

on August 16 and 17, 1898, with exposures of 60m. and 122m. respectively.

The position is nearly the same on the two plates taken on August 16, but on August 17 it followed this position $33'$, and was south $19'$, while on August 18 it followed $72'$, south $43'$. Its motion was direct, and less than that of Saturn, though nearly in the same direction. It cannot, therefore, be an asteroid, but must either be a satellite of Saturn or a more distant outside planet. The proximity of Saturn renders the first supposition much more probable. On August 17 the position angle from Saturn was 106° , and the distance $1480''$. Assuming that it was at elongation, and that its orbit is circular, its period would be 400 days, or five times that of Japetus. It was at first identified with a very faint object found on plates taken in 1897, and the period of seventeen months was derived from them. This supposition has not been confirmed.

Measurements of the positions of the images give additional material for determining the form of the orbit. The method of measurement is that described in the *Annals*, vol. xxvi. p. 236. The uncorrected positions of the four images referred to the first plate of August 16 as an origin, are for x , $0''0$, $+1''2$, $+33''6$, and $+71''8$; for y , $0''0$, $-1''7$, $-19''8$, and $-42''1$; the corresponding Greenwich mean times are 12h. 16m., 14h. 18m., 12h. 56m., and 13h. 12m. Correcting for the motion of Saturn, the relative motion with reference to that body is in x , $0''0$, $-2''4$, $-10''7$, and $-22''0$; in y , $0''0$, $+0''1$, $+2''4$, and $+2''9$. It appears from this that the apparent motion is about $10''4$ a day, at a distance of $1480''$. A computation shows that if the orbit is circular, the period must be either 4200 or 490 days, according as the satellite is near conjunction or elongation. These values may be greatly altered if the orbit is elliptical. Since the interval of time between the first and last photographs on which the satellite appears is only two days, it is impossible to predict its position with accuracy. It is probable that its position angle from Saturn now lies between 280° and 290° , and its distance between $20'$ and $30'$. These uncertainties will probably be greatly diminished from measures of plates of Saturn taken in Arequipa on September 15, 16, and 17, 1898, which for some unexplained reason have not yet been received in Cambridge.

The direction of the motion, which is nearly towards Saturn, shows that the apparent orbit is a very elongated ellipse, and that it lies nearly in the plane of the ecliptic. Prof. Asaph Hall has pointed out that this is to be expected in a body so distant from Saturn. The attraction of the latter only slightly exceeds that of the sun. Hyperion appears as a conspicuous object on all four of the plates, and the new satellite appears about a magnitude and a half fainter on each. The approximate magnitude is therefore about 15.5. As seen from Saturn, it would appear as a faint star of about the sixth magnitude. Assuming that its reflecting power is the same as that of Titan, its diameter would be about two hundred miles. It will, therefore, be noticed that while it is probably the faintest body yet found in the solar system, it is also the largest discovered since the inner satellites of Uranus in 1851. The last discovery of a satellite of Saturn was made in September 1848 by Prof. William C. Bond, then director of this Observatory, and his son, Prof. George P. Bond. The satellite Hyperion was seen by the son on September 16 and 18, but its true character was first recognised on September 19, when its position was measured by both father and son (see *Annals*, ii. p. 12). Soon afterwards it was discovered independently by Lassell, at Liverpool.

Prof. William H. Pickering, as the discoverer, suggests that the name Phœbe, a sister of Saturn, be given to the new satellite. Three of the satellites—Tethys, Dione, and Rhea—have already been named for Saturn's sisters, and two, Hyperion and Japetus, for his brothers.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—The following are the speeches delivered on April 27 by the Public Orator, Dr. Sandys, in presenting (1) Prof. Sir William Turner and (2) the Rev. Prof. Wiltshire, for the honorary degree of Doctor in Science:—

(1) Virum regni totius medicorum concilio praepositum, virum honoribus academicis plurimis cumulatum, etiam noster

