

of Seneca, the only copy of which is in the Print Room at the British Museum, and a beautiful figure of St Catherine, we can admit none of the other plates, said to proceed from Rubens, as authentic. Rubens nevertheless exercised an immense influence on the art of engraving. Under his direct guidance Soutman, Vorsterman, Pontius, Witdoeck, the two Bolsverts, Peter de Jole, N. Lauwers, and many others of less note left an immense number of beautiful plates, reproducing the most celebrated of his paintings. To give an idea of what his influence was capable of accomplishing, pictorially speaking, it might be sufficient to notice the transformation undergone by the Antwerp school of engraving under Rubens; even the modern school of engraving, in more than one respect, is a continuation of the style first practised in Antwerp. His influence is scarcely less apparent in sculpture, and the celebrated Luke Fayd'herbe was his pupil.

Neither in name nor in fact did the Flemish school ever find a second Rubens. None of his four sons became a painter, nor did any of his three daughters marry an artist. According to Rubens's will, his drawings were to belong to that one of his sons who might become a painter, or in the event of one of his daughters marrying a celebrated artist they were to be her portion. The valuable collection was dispersed only in 1659, and of the pictures sold in 1640 thirty-two became the property of the king of Spain. The Madrid Gallery alone possesses a hundred of his works. Four years after her husband's death Helena Fourment married J. B. Van Brouckhoven de Bergheyc, knight of St James, member of the privy council, &c. She died in 1673. In 1746 the male line of Rubens's descendants was completely extinct. In the female line more than a hundred families of name in Europe trace their descent from him.

The paintings of Rubens are found in all the principal galleries in Europe: Antwerp and Brussels, Madrid, Paris, Lille, Dresden, Berlin, Munich, Vienna, St Petersburg, London, Florence, Milan, Turin exhibit several hundreds of his works. J. Smith's *Catalogue gives descriptions of more than thirteen hundred compositions.*

*Literature.*—A. van Hasselt, *Histoire de P. P. Rubens*, Brussels, 1840; E. Gachet, *Lettres inédites de P. P. Rubens*, Brussels, 1840; W. Noel Sainsbury, *Original unpublished Papers illustrative of the Life of Sir Peter Paul Rubens*, London, 1853; C. Ruelens, *Pierre Paul Rubens, Documents et Lettres*, Brussels, 1877; Armand Baschet, "Rubens en Italie et en Espagne," in the *Gazette des Beaux Arts*, vols. xxii. to xxiv., Paris, 1867-68; A. Michiels, *Rubens et l'École d'Anvers*, Paris, 1877; Cruzada Villamil, *Rubens diplomático español*, Madrid, 1874; Gachard, *Histoire politique et diplomatique de P. P. Rubens*, Brussels, 1877; P. Genard, *P. P. Rubens, Anecdotes over den Grooten Meester*, Antwerp, 1877; Max Rooses, *Tijds en Portraits grands d'après P. P. Rubens, pour l'imprimerie plantinienne*, Antw., 1877; J. Smith, *Catalogue Raisonné of the Works of the most eminent Dutch and Flemish Painters*, part ii., London, 1830; Waagen, *Peter Paul Rubens* (translated from the German by H. Noel, edited by Mrs Jameson, London, 1840); H. Hymans, *Histoire de la gravure dans l'École de Rubens*, Brussels, 1879; C. G. Voorhelm Schneeroogt, *Catalogue des Estampes gravées d'après Rubens*, Haarlem, 1873. (H. H.)

RUBIDIUM. See POTASSIUM METALS.

