the middle ages. In the 9th century Tours also became the ecclesiastical metropolis of Brittany, Maine and Anjou, and when the empire was divided by Louis the Pious into various districts or *missatica,* Tours was the centre of one of these, the boundaries of which corresponded roughly with those of the ecclesiastical jurisdiction of the city. Touraine suffered from the invasions of the Northmen, who massacred the monks of Maπnoutier in 853, but never pillaged Tours. The administration of Touraine was entrusted, from Merovingian times onward, to counts appointed by the crown. The office became hereditary in 940 or 941 with Thibault the Old or the “ Tricheur.” His son Odo I. was attacked by Fulk the Black, count of Anjou, and despoiled of part of his territory. His grandson Thibault III., who refused homage to Henry I., king of France, in 1044, was entirely dispossessed by Geoffrey of Anjou, called the Hammer (d. 1060). The 7th count, Fulk (d. 1109), ruled both Anjou and Touraine, and the county of Touraine remained under the domination of the counts of Anjou *(q.υ.)* until Henry II. of England deprived his brother Geoffrey of Touraine by force of arms. Henry II. carried out many improvements, but peace was destroyed by the revolt of his sons. Richard Coeur de Lion, in league with Philip Augustus, had seized Touraine, and after his death Arthur of Brittany was recognized as count. In 1204 it was united to the French crown, and its cession was formally acknowledged by King John at Chinon in 1214. Philip appointed Guillaume des Roches hereditary seneschal in 1204, but the dignity was ceded to the crown in 1312. Touraine was granted from time to time to princes of the blood as an appanage of the crown of France. In 1328 it was held by Jeanne of Burgundy, queen of France; by Philip, duke of Orleans, in 1344; and in 1360 it was made a peerage duchy on behalf of Philip the Bold, afterwards duke of Burgundy. It was the scene of dispute between Charles, afterwards Charles VII., and his mother, Isabel of Bavaria, who was helped by the Burgundians. After his expulsion from Paris by the English Charles spent much of his time in the chateaux of Touraine, although his seat of government was at Bourges. He bestowed the duchy successively on his wife Mary of Anjou, on Archibald Douglas and on Louis III. of Anjou. It was the dower of Mary Stuart as the widow of Francis II. The last duke of Touraine was Francis, duke of Alençon, who died in 1584. Plessis-les-Tours had been the favourite residence of Louis XI., who granted many privileges to the town of Tours, and increased its prosperity by the establishment of the silk-weaving industry. The reformed religion numbered many adherents in Touraine, who suffered in the massacres following on the conspiracy of Amboise; and, though in 1562 the army of Condé pillaged the city of Tours, the marshal of St André reconquered Touraine for the Catholic party. Many Huguenots emigrated after the massacre of St Bartholomew, and after the revocation of the Edict of Nantes the silk industry, which had been mainly in the hands of the Huguenots, was almost destroyed. This migration was one of the prime causes of the extreme poverty of the province in the next century. At the Revolution the nobles of Touraine made a declaration expressing their sympathy with the ideas of liberty and fraternity. Among the many famous men who were born within its boundaries are Jean le Meingre Boucicaut, marshal of France, Béroalde de Verville, author of the *Moyen de parvenir,* Rabelais, Cardinal Richelieu, C. J. Avisseau, the potter (1796-1861), the novelist Balzac and the poet Alfred de Vigny.

See the quarterly publication of the *Mémoires* of the *Société archéologique de Touraine* (1842, &c.) which include a *Dictionnaire géographique, historique et biographique* (6 vols., 1878-1884), by J. X. Carré de Busserolle. There are histories of Touraine and its monuments by Chalmel (4 vols. Paris, 1828), by S. Bellanger (Paris, 1845), by Bourrassé (1858). See also Dupin de Saint André, *Hist. du protestantisme en Touraine* (Paris, 1885); T. A. Cook, *Old Touraine* (2 vols. London, 1892).

