A lady who had lived in India mentioned, in this connection, that she had often noticed natives, after taking up a photograph to look at it, replace it upside down. One of those two boys, looking at pictures, preferred to hold them upside down.

A. B. M.

Lecture Experiment on the Nodes of a Bell.

REFERRING to Mr. Taylor's letter on the above subject (January 23), the method he describes requires, in the first place, a bell-jar of very wide edge—at least half an inch—and the result, when obtained, would only be visible to one or two persons at a time. May I suggest the following method, although, very probably, by no means new.

An ordinary bell-jar with a plain edge (not welted) is fixed firmly in an inverted position; from a metal ring, arranged above it, are suspended eight small beads by fine threads, in such a manner that they rest lightly against the outside of the edge of the jar. It is convenient (though not necessary) to so arrange the beads that they touch the circle of the jar at equidistant points. On then bowing, the beads are all jerked out from their positions, and can be heard rattling against the glass as they fall back; and it is easy to note that at the nodes the disturbance is comparatively slight, while it is more violent in the ventral segments.

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THE PLANET VENUS.

THE planet Venus, as every observer knows, is a difficult and, at the same time, a tantalising object for observation, for when she is in that part of her orbit nearer to us, and therefore greatest in size, she presents us with only a small illuminated crescent, from which it is impossible to gather much from her surface markings as a whole. Although at her greatest distance from us she presents her whole disc, yet the latter appears so small that even in this case satisfactory observation is not obtainable. We have to content ourselves, therefore, with observations made between these two stages, and when her apparent disc is thus semi-illuminated.

That such an important question as the time of rotation of the planet about her axis is not yet definitely settled, is quite sufficient to indicate that the observer has not everything his own way.

In a former number of NATURE (vol. xlvi. p. 469), a summary was given of the valuable observations made by the late M. Trouvelot at Cambridge, United States, and Meudon, extending over the years 1877-1891. The chief points to which reference there was made were the two kinds of spots, white and grey, one specially prominent in size having appeared on September 3, 1876; the snow caps at the poles, and the bright specks which appeared at their southern extremities; the varying shape of the terminator, which occurred sometimes in the space of a few hours; and, finally, the period of rotation. Trouvelot found that the whitish and greyish spots were very difficult to observe, even under favourable conditions. The former were situated near the terminator, and produced on it slight deformations, which seemed so to alter it as to suggest that these spots are at a higher level than the other parts. The greyish spots, on the other hand, when situated in about the same positions, also deformed the terminator to a small extent, but in an opposite way to those just mentioned, suggesting that these spots lie at a lower level than the parts near them. Another peculiarity of these two kinds of spots which he remarked was their size. The white ones seemed to assume a round or slightly oval form, and were nearly always small, while the grey spots were generally of an elongated shape and of large dimensions, forming sometimes straight bands. That the spots were not necessarily of long duration was also remarked, and they were analogous in their formation to "taches des couches nuages continues de notre atmosphère précédant les pluies, et qu'un simple jeu de lumière fait naître ou disparaître." Their contours were described as very vague, those of the white spots being less brilliant, and those of the grey spots less dark.

In the observations that were made at the Catania Observatory and at Mount Etna (*Astr. Nach.*, Bd. 139, No. 3329), and to which a brief reference is here made, the observer, Sig. A. Mascari, describes in detail the appearances of the spots during the years 1892-1895. He also differentiates between the two kinds of spots. "Le macchie oscure si presentano ordinariamente sotto forma di leggiere velature grigie a contorni mai netti, molto deboli, senza alcun limite deciso, ed è assai raro e fortunato quel momento in cui si può arrivare a distinguere con precisione qualche contorno netto." The second type, "Le macchie chiare si rilevano per un maggiore splendore rispetto a quello del resto del pianeta.

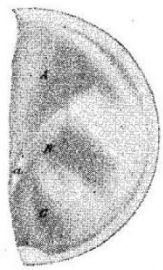

FIG. 1.—October 12, 1892.

From [illegible] which accompany the observations in the communication referred to above, the surface markings can be clearly followed.