RUBRUQUIUS, the name which has most commonly been given to William of Rubruk, a Franciscan friar and the author of a remarkable narrative of Asiatic travel in the 13th century. Nothing is known of him save what can be gathered from his own narrative, with the exception of a word from the pen of Roger Bacon, his contemporary and brother Franciscan, indicating personal acquaintance. The name of Rubruquius has adhered to him, owing to this form ("Willielmus de Rubruquis") being found in the imperfect copy of the Latin original printed by Hakluyt in his collection, and followed in his English translation, as well as in the completer issue of the English by Purchas. Writers, again, of the 16th and 17th centuries have called the traveller Risbrouck and Rysbrokius, for which there is no authority,—an error founded on the too hasty identification of his name of origin with Ruysbroeck in Brabant (a few miles south of Brussels). This error was probably promoted by the fame of John of Ruysbroeck or Rysbroeck (1294-1381), a Belgian mystic theologian, whose treatises have been reprinted as late as 1848 (see vol. xvii. p. 133). Our traveller is styled "Guillaume de Rysbroeck" and "Ruysbroeck" in the *Biographie Universelle* and in the *Novv. Biog. Générale*. It is only within the last twenty years that attention has been called to the fact that Rubrouck is the name of a village and commune in what was formerly called French Flanders, belonging to the canton of Cassel in the department du Nord, and lying some 8½ miles north-east of St Omer. In the library of the latter city many mediæval documents exist referring expressly to

Rubrouck, and to persons in the 12th and 13th centuries styled as "de Rubrouck."<sup>1</sup> It may be fairly assumed that Friar William came from this place; indeed, if attention had been paid to the title of the MS. belonging to Lord Lunley, which was published by Hakluyt (*Itinerarium fratris Willielmi de Rubruquis de Ordine fratrum Minorum*, Galli, Anno Gratæ 1253, ad partes Orientales), there need have been no question as to the traveller's quasi-French nationality;<sup>2</sup> but this (erroneously) has always been treated as if it were an arbitrary gloss of Hakluyt's own.

Friar William went to Tartary under orders from Louis IX. (St Louis). That king, at an earlier date, viz., December 1248, when in Cyprus, had been visited by certain persons representing themselves to be envoys from a great Tartar chief Elchigauay (Ilchikadai), who commanded the Mongol hosts in Armenia and Persia. The king then despatched a return mission consisting of Friar Andrew of Lonjumeil and other ecclesiastics, who carried presents and letters for both Ilchikadai and the Great Khan. They reached the court of the latter in the winter of 1249-50, when there was in fact no actual Khan on the throne; but in any case they returned, along with Tartar envoys, bearing a letter to Louis, which was couched in terms so arrogant and offensive that the king repented sorely of having sent such a mission (*li rois se repentit fort quant il y envoya*, Joinville, § 492). These returned envoys reached the king when he was at Cæsarea, therefore between March 1251 and May 1252. It was, however, not very long after that the zealous king, hearing that a great Tartar prince called Sartak was a baptized Christian, felt strongly moved to open communication with him, and for this purpose deputed Friar William of Rubruk with companions. But it is evident that the former rebuff had made the king chary as to giving these emissaries the character of his royal envoys, and Friar William on every occasion, beginning with a sermon delivered in St Sophia's (on Palm Sunday, i.e., April 13, 1253), formally disclaimed that character, alleging that, though he was the bearer of the king's letters and presents, he went simply in fulfilment of his duty as a Franciscan and preacher of the gospel.

Various histories of St Louis, and other documents which have come down to us, give particulars of the despatch of the mission of Friar Andrew from Cyprus, but none mention that of Friar William; and the first dates given by the latter are those of his sermon at Constantinople, and of his embarkation from Sinope (May 7, 1253). He must therefore have received his commission at Acre, where the king was residing from May 1252 to June 29, 1253; but he had travelled by way of Constantinople, as has just been indicated, and there received letters to some of the Tartar chiefs from the emperor, who was at this time Baldwin de Courtenay, the last of the Latin dynasty.

The narrative of the journey is everywhere full of life and interest, but we cannot follow its details. The vast conquests of Jenghiz Khan were still in nominal dependence on his successors, at this time represented by Mangu Khan, reigning on the Mongolian steppes, but practically those conquests were splitting up into several great monarchies. Of these the Ulás of Jájí, the eldest son of Jenghiz, formed the most westerly, and its ruler was Bätü Khan, established on the Volga. Sartak is known in the history of the Mongols as Bätü's eldest son, and was appointed his successor, though he died immediately after his father (1255). The story of Sartak's profession of Christianity may have had some kind of foundation; it was currently believed among the Asiatic

<sup>1</sup> A detailed notice of such documents was published by M. Edm. Coussemaeker of Lille. See remarks by M. D'Arvezac in *Bull. de la Soc. de Géog.*, 2d vol. for 1868, pp. 569-570.

