SWIFT'S COMET.

The comet discovered by Swift on the 10th of October last, has again attracted general attention from the announcement by Mr. Chandler in *Special Circular No.* 7, to SCIENCE OBSERVER, that it seems to be identical with Comet III., 1869 (Tempel), and from the announcement by the Astronomer Royal to the Smithsonian Institution, of a comet discovered by Lohse, at Lord Lindsay's observatory, Dun Echt, November 7, which proves to be an independent discovery of the same object. It has already been followed for nearly a month by astronomers in America, and its elements were computed by Mr. Chandler as accurately as possible from the data at hand.

The following observations made by Prof. Eastman with the Transit Circle of the Naval Observatory, Washington, together with the resulting elements and ephemeris computed by Mr. Upton, have been kindly furnished for publication.

COMET, SWIFT, 1880.

Observations made with the Transit Circle at the Naval Observatory, Washington, D. C.:

	R. A. H.	M.	S.	DECL.		
October 25	21	50	8.74	+ 28°	29′	4″.9
November 1	22	12	33.12	35°	32′	48″.1
" 7	22	45	6.26	42°	26′	8″.3

ELEMENTS.

T=1880. Nov. 8.00411, Wash. M. T.

π= 42° 2′ 13″
Ω=295 48 23
ι= 7 22 16
} Mean Eq. 1880.0.

log. q=0.04220.

COMPUTATION OF MIDDLE PLACE.

	OBS.	COMP.
$d\lambda \cos\beta$ =		— 15″
$d\beta$ =		+ 4″

EPHEMERIS. WASHINGTON—MEAN MIDNIGHT.

DATE.	R. A. H.	M.	S.	DECL.			Intensity of Light.
1880—November 16	0	13	15	+ 52°	8′.7		1.11
" 20	1	7	41	54	31.2		1.08
" 24	2	5	44	54	59.6		0.99
" 28	2	59	22	53	38.8		0.86
December 2	3	43	26	51	2.5		0.72
" 6	4	17	21	47	50.5		0.58

In order to show the remarkable accordance with the elements of III., 1869, we give the elements of this latter comet as published by Dr. Bruhns, Astron. Nach. 1788:

COMET III., 1869.

T = 1869, Nov. 20. 85426. Berlin, M. T.

π = 41° 17′ 12″.5
Ω = 292° 40′ 28″.8
ι = 6° 55′ 0″.0
} Mean Eq. 1870.0

log. q. = 0.042416.

Assuming the two to be identical, and the comet to move in an eclipse having a period of 12 days less than 11 years, we shall have—

Semi-major axis = 4.93589
Eccentricity = 0.7767.

The intensity of light on November 7 is taken as unity. On this scale the intensity on October 10, when the comet was discovered, was 0.36. It reaches a maximum brightness about November 16, and it is probable that observations can be continued till near the end of the year, before the comet becomes too faint.

It presents an ill-defined disc, several minutes in diameter, but owing to the brightness of the moon, it can be seen for the next week, only with the larger instruments. If the identity of these two comets is finally established, and there seems to be no reasonable doubt of it now, a recomputation of the elements, embodying all the reliable observations made in 1869, will be very desirable, and will doubtless soon be undertaken. W. C. W.

WASHINGTON, *Nov.* 15, 1880.

THE NEW PERIODIC COMET.

This comet, discovered by me at midnight of October 10–11, is destined, from present indications, to become one of considerable celebrity, notwithstanding it will not be visible to the naked eye. The computation of the elements of its orbit reveals the fact that they are almost identical with those of Comet III., 1869, and hence it becomes what in astronomical language is called a periodic comet. This will have a period of not over 11, and probably only 5½ years, in which case it must have returned unobserved to perihelion about the middle of the year 1875. In either case it will be a periodic comet of short period.

I am indebted to the kindness of Prof. S. C. Chandler, Jr., of Boston, for the following set of elements, which, however, owing to the inexact determinations of the three positions used for their computation, must, of course, be considered only as approximations. They are, no doubt, near enough to the truth to establish the fact that Comet IV., 1880, is a return of Comet III., 1869, for it is almost an impossibility for two different comets to come into our system possessing physical characteristics so similar, and having elements so nearly alike. I copy both sets of elements for comparison:

Per. passage.	Comet III., 1869. Nov. 20.854.	Comet IV., 1880. Nov. 7.714.
	° ′ ″	° ′
Lon. per	41 17 12.5	41 41
Lon. node	292 40 28.8	295 25.4
ι	6 55 0	7 21.7
Log. q	0.042416	0.04262
Motion.	Direct.	Direct.

If the above supposition regarding the identity of the two comets be true, it will add another to the list of periodic comets, bringing the number up to eleven. Their names are as follows:

Name.	Period.
Halley's	76.75 years.
Encke's	3.30 "
Winnecke's	5.54 "
Brorsen's	5.58 "
Biela's	6.61 "
D'Arrest's	6.64 "
Tempel's (1867)	6.00 "
Tempel's (1873)	5.16 "
Faye's	7.44 "
Tuttle's	13.66 "

From the above list I have rejected Dé Vico's comet, which should not have been placed there, as the supposed periodicity has never been verified by an observed return.

There can be but little doubt that to this list should be added comet I, 1880, commonly called the great South American comet, with elements and general appearance almost identical with the great comet of 1843, one of the most remarkable comets mentioned in history. It was seen in the daytime, close to the sun's limb, glowing like a coal of fire. Of all known comets, it has made the nearest approach to the sun. It was truly said of it: "It exhausted its head in the manufacture of its tail," for it was nearly all tail.

As an evidence of the advance which cometary astronomy has made in our times, it may be stated that up to 1822 one only, (Halley's) periodic comet, was known. The number of such is doubtless very great, in fact computation makes the number several hundred, but until