Fig. 1, which is one of a series of four drawings made in the months of October and November 1892, gives the general appearance of the surface as it was then observed. The three dark patches, A, B, and C, were nearly always visible; *a* was not always so prominent as is shown in the drawing. The terminator was also at times irregular in shape, being specially so on November 14. The edge of the south polar cap, near the terminator on October 13, assumed a somewhat similar appearance to that which Trouvelot recorded on September 27, 1876. The observations of the latter indicated that the most striking

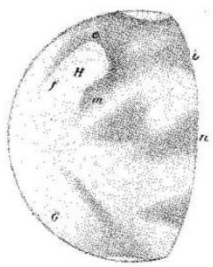

FIG. 2.—September 25, 1893.

irr[illegible]ities of the terminator close to the edge of the pole-caps, where deep notches were often recorded. They were of different sizes and shapes, and underwent rapid changes in periods of sometimes a few hours. These facts led Trouvelot to believe in a short period for the rotation of the planet. In the observations for 1893, the terminator was directed towards the east.

Fig. 2 shows the planet for September 25, 1893, from 13h. 50m. to 14h. 52m. The bright spot, H, is bounded on the east and west sides by dark, well-defined contours, *e*, *f*, and *m*. The region about G was somewhat obscure; the area enclosed by *i*, *m*, *n* was bright and sometimes circular, being bounded, for the most part, by dark indistinct contour lines.

Fig. 3 shows this more clearly. This drawing, made on October 13, seems to be more typical of the appearance of the disc for this year. The six comparatively large whitish spots, H, I, G, N, M, L, are here clearly shown. H is somewhat varied by an incursion of the dark contour line on the east side; I is also sometimes partially bisected by a dark streak, as was the case on November 27, 16h. 50m. (Fig. 4).

The different shapes which the terminator underwent during this year's observation were very prominent, that on November 27 being the most noticeable.

The disc in March 1895, the terminator being directed towards the east, presented the appearance shown in Fig. 5. One can easily recognise the large white spots, H, I, G, N, M; I appears, however, no longer divided,

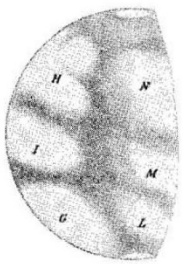

FIG. 3.—October 13, 1893.

while L seems to have more or less disappeared, giving place to a prominent circular spot a little more to the eastward. The detail observed during the months of July and August can be best seen by examining Fig. 6, which can be conveniently compared with Fig. 3 or Fig. 4.

With regard to the length of period of rotation of this planet, the difficulties of identifying the spots after brief intervals of time have rendered this point doubtful. Leo Brenner on this point writes (*Astr. Nachr.*, No 3300, p. 197): Obgleich ich bisher 107 Beobachtungen der Venus zu verzeichnen habe, konnte ich doch erst 22 Zeichnungen anfertigen, weil die wahrgenommenen Flecken gewöhnlich so schwach und unbestimmt sind,

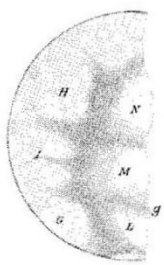

FIG. 4.—November 27, 1893.

dass ein gewissenhafter Beobachter Bedenken trägt, ihre Wiedergabe zu versuchen, weil er fürchten muss, entweder ein Opfer von Selbsttäuschung zu werden oder die Ausdehnung der Flecke nicht richtig aufzufassen. Deshalb halte ich auch die Berechnung der Rotation aus Flecken, die so unbestimmt sind, für ganz und gar unmöglich. Anders verhält es sich aber mit Erscheinungen, welche so deutlich sind, dass sie ins Auge fallen und über deren Wirklichkeit mithin kein Zweifel bestehen kann."