<sup>2</sup> The country of Flanders was at this time a fief of the French crown (see Natalis de Wally, *Notes on Joinville*, p. 576). William's mother-tongue may probably have been Flemish. But this cannot be proved by his representation to Mangu Khan (p. 361) that certain *Teutonici* who had been carried away as slaves by a Tartar chief were *nostræ linguæ*, as Dr Franz Schmidt inclines to think.

Christians, and it is alleged by Armenian writers that he had been brought up and baptized among the Russians.

Rubruk and his party landed at Soldaia, or Suddak, on the Crimean coast, a port which was then the chief seat of the communication between the Mediterranean states and what is now southern Russia. Equipped with horses and carts for the steppe, they travelled successively to the courts of Sartak and of Bätü, respectively on the hither and further banks of the Volga, banded from one to the other, and then referred to the Great Khan himself, an order involving the enormous journey to Mongolia. The actual travelling of the party from the Crimea to the Khan's court near Karakorum cannot have been, on a rough calculation, less than 5000 miles, and the return journey to Ayas in Cilicia would be longer by 500 to 700 miles. The chief dates to be gathered from the narrative are as follows:—embark on the Euxine, May 7, 1253; reach Soldaia, 21; set out thence, June 1; reach camp of Sartak, July 31; begin journey from camp of Bätü eastward across steppe, September 16; turn south-east, November 1; reach Talas river, 8; leave Caillac<sup>1</sup> (south of Lake Balkash), 30; reach camp of Great Khan, December 27; leave camp of Great Khan on or about July 10, 1254; reach camp of Bätü again, September 16; leave Sartak's camp, November 1; at the Iron Gate (Derbend) 18; Christmas spent at Nakhshiván (under Ararat); reach Antioch (from Ayas, via Cyprus), June 29, 1255; reach Tripoli, August 15.

The camp of Batn was reached near the northernmost point of his summer marches, therefore about Ukek near Saratoff (see *Marco Polo*, Prol., chap. iii. note 4). Before the camp was left they had marched with it five weeks down the Volga. The point of departure would lie on that river somewhere between 48° and 50° N. lat. The route taken lay eastward by a line running north of the Caspian and Aral basins; then from about 70° E. long, south (with some easting) to the basin of the Talas river; thence across the passes of the Kirghiz Ala-tau and south of the Balkash Lake to the Ala-kul and the Baratula Lake (Ebi-nür). From this the travellers struck north across the Barluk, or the Orkoehuk Mountains, and thence, passing south of the modern Kobdo, to the valley of the Jabkan river, whence they emerged on the plain of Mongolia, coming upon the Great Khan's camp at a spot ten days' journey from Karakorum and bearing in the main south from that place, with the Khangai Mountains between.

This route is of course not thus defined in the narrative, but is a laborious deduction from the facts stated therein. The key to the whole is the description given of that central portion intervening between the basin of the Talas and the Lake Ala-kul, which enables the topography of that region, including the passage of the Ili, the plain south of the Balkash, and the Ala-kul itself, to be identified past question.<sup>2</sup>

The return journey, being made in summer, after retraversing the Jabkan valley,<sup>3</sup> lay much farther to the north, and passed north of the Balkash, with a tolerably straight course probably, to the mouths of the Volga. Thence the party travelled south by Derbend, and so by Shamakhi to the Araxes, Nakhshivan, Erzingan, Sivas, and Iconium, to the coast of Cilicia, and eventually to the port of Ayas, where they embarked for Cyprus and Syria. St Louis had returned to France a year before.

