

The Galaxy as the Fundamental Plane of the Solar Star-cluster.

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MUCH attention has been given to the question in recent times as to whether the galaxy is an independent and isolated structure or whether it is related in any way to the stars around us. W. Herschel showed that the stars crowd much more thickly towards the plane of the galaxy than towards its poles, and that this increase can be represented by the numbers 4, 5, 8, 14, 24 and 53. His method was very simple. He made 3,000 observations along a line joining the galactic north pole to the galactic circle, and counted the number of stars which appeared in each telescope field of view. It was a rough and ready method which ignored all differences of stellar magnitude. Procter has more recently shown that the brighter stars especially tend towards the galactic plane. Gore still more recently has proved that all the different magnitudes of stars except those just below the limit of vision show the same tendency. The still fainter stars again crowd towards the galactic plane. If we consider the first magnitude stars—Alpha Cyprie, Altair and Capella are almost in the central plane of the Galaxy. Procyon, Vega, Aldebaran and Betelguex are close neighbours, and Pollux is not far away. The only two first magnitude stars which exhibit no connection with the Galaxy are Regulus and Arcturus, of which the latter can hardly be considered as a staple member of our system on account of its enormous proper motion. But not only does star distribution point to the Galaxy as being intimately associated with our solar cluster of stars, the distribution of the nebulae points the same lesson. Whilst the stars exhibit a tendency to crowd towards the Galaxy, the nebulae as consistently avoid this region. Where the sky is barren of stars, it is rich in nebulae; and conversely. W. Herschell proved this for the Northern Hemisphere, and his son J. Herschell for the Southern. It has since been discovered that nebulae are of two quite distinct and opposite types, differentiated by the spectroscope as “gaseous” and “continuous.” Whilst the “gaseous” nebulae are found invariably within or very near the Galaxy, the “continuous” nebulae are as invariably found far removed from its neighbourhood. Hence the conclusion can scarcely be avoided,

that the Galaxy is in some way intimately connected with the distribution of the stars and nebulae of our system.

Notes on Conjunction of Jupiter and Venus.

By P. C. BOSE.

At the latter end of January and the beginning of February last Astronomers and Astrologers were busy discussing the effects of conjunctions of the various planets, Jupiter, Venus, Saturn and Mars and our Satellite the Moon. I was interested in the conjunction of Jupiter and Venus and the rate at which they were approaching each other made it clear to everybody about the earlier part of February, that the time of conjunction was not distant. The monthly notes of our Society which I got some time ago were particularly reticent about this phenomenon, but on the 3rd February a short paragraph appeared in the *Statesman* which fixed the date as the 14th February, and it further stated that they will set together with a separation of less than half a degree. I wished to take some photographs of the event, and fortunately I had just then had everything handy for it. I had a French lens of 1.4" aperture and about 10" focal length, and I had these fitted to a light hand-made camera body especially made for taking star photographs. The plates I used were Ilford's "Empress" which as you all know are twice as rapid as Ilford's "Ordinary." I decided to take three photos, one on the 13th, one on the 14th and one on the 15th. I simply allowed the planets to trail on the plates. The thin dots and lines represent Jupiter and the thick ones, Venus. The photos were all taken at 7.15 on the respective dates and when they were at an altitude of 20° to 25°. The exposures given were 2½, 5 and 4 minutes respectively as I did not like to introduce complications by bringing in stars by longer exposures. On the 13th the planets were about 3½° apart. On the 14th they were less than 1½° apart. I could not see the actual setting owing to smoke near the horizon, but during the period of observation the angle remained almost invariable. But Mr. Mitchell told me the other day that he got an angle of about 34' with his instrument at Bankura. Bankura is about a degree or a little more to the north-west of Calcutta. The gentleman, who wrote in the *Statesman*, must have calculated for some other station west