It is at present uncertain whether a rotation is performed in, roughly, twenty-four hours, or whether it is accomplished in about 225 days. Trouvelot, from his numerous observations, gave a period amounting to nearly twenty-four hours; while Schiaparelli still adheres to 225 days. Quite lately also Tacchini, from observations made during last summer at the Collegio Romano, favoured Schiaparelli's view that the rotation period is equal to the sidereal revolution; and his observations (*Atti Reale Acad. Lincei*, vol. v. p. 3) towards the end of 1895, have led him to the same conclusion, The observations of Mascari seem, however, to have led him to adopt the longer of the two periods. Cerulli also, from observations made in July, August, and November of last year (*Astr. Nach.*, No. 3329) is inclined to adopt Schiaparelli's length of period. Writing in *Astr. Nachr.* (No. 3310, p. 368), he says: "Onde si conchiude che la configurazione delle ombre di Venere si mantiene sensibilmente invariabile per molti giorni, e non rivela nessun movimento conciliabile con rotazioni di breve durata."

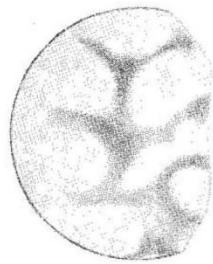

FIG. 5.—March 23, 1895.

Leo Brenner, on the other hand (*Astr. Nach.*, No. 3314), is decidedly in favour of the shorter period, and so is therefore of the same opinion as Trouvelot. The former argues that if the spots preserve their positions, then those near the terminator would be for some length of time under the same conditions of illumination, and therefore would appear the same. This he maintains is not the case, and is not even borne out by the drawings of Schiaparelli and other observers.

It may be remembered that Trouvelot determined his value of 23h. 49m. 28s. from the observations of certain spots, but he also stated that many of the general features visible on the planet's surface, such as the rapid deformations of the horns and of the terminator, &c., a

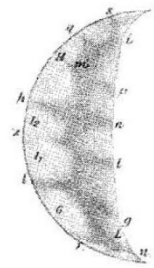

FIG. 6.—July 26 to August 5, 1895.

suggested a short period of rotation, and were "inconciliable avec la période de rotation, si lente et si inattendue, déduite par l'éminent astronomie de Milan."

Brenner, who has observed Venus some 275 times, says that the spots move with a velocity of 15°·030 in one hour, thus indicating a period of 23h. 57m. 7·5459s. In fact, he seems so convinced of the accuracy of his observations, that he has published a map of the surface of Venus, and finds that drawings by numerous observers agree well with it. He maintains, also, that the dark spots are true appendages on the planet's surface, and are not connected with the cloudy atmosphere. (See *Astr. Nachr.*, No. 3300, p. 198, in which he refers to a peculiar shaped spot situated near the South Pole, and a communication from Stanley Williams.

He accounts for the idea of a long period of rotation having been and still being upheld, on the ground that between 320° and 150° longitude there are several spots which are somewhat alike, six of which lie in a north and south direction, and two in higher latitudes in an east and west direction.

For this reason, if an observer does not steadily watch the planet from morning till evening every day, but simply makes an occasional observation, he can then easily mistake one spot for another, and imagine that he is observing the same one when he is really observing another, and thus conclude that no apparent motion of the spot is noticeable.

Whether this be so or not is, however, the question, but one does not feel quite at liberty to state definitely that therein lies the cause of Schiaparelli's, Tacchini's, &c., deductions of a long period, for certainly they must have convinced themselves thoroughly that such a rapid rotation, which according to Brenner is so apparent, was nevertheless to them very difficult of observation before they committed themselves to definite statements.

The following, but somewhat incomplete, list gives some idea of the views held by observers regarding the time of rotation of the planet under discussion. Column I. gives the names of those who advocate the short period of about 24 hours; column II., with one exception, those who are inclined to the period of, roughly, 225 days, and column III., those who are doubtful. The dates against some of the names refer to the times at which the respective observations were made.

I. Short period.	II. Long period.	III. Doubtful.
D. Cassini (1667)	Bianchini (1727)>24^{d}	Herschel, Sir W.
J. Cassini (1730?)	Schiaparelli	Beer and Mädler (1833–36)
Schröter (1788–93)	Cerulli	
De Vico (1840?)	Tacchini	
Trouvelot (1877–91)	Mascari	
Leo Brenner		
Stanley Williams		

During the first few months of this year the planet will be a morning star. From the middle of January to the middle of May, her time of rising before the sun diminishes from three hours to half an hour, her apparent diameter decreasing during this time from 16″ to 10″. After August she will become an evening star, her apparent distance from the sun increasing. In the middle of November she will set one hour and a half, and towards the end of December three hours, after the sun; her apparent diameter at this latter epoch being 15″. W. J. S. L.