We have alluded to Roger Bacon's mention of Friar William of Rubruk. Indeed, in the geographical section of the *Opus Majus* (c. 1262) he cites the traveller repeatedly and copiously, describing him as "frater Willielmus quem dominus rex Francie misit ad Tartaros, Anno Domini 1253 . . . qui perlustravit regiones orientis et aquilonis et loca in medio his annexa, et scripsit hæc prædicta illustri regi; quem librum diligenter vidi et cum eum ejus auctore contuli" (*Opus Majus*, ed. Jebb, 1733, pp. 190-191). Add to this William's own incidental particular as to his being (like his precursor, Friar John of Pian Carpine, see vol. v. p. 132) a very heavy man (*ponderosus valde*), and we know no more of his personality except the abundant indications of character afforded by the story itself. These point for us an honest, pious, stout-hearted, acute, and most intelligent observer, keen in the acquisition of knowledge, the author in fact of one of the best narratives of travel in existence. His language indeed is Latin of the most un-Ciceronian quality,—dog-Latin we fear it must be called; but, call it what we may, it is in his hands a pithy and transparent medium of expression. In spite of all the difficulties of communi-

<sup>1</sup> Caillac, where Rubruk halted twelve days, is undoubtedly the Kayalik of the historians of the Mongols, the position of which is somewhat indefinite. The narrative of Rubruk shows that it must have been near the modern Kopal.

<sup>2</sup> See details in *Cathay and the Way Thither*, pp. ccxi.-ccxiv, and Schuyler's *Tartaria*, l. 402-405. Mr Schuyler points out the true identification of Rubruk's river with the Ili, instead of the Chui, which is a much smaller stream; and other amendments have been derived from Dr F. M. Schmidt (see below).

<sup>3</sup> So the present writer interprets what Rubruk says:—"Our going was in winter, our return in summer, and that by a way lying very much farther north, only that for a space of fifteen days' journey in going and coming we followed a certain river between mountains, and on these there was no grass to be found except close to the river." The position of the Chagan Takoi or upper Jabkan seems to suit these facts best; but Mr Schuyler refers them to the upper Irtish, and Dr F. Schmidt to the Uliungur.

cation, and of the badness of his *tirgenannus* or dragoman,<sup>4</sup> he gathered a mass of particulars, wonderfully true or near the truth, not only as to Asiatic nature, geography, ethnography, and manners, but as to religion and language. Of his geography a good example occurs in his account of the Caspian (eagerly caught up by Roger Bacon), which is perfectly accurate, except that he places the hill country occupied by the Mulahids, or Assassins, on the eastern instead of the southern shore. He explicitly corrects the allegation of Isidore that it is a gulf of the ocean: "non est verum quod dicit Isidorus . . . nusquam enim tangit oceanum, sed undique circumdatur terra" (265).<sup>5</sup> Of his interest and acumen in matters of language we may cite examples. The language of the Pascatir (or Bashkirds) and of the Hungarians is the same, as he had learned from Dominicans who had been among them (274).<sup>6</sup> The language of the Ruthenians, Poles, Bohemians, and Slavonians is one, and is the same with that of the Wandals, or Wends (275). In the town of Equius (immediately beyond the Ili, perhaps Aspara)<sup>7</sup> the people were Mohammedans speaking Persian, though so far remote from Persia (281). The Yugurs (or Ugurs) of the country about Caillac (see note above) had formed a language and character of their own, and in that language and character the Nestorians of that tract used to perform their office and write their books (281-2). The Yugurs are those among whom are found the fountain and root of the Turkish and Comanian tongue (289). Their character has been adopted by the Moghals. In using it they begin writing from the top and write downwards, whilst line follows line from left to right (286). The Nestorians say their service, and have their holy books, in Syriac, but know nothing of the language, just as some of our monks sing the mass without knowing Latin (293). The Tibet people write as we do, and their letters have a strong resemblance to ours. The Tangut people write from right to left like the Arabs, and their lines advance upwards (329). The current money of Cathay is of cotton paper, a palm in length and breadth, and on this they print lines like those of Mangu Khan's seal:—"imprimunt lineas sicut est sigillum Mangu"—a remarkable expression. They write with a painter's pencil and combine in one character several letters, forming one expression:—"faciunt in una figura plures literas comprehendentes unam dictionem,"—a still more remarkable utterance, showing an approximate apprehension of the nature of Chinese writing (329).

