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further added to precise knowledge, and the relatively advanced state of this about the time in question is well shown by the anonymous Portuguese chart in the Paris National Library reproduced by Teleki in his collection (Plate 5, No. 1). These early nautical charts are in fact—as was so often the case—far better than many of the later efforts of landmen, as can be seen by a comparison of the various maps given by Teleki. It is therefore likely that the Japanese, when after the expulsion of the missionaries they began making the first crude maps of their own islands, availed themselves of the European material ready to their hand, rather than that they themselves executed surveys to supply the framework for the topographical detail. But conclusions on this head would no doubt be greatly helped and would also be of more value could we study the large-scale map of Japan shown on the second of the pair of bed-screens.

E. HEAWOOD.

NOTES ON THE EARLY HISTORY OF THE MARINER'S COMPASS

M. Esposito

I.—BRUNETTO LATINO AND ROGER BACON.

A RECENT writer in the Irish periodical *Studies*,* Prof. A. J. Rabilly, dealing with certain publications on Roger Bacon, makes the following statement: "A reliable contemporary account of Bacon's real work at Oxford would be a valuable addition to our knowledge. Hence I venture with much diffidence to quote a passage which (so far as I know) has remained unnoticed and unknown. In the *Monthly Magazine* for 1802 there was published the translation of some letters from Brunetto Latino† to Guido Cavalcanti describing his impressions of a visit to England. The letters are exceedingly interesting and deserve a careful investigation from students of Dante and of English literature. The discussion of their authenticity hardly falls within the competence of the present writer, but there is strong internal evidence of genuineness. Until proof is forthcoming there seems no reason to doubt the authenticity of the following vivid and strangely neglected description of Bacon at Oxford as seen by a sympathetic and cultured visitor." Then follows a long extract from the eighth of these letters, in the course of which occurs the following passage (*loc. cit.*, pp. 254-55): "He (*i.e.* Bacon) further showed me (Brunetto Latino) a black ugly stone called a magnet which has the surprising property of drawing iron to it; and upon which if a needle be

* *An Irish Quarterly Review of Letters, Philosophy, and Science*, 3, September 1914, pp. 252 *seq.*

† *Latino* is more correct than the common *Latini*, cf. Gaspary, 'Early Italian Literature,' translated by Oelsner (1901), pp. 367-8.

rubbed and afterwards fastened to a straw so as it shall swim upon water, the needle will instantly turn towards the Pole-star ; therefore be the night ever so dark so as neither moon nor star be visible, yet shall the mariner be able by the help of this needle to steer his vessel aright. This discovery which appears useful in so great a degree to all who travel by sea must remain concealed until other times, because no master-mariner dares to use it lest he should fall under a supposition of his being a magician ; nor would even the sailors venture themselves out to sea under his command, if he took with him an instrument which carries so great an appearance of being constructed under the influence of some infernal spirit."

Prof. Rahilly adds that "This realistic sketch of Friar Bacon in his laboratory at Oxford is historically far preferable to the usually accepted account."

In a later communication to the same review (*Studies*, 4, March 1915, p. 128) Prof. Rahilly returned to the subject of these letters and remarked : "I have incidentally noted many internal evidences of genuineness." These "internal evidences of genuineness" would, in fact, furnish conclusive proof of the spuriousness of the documents, had not the author of the forgery, a certain Mr. William Dupré, of London, been compelled to make a full confession. The history of this forgery has been elucidated by the present writer (*Modern Language Review*, 12, January 1917, pp. 59-63), and it would be unnecessary to return to it here were it not for the fact that, contrary to Prof. Rahilly's belief, these documents have been known to, and quoted as genuine by, a number of writers on the history of geography beginning with Heinrich Julius von Klaproth and ending with Prof. C. R. Beazley.

Klaproth ('Lettre à M. le Baron A. de Humboldt sur l'invention de la boussole' (Paris, 1834), pp. 45-6) was apparently the first to cite the passage dealing with Roger Bacon and the magnet, which I have quoted above. His citation was reproduced by d'Avezac,* from whom it passed to Thomas Wright† and to Major ('Life of Prince Henry the Navigator' (1868), pp. 57-59). More recent writers who have been likewise imposed upon into believing in Brunetto's visit to Oxford and in the account of the magnet are Poggendorff (*Geschichte der Physik* (1879), p. 101), Weise ('The Discoveries of America' (1884), pp. 62-63), Nordenskiöld ('Periplus,' Engl. Transl. (Stockholm, 1897), p. 49), Silvanus Thompson (*Proc. R. British Academy*, 1906, p. 378), and C. R. Beazley ('The Dawn of Modern Geography,' 3 (1906), pp. 505, 510-11 ; 'History,' 2 (1913), pp. 47-48).

No philologist appears to have examined these documents, and it is highly improbable that any scholar would have been taken in by them.

* *Bulletin de la Société Géographique de Paris*, 4^e série, t. xv (1858), p. 175. Later, as we shall see, d'Avezac realized that he was dealing with a forgery.