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Senatus titulo suo decorare anno proximo decrevit. Inter Lancastrienses natus, inter Londinienses educatus, inter Edinenses, medicinae in schola celeberrima, quam tot coloniae Britannicae studiorum medicorum quasi *μητρόπολις* venerantur, anatomiae scientiam per annos plus quam triginta praeclare professus, non modo Universitati suae aedificiis novis instruendae operam insignem dedit, sed etiam studiorum suorum actis per seriem edendis iamdudum maxima cum laude praefuit. Idem, rerum naturae spoliis olim in Britanniam feliciter reportatis, Australasiae praesertim anthropologiam opere in magno accuratissime expositam luculenter illustravit. Nuper societatis Britannicae scientiarum finibus proferendis praeses in annum proximum designatus, ab eadem disputationibus de anthropologiae scientia etiam inter Canadenses habendis haud ita pridem praepositus, hominum omnium plausus propterea praesertim meritis est, quod simiarum superbiam recentem repressit et generis humani dignitatem veterem denuo vindicavit.

Duco ad vos generis humani vindicem, equitem insignem, anatomiae professorem illustrem, WILLELMUM TURNER.

(2) Unus ex alumnis nostris, societatis geologicae, astronomicae, Linnaeanae socius, idcirco praesertim inter peritos laudatur, quod palaeontographicae societatis in usum, palaeontologiae studiosorum ad fructum, aevi prioris monumenta a rerum natura in saxis impressa, non sine summo ingenio et labore illustrata, per annos plurimos litterarum monumentis mandaverit. Idem Universitatem nostram beneficio singulari ad sese devinxit, quod non modo bibliothecam suam, sed etiam vitae antiquae reliquias veteres in saxis conservatas et saxorum inter se diversorum exempla quam plurima, nuper nobis in perpetuum donavit. Illa vero exempla omnia, olim inter Londinienses in Collegio Regali professor, docendi praesertim in commodum collegerat, cum Horatio (ut videtur) arbitratus "demissa per aures quam quae sunt oculis subiecta" animum segnius excitare. Etiam ipsa fama liberalitatis tantae nuper inter nosmet ipsos inter rerum naturae praesertim studiosos animum gratum excitavit. Quanto magis iuvat Universitatem totam liberalitatis tantae auctorem ipsum hodie oculis suis redditum et auspiciis optimis praesentem contemplari. Qui prioris aevi tot exempla nobis donavit, ipse nostro in saeculo munificentiae in Universitatem nostram ab aliis imitandum praebuit exemplum.

Praesento vobis geologiae professorem emeritum, virum de rerum naturae studiis praeclare meritum, THOMAM WILTSHIRE.

Prof. A. Cornu, of the École Polytechnique of Paris, has been appointed Rede Lecturer for the present year. The lecture will be delivered in the Senate House on June 1, as a part of the proceedings relating to the jubilee of Sir G. G. Stokes. On the same evening, a conversazione will be held in the Fitzwilliam Museum. Next day an address from the University and a commemorative gold medal will be presented to the veteran Lucasian professor. The guests of the University will be received by the Chancellor, and certain honorary degrees will be conferred. A garden-party at Pembroke College, and a State dinner in the evening, will close the festivities.

Prof. Macalister announces three lectures of an historical character, on eponymous structures in human anatomy, on May 9, 13, and 16.

University tables are vacant at the Naples and the Plymouth Zoological Stations. Applications are to be sent to Prof. Newton by June 1.

THE *Times* makes the following announcement:—"We understand that Mr. Passmore Edwards has intimated his intention of giving 10,000*l.* upon trust to equip a school and building for the teaching of economics and commercial science in the New London University. The Trustees, who are to carry out the trust and offer the building when ready to the new University Senate, are the Bishop of London, Mr. Sidney Webb, and Mr. Haldane, Q.C., M.P. The work of the London School of Economics will probably be continued there. Further endowments will, of course, be wanted for chairs of banking, commercial history and geography, commercial law, insurance and other special subjects, and this magnificent gift by Mr. Passmore Edwards should encourage other wealthy Londoners to imitate his generosity."