Yet this sagacious and honest observer is denounced as an ignorant and untruthful blunderer by Isaac Jacob Schmidt (a man no doubt of useful learning, of a kind rare in his day, but narrow and wrong-headed, and in natural acumen and candour far inferior to the 13th-century friar whom he maligns), simply because the evidence of the latter as to the Turkish dialect of the Ugurs traversed a pet heresy, long since exploded, which Schmidt entertained, viz., that the Ugurs were by race and language Tibetan.<sup>8</sup>

The narrative of Rubruk, after Roger Bacon's copious use of it, seems to have dropped out of sight. It has no place in the famous collections of the 14th century, nor in the earlier *Speculum Historiale* of Vincent of Beauvais, which gives so many others of the Tartarian ecclesiastical itineraries. It first appeared imperfectly in Hakluyt (1600), as we have mentioned. But it was not till 1839 that any proper edition of the text was published. In that year the *Recueil de Voyages* of the Paris Geographical Society, vol. iv., contained a thorough edition of the Latin text, and a collation of the few existing MSS., put forth by M. D'Arvezac, with the assistance of two young scholars, since of high distinction, viz., Francisque-Michel and Thomas Wright. But there is no commentary, such as M. D'Arvezac attached, in his own incomparable fashion, to the edition of Friar John of Pian Carpine in the same volume; nor has there ever been any properly annotated edition of a traveller so worthy of honour. Richthofen in his *China*, l. 602-604, has briefly but justly noticed the narrative of Rubruk. A *Fr. 8<sup>vo</sup>* version with some notes, issued at Paris in 1877, in the *Bibliothèque Orientale Elzévirienne*, if named at all, can only be mentioned as beneath contempt. The task is one which the present writer has long contemplated, but now with but slender hope of accomplishment. (Since this was in type the writer has received from Dr. Franz Max Schmidt an admirable monograph by him, *Leber Rubruks Reise* (Berlin, p. 93), extracted from vol. xx. of the *Ztschr. Geog. Soc. Berl.*, and has greatly profited by it in the revision of the article in proof.) (H. Y.)

RUBY. This name is applied by lapidaries and jewellers to two distinct minerals, which may be distinguished as the true or Oriental ruby and the spinel ruby. The former is a red variety of corundum or native alumina, of

<sup>4</sup> "Ego enim percepit poseri, quando incepti aliquantulum intelligere idioma, quod quando dicebam unum ipse totum aliud dicebat, secundum quod ei occurbat. Tum, videns periculum loquendi per ipsum, electi magis tacere" (248-249).

<sup>5</sup> The page references in the text are to D'Arvezac's edition of the Latin (see below).

<sup>6</sup> The Bashkirds now speak a Turkish dialect; but they are of Finnish race, and it is quite possible that they then spoke a language akin to Magyar. There is no doubt that the Musulman historians of that age identified the Hungarians and the Bashkirds (e.g., see extracts from Juwaini and Fakhreddin in App. to D'Obson's *Hist. des Mongols*, ll. 620-623). The Bashkirds are also constantly coupled with the *Majâr* by Abulghâzi. See Fr. tr. by Desmaisons, pp. 19, 140, 180, 189.

<sup>7</sup> *Aspa* = *Equus*. Aspara is often mentioned by the historians of Timur and his successors; its exact place is uncertain, but it lay somewhere on the Ili frontier. Dr F. Schmidt thinks this identification impossible; but one of his reasons—viz., that Equus was only one day from Caillac—appears to be a misapprehension of the text.

<sup>8</sup> See *Forschungen im Gebiete . . . der Völker Mittel-Asiens*, St. Petersburg, 1824, pp. 90-93.

great rarity and value, while the latter is an aluminate of magnesium, inferior to the true ruby in hardness and much less esteemed as a gem stone. With ancient writers the confusion was even greater, for they appear to have classed together under a common name, such as the *carbunculus* of Pliny or the *ἀνθραξ* of Greek writers, not only our two kinds of ruby but also garnets and other inferior stones of a brilliant fiery colour. By modern mineralogists it has come to be understood that when the word ruby is used without any qualifying prefix the true or Oriental stone is invariably indicated.