**TOURCOING,** a manufacturing town of northern France in the department of Nord, less than a mile from the Belgian frontier, and 8 m. N.N.E. of Lille on the railway to Ghent. Pop. (1906), 62,694 (commune, 81,671), of whom about one-third are natives of Belgium. Tourcoing is prac- tically one with Roubaix to the south, being united thereto by a tramway and a branch of the Canal de Roubaix. The public institutions comprise a tribunal of commerce, a board of trade arbitrators, a chamber of commerce, an exchange and a condi- tioning house for textiles. Together with Roubaix, Tourcoing ranks as one of the chief textile centres of France. Its chief industry is the combing, spinning and twisting of wool carried on in some eighty factories employing between 10,000 and 12,000 workpeople. The spinning and twisting of cotton is also important. The weaving establishments produce woollen and mixed woollen and cotton fabrics together with silk and satin drapery, swanskins, jerseys and other fancy goods. The making of velvet pile carpets and upholstering materials is a speciality of the town. To these industries must be added those of dyeing, the manufacture of hosiery, of the machinery and other apparatus used in the textile factories and of soap.

Famed since the 12th century for its woollen manufactures, Tourcoing was fortified by the Flemings in 1477, when Louis XI. of France disputed the inheritance of Charles the Bold with Mary of Burgundy, but in the same year was taken and pillaged by the French. In 1794 the Republican army, under Generals Moreau and Souham, gained a decisive victory over the Austrians, the event being commemorated by a monument in the public garden. The inhabitants, 18,000 in 1789, were reduced by the French Revolution to 10,000.

**TOURMALINE,** a mineral of much interest to the physicist on account of its optical and electrical properties; it is also of some geological importance as a rock-constituent (see Schorl), whilst certain transparent varieties have economic value as gem-stones. The name is probably a corruption of *turmali, or toramalli,* the native name applied to tourmaline and zircon in Ceylon, whence specimens of the former mineral were brought to Europe by the Dutch in 1703. The green tourmaline of Brazil had, however, been known here much earlier; and coarse varieties of the mineral had passed for cen- turies under the German name of *Schorl,* an old mining word of uncertain origin, possibly connected with the old German *Schor* (refuse), in allusion to the occurrence of the mineral with the waste of the tin-mines. The German village of Schorlau may have taken its name from the mineral. It has been suggested that the Swedish form *skörl* has possible connexion with the word *skör,* brittle.

Tourmaline crystallizes in the rhombohedral division of the hexagonal system. The crystals have generally a prismatic habit, the prisms being longitudinally striated or even channelled. Trigonal prisms arc characteristic, so that a transverse section becomes triangular or often nine-sided. By combination of several prisms the crystals may become sub-cylindrical. The crystals when doubly terminated are often hemimorphic or present dissimilar forms at the opposite ends; thus the hexagonal prisms in fig. 1 are terminated at one end

by rhombohedral faces, *o,* P, and at the other by the basal plane *k'.* Doubly- terminated crystals, however, are com­paratively rare ; the crystals being usually attached at one end to the matrix. It is notable that prismatic crystals of tour- maline have in some cases been curved and fractured transversely; the displaced fragments having been cemented together by deposition of fresh mineral matter. Tourmaline is not infre­quently columnar, acicular or fibrous; and the fibres may radiate from a centre so as to form the so-called “tourmaline suns.” Crystals of tourmaline present no distinct cleavage, but break with a sub-conchoidal fracture; and whilst the general lustre of the mineral is vitreous, that of the fractured surface is rather pitchy. The hardness is slightly above that of quartz. (7). The specific gravity varies according to chemical composition, that of the colourless varieties being about 3, whilst in schorl it may rise to 3∙2.

Tourmaline has a great range of colour, and in many cases the crystals are curiously parti-coloured. Occasionally, though rarely, the mineral is colourless, and is then known as achroite, a name proposed by R. Hermann in 1845, and derived from the Greek *ἄχροος* (uncoloured). Red tourmaline, which when of fine colour is the most valued of all varieties, is known as rubellite (*q.v*.). Green tourmaline is by no means uncommon, but the blue is rather rare