already obtained may be of sufficient interest to justify preliminary publication. The experimental details will be more appropriately given with the completed experiments.

Curie has shown that the rays from active barium compounds are of two kinds. One kind is easily absorbed, and is not deflectable by the magnet. The other kind is much more penetrating, and does suffer deflection in a magnetic field. It is to the latter kind exclusively that the experiments refer.

The intensity of the radiation was measured by the electrical conductivity of air exposed to it. It was again measured after partial absorption by a plate of the material under investigation.

In the following table the first column gives the coefficients of absorption λ defined by the equation

$$r = r_0 e^{-\lambda d},$$

while r_0, r, are the initial and final intensities of the radiation, and d the distance traversed.

Material	Coefficient of absorption	Density	Coefficient of absorption / Density
Platinum ...	157·6	21·5	7·34
Lead	62·5	11·4	5·48
Silver	65·7	10·6	6·20
Copper ...	49·2	8·95	5·50
Iron	52·2	7·76	6·74
Tin	51·2	7·3	7·01
Zinc	40·3	7·2	5·58
Mica ...	10·8	2·74	3·94
Glass	12·5	2·73	4·58
Aluminium ...	11·6	2·7	4·30
Celluloid ...	5·45	1·36	4·01
Ebonite ...	4·77	1·14	4·18
Card	3·84	1·0	3·84
Sulphur dioxide[1]	·0413	·00758	5·45

It will be seen that, although the coefficient of absorption is not accurately proportional to the density, yet the departure from this relation is not very great, if the enormous range of density be taken into account. Thus between solid platinum and the compressed sulphur dioxide used, there is a three thousand-fold difference of density. The quotients $\frac{\text{absorption}}{\text{density}}$ are respectively 7·3 and 5·45. It is interesting to compare these results with Lenard's observations on the absorption of the kathode rays (*Wied. Ann.* vol. lvi. p. 255). He found that the above relation between absorption and density held to about the same degree of approximation. The coefficients of absorption for the kathode rays are, however, some five hundred times greater than for the rays investigated in my experiments.

We may, I think, fairly consider that the approximate proportionality between absorption and density is an additional argument in favour of the view that the deflectable Becquerel rays are of the same nature as the kathode rays. To account for the enormously greater penetrating power of the latter, one must suppose either that the particles constituting them are much smaller, or that their velocity is much greater.

R. J. STRUTT.

Planets at their Greatest Brilliancy.

MR. DENNING'S able and lucid article upon the planet Mercury (NATURE, March 1) induces me to send a few notes. With inclined elliptical orbits it is a complicated matter to determine when an interior planet is at its greatest brilliancy. But if the orbits are assumed circular and coplanar, interesting results are easily obtained.

Theory shows that there is a certain elongation, at which the interior planet, viewed from the exterior one, has a maximum brightness. Now, for a given elongation, there are two distances, a long and a short one, between the planets. Consider only eastern elongations. It will be found that Mercury has its greatest brilliancy (for mean distances and circular orbits) when its elongation is 22° 19′, and when its distance (1·00) from the earth is the larger of the two distances possible for this elongation. The illuminated phase is 0·60. Thus Mercury is brightest *before* its maximum eastern elongation of 22° 47′.

[1] Saturated vapour at 13° C.

Venus has its greatest brilliancy at elongation 39° 43′; but its distance (0·43) from the earth must be the smaller of the two possible ones. The phase is 0·27. Thus Venus is brightest *after* its maximum elongation of 46° 20′.

But, if from Venus we view Mercury, then (as in the case of the earth and Venus) we must take the shorter distance for maximum brilliancy. The elongation is 31° 36′, distance 0·54, phase 0·40. Thus Mercury, seen from Venus, is brightest after its maximum eastern elongation of 32° 21′.

That a planet should be brightest exactly at maximum elongation involves, I find, the following relationship between the radii vectores: the radius vector of the exterior planet should be just $\sqrt{5}$ times that of the interior one. When the factor exceeds $\sqrt{5}$, the interior planet is brightest before maximum elongation. When the factor falls short of $\sqrt{5}$, the interior planet is brightest after maximum elongation. Circular orbits are assumed. For the pairs, Mercury-Venus, Venus-Earth, Earth-Mars, Jupiter-Saturn, the factor is less than $\sqrt{5}$. But for Mercury-Earth it is greater; hence Mercury is brightest before maximum elongation east, a fact clearly brought out by Mr. Denning's observations. On several occasions I have seen Mercury with the unaided eye, and, generally, after greatest eastern elongation, when the conditions are less favourable than before it.

C. T. WHITMELL.

Leeds, March 5.

P.S.—The American *Ephemeris* for 1900 shows that the maxima of brightness for Mercury occur very irregularly. One maximum occurs 6 days before greatest east elongation, another only 1½ days after superior conjunction. Eccentricity accounts for these irregularities.

The Use of Silica in Thermometry.

I HAVE just learnt from your last number (p. 521) that Mons. A. Dufour has recently exhibited two silica thermometers in Paris, and that he proposes to study the suitability of silica for use in thermometers.

As I had the honour of exhibiting silica tubes of various sizes last June at the soirée of the Royal Society, and also then exhibited, in conjunction with Mr. Evans, our process for making such tubes, I am anxious at once to state that I have continued to study the applications of silica in conjunction with Mr. H. G. Lacell, and that we have at this moment the bulbs and stems of four delicate silica thermometers ready to be joined and filled as soon as their scales and some fittings are delivered. In February last we filled one of these ungraduated thermometers and tested it. It was shown to our colleague, Mr. J. E. Pearson, but was afterwards cut in two in order to alter the length of the degrees (20 mm.), as they were not quite as long as we then wished them to be.

I may add that the scales for these thermometers have been ordered, through the Cambridge Instrument Company, of Messrs. Zeiss, and that a special glass thermometer has been constructed for use in studying their zero points, which has now been in the hands of the Superintendent at Kew for some days.

Clifton, April 2, 1900. W. A. SHENSTONE.

The Natural History Museum—A Correction.

IN a paper of mine on *Ilyopsyllus coriaceus*, which appeared recently in the *Natural History Transactions of Northumberland and Durham*, I referred to certain dissections—which had been described by Mr. Thomas Scott, and are now in the Natural History Museum at South Kensington—as having "deteriorated so as to be useless," at the same time ascribing this statement to Prof. T. Jeffrey Bell, who had kindly examined the dissections at my request. The statement, so far as Prof. Bell's authority is concerned, is not quite accurate, and at his request I wish to be allowed to correct it in your columns. What Prof. Bell told me was that the dissections consist of "nothing but unrecognisable fragments," and that "Mr. Pocock, who had charge of the Crustacea in 1893, says the tube came there in the state it is in now."

I think I need scarcely add that my words, as quoted above, were not meant in any way to impute negligence or want of care to the officials of the Museum.

G. S. BRADY.

The Durham College of Science, Newcastle-upon-Tyne, March 29.