The Oriental ruby, like all other varieties of corundum, crystallizes in the rhombohedral system; but, as it usually occurs as small pebbles or rounded fragments, the crystalline form can rarely be traced. Its colour varies from deep cochineal to pale rose red, in some cases inclining to purple, the most valued tint being that known to experts as pigeon's blood colour. On exposure to a high temperature the ruby becomes green, but regains its original colour on cooling—a behaviour which is consistent with the supposition that the stone owes its colour to the presence of oxide of chromium, and indeed in artificial rubies the required tint is always obtained by the use of some compound of chromium. When a ruby of the most esteemed colour is properly viewed through a dichroscope, the colour is resolved into a carmine and an aurora red, or red inclining to orange. By this test the true ruby may be distinguished from spinel and garnet, since these minerals crystallize in the cubic system and therefore are not dichroic. Another mode of distinction is suggested by the high density of corundum: the specific gravity of the true ruby reaches or even rises slightly above 4, and thus greatly exceeds that of either spinel or garnet. But perhaps the simplest test is afforded by its great hardness ( $H=9$ ): the sharp edge of a corundum crystal will readily scratch either a spinel or a garnet, but has no effect on a ruby. The true ruby has a very high index of refraction ( $\mu=1.78$ ), and to this character is due the remarkable lustre of the polished stone. Mr Crookes has shown that the ruby is brilliantly phosphorescent when subjected to radiant discharge in a properly exhausted vessel, and curiously enough the red light emitted is equally vivid whatever be the colour of the corundum under experiment. The microscopic structure of the ruby has been studied by Mr Sorby, who finds that the stone contains fluid cavities and numerous crystallized enclosures of other minerals (*Proc. Roy. Soc.*, xvii., 1869, p. 291).

The Oriental ruby is a mineral of very limited distribution, its principal localities being confined to the kingdom of Burmah. The most important ruby mines are situated at Kyat Pyen, about 70 miles to the north-east of Mandalay; there are also mines at Mookon, a little farther north, and others in the Sagyin Hills, within 16 miles of Mandalay. In all these localities the rubies occur in association with sapphires and other precious stones, forming a gem-bearing gravel which is dug up and washed in very primitive fashion. By far the larger number of the rubies are of small size, and the larger stones are generally flawed. All rubies exceeding a certain weight were the property of the king of Burmah. The mines were jealously watched, and it was difficult for Europeans to obtain access to them; but some of the Ava workings were visited and described many years ago by Pere Giuseppe d'Amato, and more recently those near Mandalay have been described by Mr Bredmeyer, who was officially connected with them (Ball). It is stated in the older works on mineralogy that rubies occur in the Capelan Mountains near Syrian, in Pegu. In peninsular India there are but few localities that yield rubies, but they have been reported from the corundum mines of the Salem district in Madras and from Mysore. In Ceylon they occur with sapphires, but are rarer than those gems, and the Ceylon rubies are not usually of good colour. Rubies have been brought from Gandamak, in Afghanistan, but most of the stones reputed to be Afghan rubies are merely spinels.

In 1871 some remarkable deposits of corundum were discovered by Col. C. W. Jenks in Macon co., North Carolina. Rubies,

sapphires, and large pebbles of coarse corundum were found in the bed of a river near a large mass of serpentine which afterwards became known as Corundum Hill, and these pebbles were eventually traced to certain veins in the serpentine. The corundum occurred crystallized *in situ*, but was rarely of such a colour as would entitle it to be called ruby. Mr G. F. Kunz, who has lately written an article on American precious stones, states that rubies and sapphires have also been found at Vernon, New Jersey; near Helena, Montana; at Santa Fé, New Mexico; in southern Colorado; and in Arizona.

Australia has occasionally yielded true rubies, but mostly of small size and inferior quality. In Victoria they have been found in the drifts of the Beechworth gold fields and at the Berwick tin mine, Wallace's Creek; while in New South Wales they occur at Mudgee, in the *Cudgegong* and some of its tributaries, and at Tumberumba, co. Wynyard. A magenta-coloured turbid ruby from Victoria is known under the name of "barklyite."

The "star ruby" is a rather cloudy variety from Ceylon, exhibiting when cut *en cabochon* a luminous star of six rays, reflected from the convex surface of the stone.