† See his edition of Alexander Neckam 'De Naturis Rerum,' Rolls Series (1863), pp. xxxvii. *seq.*

Thor Sundby ('Brunetto Latinos Levnet og Skrifter' (Copenhagen, 1869), p. 14, n. 2), in his valuable Danish monograph on Brunetto Latino, mentions the publications of Klaproth and d'Avezac and states that he was unable to procure the *Monthly Magazine*, but adds in a footnote that Prof. Van Mehren had informed him that d'Avezac then (1869) believed these letters to be false.

The names of Brunetto Latino and of Roger Bacon must therefore cease to be quoted by historians of geography as landmarks in the early history of the compass.

II.—A NEGLECTED SOURCE.

The history of the compass during the Middle Ages has been set forth by Nordenskiöld ('Periplus,' pp. 47-50) and by C. R. Beazley ('The Dawn of Modern Geography,' 3, pp. 508-11). Neither of these writers was acquainted with the following interesting account of this instrument as used by Venetian sailors probably early in the fourteenth century. It occurs in chapter 21 of an anonymous philosophical tract entitled 'Tractatus de fascinatione,' which is found in the Munich MS., cod. lat. 16192, fols. 204a-213b, written in 1377, and also in two later manuscripts.* This tract has not yet been printed, but a few short extracts from it were given by G. M. Thomas (*Sitzungsberichte der philos.-philol. Classe der Münchener Akademie* (1875), Bd. ii, pp. 225-230). It is not possible to fix definitely the date of the composition of this work or the nationality of the author from the brief passages made available by Thomas, but we shall perhaps not be far out in assigning it to the early fourteenth century. It is apparently of considerable interest and would be worth printing in full. The passage dealing with the compass may be rendered into English thus: "That in the greater world the movement of the higher active principles does not cease when that of the lower ones comes to a stop, is proved by the motion by which the magnet attracts iron. In this motion a double principle may be assumed: firstly, a lower and inherent one which is the specific property of the magnet itself, and, secondly, a superior and external principle which is the pole-star, which is the cause of and on which depends the attractive power of the magnet. But the iron having been moved and attracted by the lower principle through the agency of the magnet, on removing the power of the magnet the pole-star still continues to move the iron, that is the stilus or iron needle, so that it turns the point of the stilus or needle in a straight line towards the pole itself and fixes thus the direction of the journey.

This I personally saw at Venice devised by the intelligence and labour of sailors who have to navigate in the darkness of night. They take a semicircular bronze table and fix a stilus at its centre, and from that point

* One at Munich, cod. lat. 5338, fols. 384a-397b, sæc. xv., and one at Vienna described by Denis ('Codices Manuscripti Theologici Bibliothecæ Palatinæ Vindobonensis,' 1, pars 2, cols. 2215-2216).

they draw lines to the circumference. At the tops of these lines they write down the names of the cities and harbours and their distances from one another. And underneath the table they make a rapid circular motion with a magnet. As a result of this motion the stilus moves continuously and in the same direction. At length the sailor suddenly withdraws the magnet and flings it into a vessel of water which he keeps behind him. The stilus or needle, notwithstanding the removal of the magnet, continues through the agency of the pole to move for a full hour, until it comes to a stop and turns its point directly towards the pole. From which guidance the sailors immediately see according to the lines drawn to the circumference towards what part of the heaven they must direct the ship in order to arrive at the desired port or destination."

In addition to the works of Nordenskiöld and Beazley mentioned above, and to the literature cited by them, it is indispensable that students of the history of the compass should consult the following memoirs (not cited by Mr. Beazley though all published before the appearance of his volume): D'Avezac, "Aperçus historiques sur la boussole" (*Bull. Soc. Géog. de Paris*, 4^e série, t. 19, 1860); V. Rose, *Zeitschrift für deutsches Alterthum*, 18, 1875, pp. 321, 339, 409-13; Bertelli, "Studi Storici intorno alla bussola nautica" (*Mem. Pont. Accad. d. N. Lincei*, 9, 1893); U. Moretti, 'Sulla scoperta della bussola nautica e sulla storia della Repubblica Amalfitana,' 1904 (Congresso Internazionale di Scienze Storiche, Roma, Aprile 1903, *Atti* No. 10).*

NAMES IN MANCHURIA

MANY of the geographical names in Manchuria are Mongol, of which we have the Russian and the Chinese versions, but usually not the original Mongol. Many other names, though Chinese, have, owing to the Russian ownership of the railways, become current in their Russian form, which, though generally a systematic version of the Chinese syllables, gives the names an appearance not always easily recognizable by those familiar with Chinese names romanized on the Wade system.

The following list includes most of the cases, found in the preparation of the Manchuria sheet of the Asia 1/5M series, which are likely to present any difficulty. The Russian maps to which reference is made are the 40-verst of Russia in Asia and the 100-verst Communications map.

* Reference may also be made to the curious controversy carried on in the pages of the *Rivista Geografica Italiana*, 1900 *seq.*, and elsewhere, by Bertelli, Porena, Botto, and Posteraro. See also Casanova, 'La Carta Nautica di Conte Freducci' (Firenze, 1894), pp. 16-17.