

XVII. "On the Perihelia and Nodes of the Planets." By
EDWARD J. COOPER, Esq., F.R.S. (Second Communi-
cation.) Received June 10, 1857.

Early in the year 1855 I had the honour to transmit to the Royal Society a paper on the distribution of the perihelia and ascending nodes of the then discovered planets, which was read at the meeting of the Society held on the 8th of March in that year. In that paper I called attention to my first notice of the phenomena in the Preface to my little work on Cometic Orbits.

Ten asteroids having been since added to the number, I requested my first assistant, Mr. Graham, to include them in a new distribution of the perihelia and nodes, and he has just reported to me the results. Instead, however, of following precisely the same semicircles which I adopted, he referred in the first instance to the larger planets, with a view to ascertain whether or not in the small planets there were an apparent preference for the heliocentric semicircles in which the perihelia and nodes of the majority of the larger planets are found. Thus,—

For large Planets.

Longitude of Perihelion, 1856·0.	Longitude of ascending Nodes.
7 from $12^{\circ} 1'$ to $168^{\circ} 19'$	7 from $46^{\circ} 36'$ to $130^{\circ} 12'$
1 at $333^{\circ} 24'$	0 elsewhere

Middle point of Arc containing greatest number.

$90^{\circ} 10'$

$88^{\circ} 24'$

Mean of these. $89^{\circ} 17'$

Taking this 'n round numbers= 90° , and dividing the asteroids into three groups in the order of their discovery, we have

Perihelia.			Ascending Nodes.		
0° to 180°. 180° to 360°.			0° to 180°. 180° to 360°.		
14	10	4	14	11	3
14	10	4	14	10	4
15	9	6	15	7	8
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
43	29	14	43	28	15
Large 8	7	1	7	7	0
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51	36	15	50	35	15

In the case of the perihelia no other two semicircles give a greater disproportion between the numbers. The semicircle 355° to 175° contains 37 of the nodes, the opposite one 13.

But in addition to this development of my original plan regarding the heliocentric longitudes of the perihelia and nodes, Mr. Graham has found a remarkable coincidence between the foregoing numbers and the periods of the discovery of the small planets. It appears that 28 have been detected between the vernal and autumnal equinoxes, and only 15 in the other half-year.

He states that this circumstance, which at a first glance might seem to throw some light upon the facts, proves, after a moment's consideration, the exact opposite to what might have been expected, at least in its bearing on the perihelia, for

	180° to 360°.	0° to 100°.
Longitudes of Aphelia	29	14
Longitudes of descending Nodes ..	28	15
Point of Ecliptic in opposition at } date of discovery	28	15

"If, then," Mr. Graham adds, "there be any connexion between these results, it is not easy to imagine why discoveries should be more frequent near the *descending* node; and it is quite contradictory that there should be a greater facility of finding the planets in the more remote parts of their orbits." Upon these facts I abstain from making any comment, excepting that the present data tend to strengthen the conviction that some physical cause, as yet unapplied to these phenomena, may be in operation. Appended to this paper are two diagrams, bringing before the eye more clearly than numbers, the heliocentric places of the perihelia and nodes which are the subjects of this notice.

XVIII. "On the Development of *Carcinus Menas*." By
SPENCE BATE, Esq., F.L.S. Communicated by Sir W.
SNOW HARRIS, F.R.S. Received May 1st 1857.

(Abstract.)

The author, after noticing the history of the subject, and the