The largest ruby known in Europe is said to be one of the size of a small hen's egg, which was presented by Gustavus III. of Sweden to the empress of Russia on the occasion of his visit to St Petersburg. Rubies of larger size have been described by Tavernier and other Oriental travellers, but it is probable that in many cases spinels have been mistaken for true rubies. There seems no doubt that the great historic ruby set in the Maltese cross in front of the imperial state crown of England is a spinel. This stone was given to Edward the Black Prince by Pedro the Cruel, king of Castile, on the victory of Najera in 1367, and it was afterwards worn by Henry V. at the battle of Agincourt, when it narrowly escaped destruction.

The spinel ruby has been described in the article MINERALOGY (vol. xvi. p. 386, sp. 93). The spinels used for jewellery are mostly obtained in Burmah, where they occur as octahedral crystals or as water-worn pebbles in association with the true ruby, for which they are often mistaken. They are also found in the gem-bearing gravels of Ceylon, Victoria, and New South Wales. The delicate rose-pink variety known as balas ruby was worked for centuries in Badakhshan, but the operations appear to have been suspended of late years. The mines are situated on the river Shighnan, a tributary of the Oxus. It is commonly said that the name "balas" or "balash" is a corruption of Badakhshan, while others derive it from Balkh.

The Oriental ruby has always been esteemed of far higher value than any other precious stone. A ruby of perfect colour, weighing five carats, is worth at the present day ten times as much as a diamond of equal weight (Streeter). As the weight of the stone increases, its value rapidly rises, so that rubies of exceptional size command enormous prices. There is consequently much temptation to replace the true stone by spinel or garnet or even paste. By means of oxide of chromium an excellent imitation of the colour of the ruby is obtained; and, though the ordinary "strass," or fine lead-glass, is very soft, and therefore soon loses its lustre, it is yet possible to produce a paste consisting of silicate of alumina which is almost as hard as rock crystal.

It is an interesting fact that the chemist has frequently succeeded in causing alumina to assume artificially many of the physical characteristics of the native ruby. As far back as 1837 M. Gaudin reproduced the ruby on a small scale by exposing ammonia-alum to the heat of the oxyhydrogen blowpipe, whereby he obtained fused alumina which was readily coloured by the addition of oxide of chromium. A different method was followed by Ebelmen. He dissolved alumina in boric acid at a high temperature, and on the cooling of the mass obtained the alumina in a crystallized form; while if chromate of ammonium was present the crystals became veritable ruby. MM. Sainte-Claire Deville and Caron heated a mixture of fluoride of aluminium, fluoride of chromium, and boric acid, and thus obtained a fluoride of boron, which, being volatile, readily escaped, and left a solid residue of alumina coloured by the chrome. These, however, were only laboratory experiments, and it was reserved for MM. Frémy and Feil, in 1878, to reproduce the ruby and sapphire on a scale suggestive of some commercial importance. By heating a mixture of artificial alumina and red lead in a fireclay crucible, they obtained a vitreous silicate of lead (the silica being derived from the crucible) and crystallized alumina, while the addition of bichromate of potassium caused this alumina to assume the coveted tint of the ruby.

For a general description of the ruby see E. Jannettaz, *Diamant et Pierres Précieuses* (1881); Kluge, *Handbuch der Edelsteinkunde* (1860); Schrauf, *Edelsteinkunde* (1869); Church, *Precious Stones* (1883); Streeter, *Precious Stones and Gems* (4th ed., 1884). For Indian localities see Ball's *Economic Geology*, being vol. iii. of the *Manual of the Geology of India* (1881); for Australian localities, Liversidge's *Minerals of New South Wales* (2d ed., 1882); for United States rubies, *Quart. Jour. Geol. Soc. Lond.*, vol. xxx., 1874, p. 203, and Kunz's article in *American Jour. Science*, ser. iii. vol. iv., 1872, pp. 109, 176, and Kunz's article in *Mineral Resources of the United States*, by A. Williams, jun. (1885). For the history of the stone consult King's *Natural Hist. of Precious Stones* (1865), and for artificial rubies, *Comptes Rendus*, vol. lxxxv., 1877, p. 1029. (F. W. R.)

