

(circa 650-55 A.D.), issued under the reign of the third emperor of the Tang. As these "Laws," however, are nowadays lost,¹ I had but little hope to investigate further the matter. However, elsewhere a passage has lately been found, giving confirmation to my view that the Chinese usage of the finger-prints for identification was current in the time of the same dynasty of Tang.

In the Arabian "Relation des Voyages" (translated by Reinaud, Paris, 1845, pp. 42-43), the merchant Sulaiman, who made several voyages to China and India in the middle of the ninth century A.D. (the time in which the above-mentioned dynasty in China was going to decline), tells us as follows: "Les Chinois respectent la justice dans leurs transactions et dans les actes judiciaires. Si un homme prête une somme d'argent à quelqu'un, il écrit un billet à ce sujet; l'emprunteur, à son tour, écrit un billet, qu'il *marque avec deux de ses doigts réunis, le doigt du milieu et l'index.*"² On met ensemble les deux billets. On les plie l'un avec l'autre, on écrit quelques caractères sur l'endroit qui les sépare, en suite, on les déplie et on remet au prêteur le billet par lequel l'emprunteur reconnaissait sa dette. Si, plus tard, l'emprunteur nie sa dette, on lui dit: 'Apport le billet du prêteur.' Si l'emprunteur prétend n'avoir point de billet, qu'il nie avoir écrit un billet accompagné de sa signature et de sa *marque*, et que son billet ait péri, on dit à l'emprunteur qui nie la dette: 'Déclare par écrit que cette ditte ne te concerne pas; mais, si, de son côté, le creancier vient à prouver ce que tu nies, tu recevras vingt coups de bâton sur le dos, et payeras une amende de vingt mille (fakkoudj) de pièces de cuivres.'³

February 3.

KUMAGUSU MINAKATA.

Earthquake of January 22.

ON the morning of January 22 a shock of earthquake was felt throughout Northern Switzerland, and at many places in Southern Germany from Ulm to Strassburg. At Basel the shock was strong enough to awaken many persons, and a crackling noise was heard by almost all observers. The direction of the shock appears to have been from north-east to south-west. The seismometer at the Bernoullianum Observatory indicated 46 min. 16 sec. after midnight (mean European time). According to newspaper reports, the shock was more severely felt in the neighbourhood of Freiburg than here.

A very slight shock occurred also on January 1, 6h. 38m. 54s. in the morning.
Basel. ALBERT RIGGENBACH.

MAGNETIC INFLUENCE OF THE PLANETS.³

AN attempt to discover a direct magnetic influence emanating from the planets is described in "Magnetismus der Planeten," by Ernst Leyst. For this purpose the author makes use of the observations taken at St. Petersburg and Pawlowsk during the years 1873-1889, and calculates the average magnetic declination for the days at which the planets are at their greatest and least distance from the earth; also for those days at which the planets are at their greatest eastern and western elongation. The numbers so obtained show certain regularities, which are considered sufficiently marked to indicate a true effect of the planetary configurations. According to the tables given, the declination is increased by 0.2 minutes of arc when Venus is nearest,

and is diminished by 0.32 when it is furthest away. Mercury acts in the opposite direction, diminishing the declination by 0.29 when it is nearest, and increasing it by 0.20 when it is furthest. The backbone of an inquiry like this ought necessarily to be found in a careful discussion as to how far an accidental combination of figures could account for the apparent effect. The magnetic declination is subject to so many changes which to us seem accidental, that if we take a certain number out of the whole series of daily averages, they must necessarily show deviations. The whole question then turns on the discussion whether the effects found by Mr. Leyst are sufficiently large and regular to be considered as real. This part of the subject is, unfortunately, treated in an insufficient manner, and, for this reason, the author has not in my opinion made out his case.

We may, however, from Mr. Leyst's numbers, draw the conclusion that even if the effect is a real one, it cannot, as the author considers, be due to an ordinary magnetic force depending in its magnitude on the distance of the planets. Within a few days of conjunction that distance does not vary appreciably, and Mr. Leyst should therefore get more trustworthy results by taking account not only of the days of conjunction, but of a group of days immediately surrounding the configurations. The necessary data are supplied by Mr. Leyst, and it appears that taking Mercury, for instance, the diminution of declination is reduced from 0.29 to 0.20 when the preceding and following days are taken into account; while when five days altogether are considered, there is a further reduction of the effect to 0.15, and when a month is taken, in the middle of which the inferior conjunction lies, there is only a deviation of 0.08 from the average declination. The other planets show the same fact. The average effect of all the planets amounts to 0.33, which is reduced to 0.26, 0.17, and 0.08 when the three days, five days, and the month nearest to conjunction are taken into calculation. If the effect is a real one, it must be due to some other cause than an ordinary magnetic action, for it practically vanishes two days before or after conjunctions, when there is very little change in the relative positions of sun, planet, and earth. Mr. Leyst himself draws attention to the rapid diminution of the supposed planetary influence within a few days of conjunction, but considers it to be an argument in favour of his view.

The amplitude of the diurnal variation is discussed; and here, of course, also a planetary effect is found, which, curiously enough, is greater for Neptune and Uranus than for Venus and Mercury. The "probable error" of the result is considered, and is calculated to exceed the supposed effect in the case of Mercury, Mars and Saturn, and to amount to about two-thirds of the effect in the case of Venus, Uranus and Neptune. The author draws the conclusion that the planetary influence is "certain" for the three latter planets and Jupiter.

It is hardly necessary to follow the author further in the complicated results he deduces, by separating what he calls the "primary" and "secondary" extremes, the primary and secondary amplitudes, and the irregular and periodic part of the diurnal variation; the primary and secondary quantities being affected in opposite directions by the mischievous Mercury. In fairness to the author, it must be stated that some of the effects of that planet are found to be in the same direction when the whole period of fifty synodic revolutions is divided into two, which are separately considered. Nevertheless, a careful perusal of Mr. Leyst's work leads to the conclusion that he has not proved his case. Among the many improbabilities of magnetic influences which are hanging over us, that of a planetary effect may for the present be set aside.

ARTHUR SCHUSTER.

¹ K. Konakamura in "Nipon Rikishi Hyôrin," Tôkyô, 1893, vol. vi. p. 24.

² In a translation by E. Renaudot (Paris, 1718, p. 33), and thence in Pinkerton's "Collection," London, 1811, vol. vii. p. 192, this sentence is rendered thus: "When any person commences a suit against another, he sets down his claim in writing, and the defendant writes down his defence, which he signs, and *holds between his fingers.*" Here no mention is made of finger-marks; instead of it a meaningless clause is given. Renaudot says Renaudot committed errors in his version ("Introduction," p. ii.), and the present case is apparently one.

³ "Über den Magnetismus der Planeten," von Ernst Leyst. ("Reperatorium für Meteorologie," vol. xvii. No. 1. St. Petersburg, 1894.)