

of definition was observed, and in actual use the performance was satisfactory. It is absolutely essential for the success of the method that the mirror be quite enclosed, and exposed only to an atmosphere of amyl acetate so as not to be allowed to dry, for about one hour after the solution has been flooded on, as, without this precaution, a perfectly uniform film cannot be obtained.—Dr. Henry **Wilde**: The origin of cometary bodies and Saturn's rings. The first part of this paper is a further exposition of the author's theory of the origin of comets and cometary bodies from the interior of the planets of the solar system, with new illustrations drawn from experimental mechanics. Dr. Wilde considers that the recently discovered satellites of Jupiter and Saturn, which have retrograde motions, are planetary ejectamenta, and from their comparative minuteness are hardly entitled to rank as satellites. The theory advanced by Olbers, the illustrious discoverer of Pallas and Vesta, that the planetoids are fragments of an exploded planet, finds confirmation in the great irregularities of their orbits and the direct and retrograde motions of cometary bodies. The author next discussed the origin of Saturn's rings, which has for a long time engaged the attention of natural philosophers. Kant assumed that Saturn at an early period of its history had the characteristics of a comet, and that its tails contracted upon the planet and formed a ring. Laplace supposed the rings to be the original nebular substance uncondensed into the form of a satellite. The author ventures to affirm that the rings are the ejectamenta of Saturn when its diminishing energies were insufficient to eject a comet with its train of meteorites, or a cometary satellite. Dr. Wilde adduced evidence to show that the interior rings were formed some time subsequently to the outermost one, which is separated from the others by an annular space of 2585 miles. The author has drawn up a table of distances of the rings from Saturn and the times of their revolutions, calculated from his measurements of the photographs recently taken at the Lick Observatory.

NEW SOUTH WALES.

Linnean Society, August 31.—Mr. C. Hedley, president, in the chair.—Dr. H. G. **Chapman**: A contribution to the study of the precipitins. The paper records the results of an examination, by gravimetric methods, of the relations of the interacting substances in precipitin interactions. It was found that the amount of precipitate yielded by each antiserum was a fixed quantity for each cubic centimetre of antiserum, provided that sufficient homologous protein was present to precipitate completely the precipitin in the antiserum. In total interactions the weight of precipitate was proportional to the amount of antiserum. In partial interactions the weight of precipitate increased with ascending weights of homologous protein. Since the precipitates are derived mainly from the antiserum, it has been possible to determine the weight of the anti-substance in the antiserum. Consequent on the results of the gravimetric study of the interaction, a method has been devised to separate the proteins of closely allied species. Suggestions are made as to the composition of a precipitin-antiserum, as regards the components, giving rise to general avian and specific interactions. The preliminary results of the application of the test to the differentiation of vegetable proteins are recorded. They show that a group-specificity holds for proteins of vegetable origin. The derivation of precipitate from antiserum has not been sufficiently considered in relation to deviation of complement.—Dr. A. J. **Turner**: Revision of Australian Lepidoptera, part v. Part v. deals with the subfamily Geometrinæ of the family Geometridæ, comprising 40 genera and 124 species. The number of known species has been greatly added to, especially from the northern part of Australia, since the publication of Mr. Meyrick's "Revision of Australian Lepidoptera, No. ii., Geometridæ," in the society's Proceedings for 1887 (p. 835).—A. F. **Basset Hull**: Description of a fossil Chiton (Mollusca) from north-west Tasmania. The description is based on an example of a median valve, which shows the species to have been allied to, but distinguishable from, *Lorica affinis*, Ashby and Torr, and the living *L. volvox*, Reeve. The specimen was collected by Mr.

W. S. Dun from the base of the Turritella sandstone at the foot of a bluff between Wynyard and Table Cape. The beds are referred to the Jan Jukian by Hall and Pritchard; that is to say, they are near the base of the Tertiary, as developed in southern Australia. Victorian geologists correlate them with the marine series at Spring Creek. The Eocene age attributed to these beds must be regarded as purely relative.

DIARY OF SOCIETIES.

- FRIDAY, OCTOBER 21.**
INSTITUTION OF MECHANICAL ENGINEERS, at 8.—The Standardisation of Locomotives in India, 1910: Cyril Hitchcock.
WEDNESDAY, OCTOBER 26.
BRITISH ASTRONOMICAL ASSOCIATION, at 5.—Annual Meeting.
FRIDAY, OCTOBER 28.
PHYSICAL SOCIETY, at 5.—Demonstration of a New Method for producing High-tension Discharges: Prof. Ernest Wilson and W. H. Wilson.—The Behaviour of Steel under combined Static Stress and Shock: F. Rogers.

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