

There was no noticeable falling off in the brightness of the planet near the limb, so that there appears to be no evidence of any kind of atmospheric absorption on Mercury.

The paper concludes with a list of previous measures of the diameter, and a discussion of the reasons why heliometer and filar-micrometer measures of diameter do not always agree, the discrepancy being ascribed chiefly to the distortion produced by the division of the objective in the heliometer (*Astronomische Nachrichten*, Bd. 156, No. 3737).

**PERIODICITY OF THE INEQUALITIES OF MERCURY.**—In the *Bulletin de la Société Astronomique de France*, pp. 402-403, 1901, M. Souleyre gives some results of his investigations into the variation of the inequalities of the planet Mercury. The times of contact of the planet with the sun's disc have been reduced from the observations available during the period 1677-1894, and the residuals are found to have a probable relation to the sun-spot period, inasmuch as the errors are all *positive* at or near the years of sun-spot *maxima*, and *negative* about the times of sun-spot *minima*. A rather discordant value is found for 1894, but the error is very small for that year.

The mean error for years of maxima is about +6 seconds, and  
 " " " minima " -9 "

**EVIDENCE OF THE EXISTENCE OF AN ULTRA-NEPTUNIAN PLANET.**—In a paper read before the Royal Society of Edinburgh (*Proc. Roy. Soc. Edinburgh*, vol. xxiii. pp. 370-374), Prof. G. Forbes outlines the observations and calculations which he considers indicate the probable existence of a planet beyond Neptune. The chief factor on which the discussion is based is the proposition enunciated by Prof. Newton in 1879, stating that *if the elliptic orbits of comets have been changed from parabolas by planetary perturbations*, then the aphelion position of the new orbit will most probably be that occupied at the time of change. Prof. Forbes in 1880 (*Observatory*, June 1880) found that seven comets had aphelia distances about equal to one hundred times the mean distance of the earth from the sun.

The present note then deals more particularly with the recent discovery of a remarkable confirmation of these original results. The comet of 1556 (possibly identical with that of 1264) was not detected in 1848, and the computations undertaken show that the longitude of the new planet in 1696 was 112°, and its distance about one hundred times the earth's mean distance. The number of comets affected by these observed perturbations is so large that the new planet is probably greater than Jupiter.

A minute examination of all the comets in Galle's Catalogue showed the author that no one of them represented the lost comet of 1556, and a further search has been made among those comets to which elliptic orbits have not yet been assigned. Of these comets 1844 iii. or 1843 ii. turn out to have aphelion longitudes near 115°. This position, he calculated, would be occupied by the hypothetical planet about 1705, and if the former comet (1844 iii.) should be the representative of the long lost comet 1556, the observed perturbations would all be as required by the theoretical deductions, viz. the node has retrograded considerably, the inclination greatly increased, and the longitude of perihelion advanced. The chief discrepancy is in the latitude of aphelion, which is smaller than would be expected. It thus appears that the long lost comet 1556 is represented by that of 1844 iii. perturbed by a planet considerably larger than Jupiter, situated at about one hundred times the mean distance of the earth from the sun, and whose longitude is about 181° in the present year 1901. A re-examination of the 1556 observations is in progress, in the hope of finding more definite information.

**UNIVERSITY AND EDUCATIONAL INTELLIGENCE.**

THE Sunderland Municipal Technical College, which has been erected at a cost of 27,000*l.*, was opened on Friday last.

THE new technical school at Liverpool, the foundation stone of which was laid on July 1, 1898, is now practically completed and will shortly be opened. The school will accommodate 1300 students. The rooms devoted to chemistry and navigation are already in use.

MR. W. J. POPE has been appointed professor of chemistry and head of the chemistry department at the new Municipal School of Technology at Manchester. He has been succeeded as head of the chemistry department of the Goldsmiths' Institute, New Cross, by Dr. A. Lapworth.

NO. 1664, VOL. 64]

A HANDY little diary and note book, which should be useful to students, has been issued by Messrs. Philip Harris and Co., Ltd., of Birmingham. It contains information as to the subjects and dates of the forthcoming examinations in connection with the Board of Education, City and Guilds of London Institute, &c.

MR. R. M. FERRIER, late lecturer in mechanical engineering at the Durham College of Science, Newcastle-upon-Tyne, has been appointed to the professorship of engineering at University College, Bristol, in the room of Dr. Stanton, whose appointment to the National Physical Laboratory was recently announced.

THE new laboratory and class rooms of the Muir Central College, Allahabad, described in a recent number of the *Pioneer Mail*, are in marked contrast to the rooms hitherto devoted to science in the institution. Judging from our contemporary's description, no pains have been spared to give the College sufficient accommodation and apparatus for the carrying on of scientific instruction.

**SOCIETIES AND ACADEMIES.**

PARIS.

**Academy of Sciences**, September 9.—M. Bouquet de la Grye in the chair.—Observations of the planet GQ, made at the Observatory of Algiers with the 0.318 metre equatorial, by M. F. Sy. The apparent positions of the planet, the positions of the comparison stars, and the magnitudes, were measured on the five nights August 21 to 26. The magnitude varied between 8.5 and 9.6.—On the existence of fundamental functions, by M. W. Stekloff.—On integral invariants, by M. Th. de Donder.—On the impossibility of representing by isopygmic curves the distribution of instability in a given seismic region, by M. F. de Montessus de Ballore. The author concludes that since seismic phenomena are essentially discontinuous both in time and space, the isopygmic curves can have no real existence. Proof of this is found in the paper by Oldham on the aftershocks of the great earthquake of June 12, 1897.—On the simultaneous appearance of mosquitoes of the genus *Anopheles* and the first cases of malarial fever in the region of Constantine, by M. A. Billet. The first cases of malaria occurring during the season were nearly simultaneous with the first appearance of the mosquito. The proof in one case of the presence of the malarial sporozoites in the *Anopheles* presents a particular interest.—On the biology of *Galeruca xanthomelaena*, by M. A. Menegaux.

**CONTENTS.**

PAGE

Wireless Telegraphy. By C. C. G. . . . .	497
<b>Our Book Shelf:—</b>	
Larmor: "Geometrical Exercises from Nixon's 'Euclid Revised,' with Solutions" . . . . .	497
Royer: "Histoire du Ciel" . . . . .	497
<b>The Denver Meeting of the American Association.</b>	498
Address by Prof. R. S. Woodward, President of the Association . . . . .	498
<b>The Glasgow Meeting of the British Association.</b>	502
Section B.—Chemistry.—Opening Address by Prof. Percy F. Frankland, F.R.S., President of the Section . . . . .	503
Section C.—Geology.—Opening Address by John Horne, F.R.S., President of the Section . . . . .	509
Section G.—Mechanics.—Opening Address by Colonel R. E. Crompton, President of the Section . . . . .	517
<b>Notes</b> . . . . .	520
<b>Our Astronomical Column:—</b>	
Diameter of Mercury . . . . .	523
Periodicity of the Inequalities of Mercury . . . . .	524
Evidence of the Existence of an Ultra-Neptunian Planet . . . . .	524
<b>University and Educational Intelligence</b> . . . . .	524
<b>Societies and Academies</b> . . . . .	524