

times at 164,000 feet (NATURE, vol. li. p. 534). If these layers tapered off uniformly in either direction from the region of maximum deposit, the total mean thickness would be half this, or 82,000 feet; and if the mean rate of subsidence were never greater than 2·18 feet per century, the total time required for the accumulation of Cambrian and post-Cambrian rocks would be not less than  $3\frac{3}{4}$  millions of years. But there may have been long unknown gaps in the process of their accumulation; the outer margin of the deposits may have extended far beyond the area of subsidence, and the mean rate of subsidence may have been at all times considerably less than the upper limit given above. On these accounts, as well as on others that might be mentioned, it seems possible that much more than  $3\frac{3}{4}$  million years has elapsed since the beginning of the Cambrian period.

Birmingham, April 8.

C. DAVISON.

#### The Burmese Chipped Flints Pliocene not Miocene.

IN the *Geological Magazine* for November of last year, p. 525, is a review by Prof. T. Rupert Jones, of the important paper, published in the *Records of the Geological Survey of India*, by Dr. Fritz Noetling, the Palæontologist of the Survey, "On the occurrence of Chipped (?) Flints in the Upper Miocene of Burma." Another paper, by Prof. T. R. Jones, on "Miocene Man in India," appeared in *Natural Science* for the same month.

From the fact that the mammals *Rhinoceros perimensis* and *Hipparion antelopinum*, of which bones were found associated with the flint chips, have only been found in India in Pliocene beds, and from a slight acquaintance, gained, it is true, more than thirty years ago, with the Burmese strata in which Dr. Noetling's most interesting discovery was made, I felt assured that there must be some error in believing that the flint chips occurred in Miocene deposits, and I wrote to Dr. Noetling on the subject. I have just heard from him in reply. In a letter from Upper Burma of March 11, he tells me he has now definitely ascertained that the bed containing the chipped flints is Pliocene.

Further particulars will, I hope, be published before long by Dr. Noetling; and I should not have written on the subject but that a serious error is caused by its being supposed that "Miocene Man" has been shown to have existed in India, and it is desirable that this error should be corrected without delay. The importance of the discovery is in no way diminished by the correction of the geological date to which the flint-bearing stratum is referred.

W. T. BLANFORD.

April 17.

#### The Mandrake.

WITH regard to Prof. Veth's exhaustive account of the mandrake (referred to in NATURE of April 11, p. 573), it may be useful to students of folklore to call their attention to the occurrence in the Chinese literature of a similar superstition, wherein *Phytolacca acinosa* (Shang-luh) takes the place of *Mandragora officinarum*. Sie Tsai-Kang's "Wu-tsah-tsu," written about 1610 (Japanese edition, 1661, tome x. p. 41), contains the following passage:—"The Shang-luh grows on the ground beneath which dead man lies; hence its root is mostly shaped like a man. . . . In a calm night when nobody is about, the collector, offering the owl's flesh roasted with oil, propitiates the spirit of the plant until *ignes fatui* crowd about the latter; then the root is dug out, brought home and prepared with magic paper for a week; thus it is made capable of speech. This plant is surnamed 'Ye-hu' (*i.e.* Night Cry) on account of its demoniacal nature.<sup>2</sup> There are two varieties of it: the white one is used for medicine; the red one commands evil spirits, and kills men when it is internally taken by error." KUMAGUSU MINAKATA.

April 16.

<sup>1</sup> Here the author says: "It is popularly called 'Chang-liu-Kan' (= Witch-tree-root)." The name shows that the root was used in witchcraft, similarly with that of the Mandragora (*cf.* Hone, "The Year-Book," *sub.* "December 28").

<sup>2</sup> Another explanation suggested for this name is that, as long as the fruit of the *Phytolacca* remains unripe, the cuckoo continues to cry every night (Sie Tsai-Kang, *ubi supra*). However, seeing that the belief in the shrieks of the Mandragora was once current among the Europeans ("Encyclopædia Britannica," 9th ed. vol. xv. p. 476), it would be more just to derive the Chinese name "Night Cry" from an analogous origin.

#### A Claim for Priority.

I SEND you, under separate cover, a copy of an address, "Radiant Matter," &c., delivered at the International Electrical Exhibition, held in Philadelphia in 1884, reprinted from the *Journal of the Franklin Institute*, September 1885, and would call your attention to the description of the method of preparing films of gold and other metals of extreme thinness, far exceeding in tenuity those described in NATURE as novelties in metallurgical methods (prepared in identically the same manner), and exhibited at a conversazione of the Royal Society, June 13, 1894. The first published note regarding this subject may be found in the *Proceedings of the American Phil. Soc.*, vol. xcix. February 16, 1877. Later and fuller notices will be found in *Journ. Franklin Institute*, April 1877, June 1877, September 1885, and September 1894. In addition to the above, the process was fully described in *U.S. Patent*, 198, 209, December 18, 1877.

ALEX. E. OUTERBRIDGE.

Philadelphia, April 5.

#### AN IMPROVED METHOD FOR THE MICROSCOPIC INVESTIGATION OF CRYSTALS.

A MEMOIR of considerable importance to all who are interested in the microscopic determination of the characters of crystals, is contributed by Prof. Klein to the *Sitzungsberichte* of the Berlin *Akademie der Wissenschaften* for January 31, 1895. The two essential points of the communication are that a form of stage goniometer is described, which permits of the most complete examination of many of the principal zones of the crystal with one and the same setting of the crystal upon its holder, and that the crystal is immersed during the observations in a liquid whose refractive index is about the mean of the refractive indices of the crystal. The idea of the "Universaldrehapparat," as the new stage goniometer is termed, appears to have suggested itself almost simultaneously to Prof. Klein and to Herr von Federow, for the former described an earlier form of it in the *Sitzungsberichte* of April 1891, while the latter published a description of an "Universaltischen" for the microscope in the *Zeitschrift für Krystallographie* of May in the same year. Herr von Federow had previously contributed to the *Zeitschrift* a remarkable memoir concerning a theodolitic universal goniometer, and the application of the principle of that instrument to the microscope goniometer followed naturally therefrom. The present memoir of Prof. Klein affords so admirable a description of the improved instrument, which has been constructed for him by the well-known Berlin crystallographical optician, Herr Fuess, and likewise of the mode of employing it in connection with the immersion method, that readers of NATURE may find a brief account of it not uninteresting. Unfortunately this description cannot well be illustrated, as Prof. Klein's illustrations are photographic reproductions which are unsuitable for further reproduction.

The microscope should of course be one of the petrological type, fitted with the usual accessories for the examination of crystals in parallel and convergent polarised light. The particular instrument constructed for Prof. Klein is somewhat similar to the largest Fuess model. It is so arranged with respect to the centre of gravity that it can be rotated into the horizontal position whenever desired, a point of some importance with regard to the use of an immersion liquid. The stage is of course circular, and is divided so as to read with the aid of a pair of verniers to single minutes; it is further provided above with two graduated rectangular traversing movements, one of which is supplied with a micrometer registering 0·01 m.m., while the other is capable of much more rapid motion. The advantages of the simultaneous rotation of the polarising and analysing nicols, as adopted in the microscopes made by Mr. Swift under the direction of Mr. Allan Dick, have been so well appreciated by