On the phonetical characteristics of each of these dialects ample information is given in his *Phonetik der nördlichen Türk. Sprachen.*

These great dialectical varieties are easily accounted for by the want of a common Turkish literary language understood every­where. The most developed and refined Turkish tongue, that of the Osmanlis, which is very rich in literary monuments, has admitted too many Arabic and Persian words, grammatical forms, and even whole sentences, and has been too much spoiled by the precepts of Persian rhetoric, to produce a popular literature. With the exception of some tales and novels, this literature has remained an exotic production, unintelligible even to the people who are sup­posed to speak the same language (see Turkey, p. 656 above). The Jagatai and Uzbegian dialects would have answered the purpose better, and present the best type of a (hypothetical) general Turkish language, of which the most prominent features may be here given.

The Arabic alphabet is in general use, though some tribes in Russia make use of Russian and others in Asia Minor of Armenian and Greek characters. But the oldest Turkish alphabet, the Uigurian, is a direct transformation of the Syriac, and has fourteen characters. When and by whom it was invented is uncertain ; the Arabic author of the *Fihrist* does not mention it, and the Uigurian MSS. which we possess date for the most part from the 15th century. It is commonly supposed to be the work of Nestorian missionaries, who may have preached the Gospel amongst the Turks as early as the 6th or 7th century.@@1 In the age of Sinjibu the Turks seem to have used the Sogdian characters in their political inter­course with Byzantium ; but as a rule they remained illiterate till their conversion to Islam. As the Semitic languages are charac­terized by the three-radical system and the constancy of the con­sonants, all Ural-Altaic languages are dominated by the law of vowel harmony and agglutination. We have therefore in Turkish a double range of vowels, commonly eight in number, of which *a, i, o, u* denote the hard or guttural and *ä, ï, ö, ü* the soft or palatal vowels, the vowels in every separate word being of the same range. The *i* only is in most dialects indifferent. The law of agglutination is derived from the same principle, but has regard, not only to the vowels, but also to the consonants and the syllables ; it is an abuse of the term if it is taken to mean that in Turkish no real etymology exists, but only an agglutination of themes and roots.

As regards the etymology we observe the absence of gender, of a separate form for the dual, and of the nominative in the nouns. There are commonly five oblique cases—genitive, dative, accusa­tive, commorative, and ablative—though Böhtlingk has shown that in the Yakut dialect, which distinguishes ten cases, the genitive is wanting. The adjective, unless used as substantive, is uninflected both as attribute and as predicate ; the comparative is formed by the suffix *-rak* (*-rek*), and takes the compared noun in the ablative ; the superlative has no specific form, though a peculiar intensive is formed by prefixing to the adjective (though in writing always as two words) a syllable beginning with the same consonant, and ending in a labial *p* or *m* : for instance, *kap kara,* “intensely black” ; *kip kizil,* “intensely red.” The decimal system has prevailed over an original septimal system. The article does not exist. The relative pronoun has been borrowed from the Persian in many dialects ; it is absent in the original Turkish. The theme of the verb is seen in the imperative, from which are derived various participles and gerunds, used either separately or combined with pronominal suffixes. These combinations supply the forms of the simple tenses and moods, though different dialects use different forms of participle and gerund for this purpose. Compound tenses and moods are expressed by means of auxiliary verbs. The theme of the imperative may, by the addition of a simple consonant, vowel, or syllable, be modified into a negative, passive, reflexive, reciprocal, impossible, causative, or doubly causative form, which are con­jugated in the same manner as the original form. The causative forms again admit of a passive negative, &c., so that in fact the number of possible verbal forms derived from a single theme has been calculated by Shaw at 29,000. There are no prepositions, only postpositions.

In syntax the order of the words and clauses of a period is almost the inverse of what seems natural to us, the subject and its predicate being placed at the end, while all hypothetical, causal, prohibitive,—in short all subordinate—clauses come first. In the simple style of illiterate peasants, and in popular romances and tales, this method presents no inconvenience as regards easy under­standing, but in the artificial, often excessively long periods of an Osmanli stylist, it presents serious difficulties to a European reader.

*Bibliography.—(a)* General works on the history and ethnography of the Turks : Deguignes, *Histoire des Huns',* Vanibéry, *Das Türkenvolk* (Leipsic, 1885), *Ursprung der Magyaren* (Leipsic, 1882), and several other publications; Radloff, *Aus Sibirien* (Leipsic, 1884) ; W. Grigorieff, *Zemlewjedjenie K. Rittera Wostotschni ili Kitaiski Turkestan* ; Neumann, *Die Völker des südlichen Russland* (Leipsic, 1847). We may add the historians of the Mongols — D'Ohsson, Howorth, and others—the numerous journals of travellers amongst Turkishpeoples, an<l several articles in the *Russische Revue, Journal of the Royal Asiatic*

*Soc.,* &c. A full bibliography of works relating to Central Asia may be found in V. J. Mejoff, *Recueil du Turkestan* (St Petersburg, 1878-84), and a useful ex­cerpt at the end of vol. ii. of Lansdell's *Russian Central Asia.* Other works have already been cited in the course of this article.

