

Tables and founded on Delannay's Theory of the Moon. Not only does the Moon differ in its position, by as much as 0·20 seconds from time to time, but these two almanacs themselves are not always wholly in accord, thus testing the highest skill of the mathematicians. But during the last two or three years, it has been observed at Greenwich and Paris Observatories, that the discrepancies of the Moon's position have been more marked, reaching a maximum of 41 seconds. Indeed it now seems quite hopeless to try and account for these discrepancies any longer on the theory of the various gravitational influences of the nearer stars. Professor Brown, one of the greatest living authorities on lunar motion, believes that it will be necessary to take into account electrical or magnetic forces, whose action at present in this connection is wholly unknown. But perhaps the chief cause of error in the calculations may be that the Earth is not rigorously a solid of revolution. And if this be so, the corrections for lunar parallax will have to be modified according to the place of observation. By this means observations may be made to square with theory. The only means of ascertaining whether the Earth's equator be a true circle will be to take observations of the Moon from several points along it.

Paper on Wolf Rayet Stars and their relation to Novæ,

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AMONG all the stars of heaven, there are none more difficult to classify than the Wolf Rayet stars. They were first noticed in 1867. Their spectrum is very remarkable, in that it consists exclusively of bright lines, often there is no continuous background at all to the spectrum. They are all very faint stars, none exceeding the 6th magnitude. This may be the reason that they have so long been ignored. It is now, however, fully recognised that these stars are of great cosmogonic importance, owing to their close relationship with Novæ. Many of the Wolf Rayet stars (those which doubtless are nearing the end of their evolution) present a continuous spectrum, with a few feeble bright lines, the chief of which is Λ 4688, the other characteristic lines being either very weak or wholly absent. These stars do not show the ordinary hydrogen lines, but many lines that are so far quite inexplicable. In many of the Wolf Rayet stars the red helium line is very marked, just as it is in most of the Novæ, especially in Nova Gemondrum and Nova Persee. This line, as also certain others of the lines of these stars, can be matched

in the spectra of solar protuberances and the chromosphere. But far the most striking resemblances exist between these stars and the Novæ. The more they are studied the more almost certain it becomes that they are the faint survivals, the decrepid relics of once brilliant Novæ. Both these stars and the Novæ are found towards the same regions of the stellar system. Although there are indeed one or two exceptions, the Novæ have made their appearance not far from the plane of the Galaxy. Over a hundred Wolf Rayet stars are known to us, and all without exception lie in the milky way, or in those detached portions of it, called the "Nebicula Major" and "Minor." Indeed their partiality for this region is quite as marked, as is the aversion to it on the part of the nebulae. This tendency towards the galactic equator can to a certain extent be accounted for on dynamical principles, by the hypothesis of a rapid rotational motion of the sidereal universe. From the fact of the Novæ and their decrepid descendants the Wolf Rayet stars being found in dense region of the sky, it can be gathered that a certain density is probably necessary for their formation. And this is just what should be expected, since such stars are produced by star encounters. It must be remembered that the real differences of stellar density in the universe vary not as the *apparent* stellar densities, but as the *square* of these apparent densities. Hence star encounters are necessarily vastly more numerous in the denser regions than in the more sparse regions. In any case it is now fairly certain that Novæ, which we maintain later become Wolf Rayet stars, have all been brought into existence by stellar encounters, whether by direct shock or merely by the liberation of internal latent forces due to gravitational strain. The only necessary condition of a "stellar encounter" is considerable deviation of the paths of the two bodies due to mutual attraction. And it can be mathematically shown that for two bodies possessing the mass and density of the Sun, in order to produce a stellar encounter and its consequences, the distance of approach need not be less than 30 times the astronomical unit. It is thus quite clear why the Novæ, and (what comes to the same thing) Wolf Rayet stars, are to be found in the denser regions of the sky.

The Elements of the Comet Wolfe, 1916 b,

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No comet has ever been before discovered when at so great a distance from the Earth, as was the Comet Wolfe. It was discovered last year when at the enormous distance of 4·1