THE SEEBOHM COLLECTION.

THE British Museum has always owed much to the generosity of private donors, and this has been exceptionally true in the case of the collection of birds, which is now the finest in the whole world. It is difficult for ornithologists of the present day to imagine what the collection was like five-and-twenty years ago in its old quarters at Bloomsbury. Its principal value then consisted of the type-specimens which it had received from the earlier voyages, and the celebrated Nepalese collection of Mr. Brian Hodgson; but the great series of Australian birds obtained by John Gould had been allowed to go to Philadelphia, apparently without a protest from any public body in England, and to the great regret of Gould himself. He had offered the collection to the nation on reasonable terms, which were afterwards eagerly accepted by Dr. Edward Wilson, who transferred the whole series, with its priceless types, to Philadelphia.

The birds' skins in past years were kept in an underground vault, in wooden boxes, so that if any particular specimen was wanted by a student, the whole lot had often to be turned out on the table, to render possible a search for the skin required. The time thus wasted was considerable, the damage to the specimens enormous, as they were heaped one upon another in the boxes, and every skin became more or less ruffled and spoilt as time went on. As regards the mounted collection, the absurd idea obtained that the public liked to see all the rare birds, and thus all the valuable types and priceless specimens were stuffed and exhibited, there to wither with the dust and exposure to light, and decay with age. Many specimens of great value, known to have been in the collection of the British Museum at the beginning of the century, are now no longer to be found there; they have doubtless fallen to pieces from decay, and have been thrown away. Even with the utmost care, I find it difficult now to preserve some of the old Montagu collection, the skins never having been properly preserved, and having been mounted with most of the bones inside them. In this way also were preserved the specimens of Captain Cook's voyage, most of which have vanished since the time that Latham described them, and they have doubtless crumbled to pieces.

It is quite certain, therefore, that twenty-five years ago the collection of birds in the British Museum was of small repute, and probably did not exceed 40,000 specimens. Little encouragement was given to travellers to help the national collection, and, excepting in the case of the Antarctic Expedition, and a few of the same kind, the specimens received from explorers on sea and land were few and far between. The best series were in the hands of private collectors. Thus, for the study of Palæarctic ornithology, students visited my collection and that of Mr. H. E. Dresser, or that of Mr. Henry Seebohm, already then commencing to loom large. For Ethiopian birds, my own collection and that of Captain Shelley were always available for the purposes of study, and far exceeded that of the British Museum in number of specimens. For Indian birds, that of the late Marquis of Tweeddale was the one generally consulted, and in India the influence of Mr. Hume was at work, and his collection was already assuming large proportions. The collection formed by the late Consul Swinhoe was the best as regarded Chinese birds, and Dr. A. R. Wallace still retained in his hands the chief set of the specimens obtained by him during his travels in the Malay Archipelago, with all the types. The best collection of Australian birds was that in the possession of Messrs. Salvin and Godman, though Mr. Gould had a large number of valuable specimens, gathered together during the previous thirty years, since the sale of his original collection. As regards American birds, the absolute dearth of species in the national collection can be estimated from a glance at the late George Robert Gray's "Hand-list of Birds," published in 1869–71, then the authentic record of what the Museum possessed, where genus after genus is scantily represented, and the series of species is lamentably defective. With regard to those of the Neotropical region, no great Museum, in the year 1872, probably stood at a greater disadvantage than the British Museum. The majority of the types of American Passeres were in the collection of Dr. P. L. Sclater, and, for a general series, nothing in Europe could surpass that of the Salvin-Godman cabinet.

In 1896 it is interesting to note the present location of the above-mentioned private collections. They are *all* in the British Museum. With the acquisition of the Wallace collection in 1874, commenced that era of improvement in the ornithological collection which has steadily progressed, and is still progressing at the present day. The Gould, Sclater, Shelley, and Sharpe collections, with many others of greater or less importance, have passed into the hands of the Trustees. Then came, in 1885 the, magnificent donation of Mr. Allan Hume, followed by that of the Tweeddale collection