(*b*) For the study of Turkish dialects the subjoined books may be used. (1) *Osmanli* : the grammars and dictionaries of Redhouse, Mallouf, Zenker, Barbier de Meynard, &c. (2) *Uigur:* the works of Klaproth ; Abel Rémusat *Recherches sur les Langues Tartares* (Paris, 1820) ; and Vambéry, *Uïgurische Sprachmonu- mente und das Kudatku Bilik* (Innsbruck, 1870). (3) *Jagatai* : the dictionary of

Pavet de Courteille, and Vambéry, *Jagataïsche Sprachstudien* (Leipsic, 1867). (4) *Eastern Turki* : Shaw’s grammar and vocabulary *(Jour. Roy. As. Soc. of Bengal,* 1877). (5) *Tatar dialects* : the grammars of Kasimbeg-Zenker (Leipsic, 1848), Ilminski (Kazan, 1869), and Radloff (Leipsic, 1882); *Dictionary of Trojanski* (Kazan, 1833); the chrestomathies of Béresine (Kazan, 1857), Terentieff, and specialiy Radloff, *Proben der Volksliteratur der türkischen Stämme Süd-Sibiriens* (St Petersburg, 1872). And (6) *Yakuti* : Böhtlingk, *Die Sprache der Jakuten* (St Petersburg, 1851). (Μ. T. H.)

TURMERIC, the tuberous root of *Curcuma longa,* L., an herbaceous perennial plant belonging to the natural order *Zingiberaceæ.* It is a native of southern Asia, being cultivated on a large scale both on the mainland and in the islands of the Indian Ocean. Turmeric has been used from a remote period both as a condiment and as a dye stuff, and to a more limited extent as a medicine. In Europe it is employed chiefly as a dye, also as an ingre­dient in curry powder and as a chemical test for alkalies. The root is prepared by cleaning it and drying it in an oven. There are several varieties (Madras, Bengal, Gopalpur, Java, China, and Cochin turmeric), differing chiefly in size and colour and to a slight degree in flavour. Some of these consist exclusively of the ovate central tubers, tech­nically known as “ bulbs,” and others of the somewhat cylindrical lateral tubers, which are distinguished in trade as “ fingers.” Both are hard and tough, but break with a short resinous or waxy fracture, which varies in tint from an orange brown to a deep reddish brown.

Turmeric has a characteristic odour and an aromatic taste. The aroma it owes to a complex essential oil, which consists princi­pally of an alcohol called *turmerol* (formula C19H28O), which differs from carvol in being unable to combine with hydrogen sulphide ; the other constituents of the oil have not been determined. The colour is due to *curcumin*, C14H14O4, of which the drug contains about 0∙3 per cent. It possesses the properties of an acid, forming red-brown salts with alkalies and being precipitated from alkaline solutions by acids. When pure it forms yellow crystals having a vanilla odour and exhibiting a fine blue colour in reflected light. It is soluble in alcohol, in chloroform, and in alkaline solutions, but only sparingly in water. Paper tinged with a tincture of tur­meric exhibits on the addition of an alkali a reddish brown tint, which becomes violet on drying. This peculiarity was pointed out by Vogel in 1815, and since that date turmeric has been utilized as a chemical test for detecting alkalinity. In India the drug is considered to possess cordial and stomachic properties : a decoction made with milk and sweetened is used as a remedy for colds. Externally it is employed in skin diseases and in the form of a cooling lotion for relieving the pain of conjunctivitis ; the fumes of the burning tubers directed into the nostrils relieve congestion in cases of coryza. The cultivation of turmeric is carried on most successfully in light rich soil in well-watered districts. The plant is easily propagated by offsets. An acre yields about 2000 lb. Turmeric is said to grow in large quantities on the slopes of hills bordering the plains of the Beni in Bolivia and also in Panama. Several species of *Curcuma* and of allied genera yield yellowish aromatic roots. In Sierra Leone a kind of turmeric is obtained from a species of *Canna.*

TURNER, Charles (1773-1857), an English engraver, was born at Woodstock in 1773. He entered the schools of the Royal Academy in 1795; and, engraving in stipple in the manner of Bartolozzi, he was employed by Alderman Boydell. His finest plates, however, are in mezzotint, a method in which he engraved J. M. W. Turner’s Wreck and twenty-four subjects of his *Liber Studiorum,* Reynolds’s Marlborough Family, and many of Raeburn’s best portraits, including those of Sir Walter Scott, Lord Newton, Dr Hamilton, Profs. Dugald Stewart and John Robison, and Dr Adam. He also worked after Lawrence, Shee, and Owen. He was an admirable engraver, large, broad, and masterly in touch ; and he reproduced with great fidelity the characteristics of the various painters whose works he translated into black and white. In 1828 he was elected an associate engraver of the Royal Academy. He died in London on 1st August 1857.

@@@1 For details about the spread of Christianity amongst the Turks, see Yule, *Cathay and the Way thither,* i. 90-100.