

Vol. 33 of the *Journal* of the Chemical Society and in Vol. 94 of the *Annales de Chemie*. Warington confirmed the biological nature of nitrification not only in soil but also in ammoniacal solutions inoculated with soil. He showed also that the nitrous organisms were entirely confined to the first nine inches of ordinary soil (1887). He further showed that the nitrification of organic nitrogenous substances (urine, milk) has to be preceded first

by their transformation into ammonia. Warington was one of the first to demonstrate that an approximate increase of 350 pounds of nitrogen per acre may be obtained as a result of the growth of inoculated legumes.

In 1906, Warington's health gave way. He had to undergo a serious operation. He never regained his health after this and he passed away, March 20, 1907.

## ASTRONOMICAL NOTES.

**Planets during September 1938.**—Mercury will be a morning star during the month and will be visible low down near the eastern horizon for a short while before sunrise. There will be two conjunctions of the planet with Mars, one on September 4 and the other, a very close one, on September 16. Venus will continue to be a very conspicuous object in the western sky; it reaches greatest eastern elongation ( $46^{\circ}.3$ ) on September 11 and can be seen in our latitudes for nearly three hours after sunset. Mars is slowly moving away from the sun but is still not favourably placed for observation. On September 5, the planet will closely approach the first magnitude star Regulus ( $\alpha$  Leonis).

Jupiter will be on the meridian at about 10 p.m. and will be in a convenient position for observation in the early part of the night. So also will be Saturn, which will be a fairly bright object rising about an hour and a half after sunset. It will continue its slow retrograde motion in the constellation Pisces. Uranus is likewise moving slowly in a retrograde direction in the constellation Aries. A conjunction with the Moon takes place on September 14, which will afford an opportunity to observers with simple optical aid to locate the planet. A lunar occultation of some interest that can be seen in this country is that of  $\beta'$  Scorpii (magnitude 2.9) which will occur at about 8 p.m. on the night of September 28.

**The Milky Way.**—There are a number of interesting regions of the galaxy which can be conveniently observed during the month, immediately after sunset. The great star clouds in Sagittarius, the regions in Aquila and Cygnus which are extraordinarily rich in faint stars, are some of the parts of the Milky Way which merit special attention. Side by side, there are the dark holes and rifts in Ophiuchus and other places, regions apparently devoid of stars, which will repay a careful study. In these regions are found extensive dark clouds which obscure the light of stars situated beyond. These dark nebulae are comparatively near the sun, the distances varying from a hundred to a thousand persecs.

**Zeta Aurigae.**—This is a well-known eclipsing binary system in which the two components eclipse each other in a period of 973 days. During the two recent eclipses, photometric and spectroscopic observations have been obtained in considerable detail by a number of observers. Some interesting facts have been deduced from a preliminary discussion of the results, which indicate that the two components are not of equal dimensions. The diameter of the larger star is about twenty times that of the smaller, which, in turn, is ten times that of the Sun. The larger star is of Spectral type K and has about fifteen times the Sun's mass while the smaller, of type B has eight times the mass of the sun.

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