RÜCKERT, FRIEDRICH (1788–1866), an eminent German poet, was born at Schweinfurt on the 16th May 1788. He was educated at the gymnasium of his native place and at the universities of Würzburg and Heidelberg, where he studied law and philology. Having taken his degree, he went to the university of Jena as a "privat-docent"; but this position he soon abandoned. For some time he worked in connexion with the *Morgenblatt* at Stuttgart. Nearly the whole of the year 1818 he spent in Rome, where he devoted himself to study, especially to the study of the popular poetry of Italy; and afterwards he lived for several years at Coburg. He was appointed a professor of Oriental languages at the university of Erlangen in 1826, and in 1841 he was called to a similar position in Berlin, where he was also made a privy councillor. In 1849 he resigned his professorship at Berlin, and went to live on his estate near Coburg. He died on the 31st January 1866. When Rückert began his literary career, Germany was engaged in her life-and-death struggle with Napoleon; and in his first volume, *Deutsche Gedichte*, published in 1814 under the name of Freimund Raimar, he gave vigorous expression to the prevailing sentiment of his countrymen. In 1816 appeared *Napoleon, eine politische Komödie in drei Acten*, and in 1817 the *Kranz der Zeit*. He issued a collection of poems, *Oestliche Rosen*, in 1822; and in 1834–38 his *Gesammelte Gedichte* were published in six volumes, a selection from which has passed through many editions. Rückert, who was master of thirty languages, made his mark chiefly as a translator of Oriental poetry, and as a writer of poems conceived in the spirit of Oriental masters. Much attention was attracted by *Die Verwandlungen des Abu Seid*, a translation of Hariri's *Makamen* (1826), *Nal und Damajanti*, an Indian tale (1828), *Amriltkais, der Dichter und König* (1843), and *Hamasa, oder die ältesten arabischen Volkslieder* (1846). Among his original poems dealing with Oriental subjects are *Morgenländische Sagen und Geschichten* (1837), *Erbauliches und Beschauliches aus dem Morgenland* (1836–38), *Rostem und Sohrab, eine Heldengeschichte* (1838), and *Brahmanische Erzählungen* (1839). The most elaborate of his works is *Die Weisheit des Brahmanen*, published in six volumes in 1836–39. In 1843–45 he issued several dramas, all of which are greatly inferior to the work to which he owes his distinctive place in German literature. At the time of the Danish war in 1864 he wrote *Ein Dutzend Kampf-Lieder für Schleswig-Holstein*, which, although published anonymously, produced a considerable impression. After his death many poetical translations and original poems were found among his papers, and several collections of them were published. Rückert lacked the simple and natural feeling which is characteristic of all the greatest lyrical poets of Germany. But he had a certain splendour of imagination which made Oriental poetry congenial to him, and he has seldom been surpassed in his power of giving rhythmic expression to ideas on the conduct of life. As a master of poetical style he ranks with German writers of the highest class. There are hardly any lyrical forms which are not represented among his works, and in all of them, the simplest and the most complex, he wrote with equal ease and grace.

A complete edition of Rückert's poetical works appeared in Frankfurt in 1868–69. See Fortlage, *Rückert und seine Werke* (1867); Beyer, *Friedrich Rückert, ein biographisches Denkmal* (1868); *Neue Mittheilungen über Rückert* (1873); and *Nachgelassene Gedichte Rückerts und neue Beiträge zu dessen Leben und Schriften* (1877); Boxberger, *Rückert-Studien* (1878).

RÜDAGÍ (d. 954). Hakim Mohammed Farid-eddin Abdalláh, the first great genius of modern Persia, was born in Rüdág, a village in Transoxiana, about 870–900,—totally blind, as most of his biographers assert, although the fine distinction of colours and the minute description

of the various tints and shades of flowers in his poems flatly contradict the customary legend of the "blind minstrel." In his eighth year he knew the whole Korán by heart and had begun to write verses. He had besides a wonderful voice which enraptured all hearers, and he played in a masterly way on the lute. The fame of these accomplishments at last reached the ear of the Sámánid Nasr II. bin Ahmad, the ruler of Khorásán and Transoxiana (913–942), who drew the poet to his court and distinguished him by his personal favour. Rüdágí became his daily companion, rose to the highest honours, and grew rich in worldly wealth. He received so many costly presents that he could allow himself the extravagance of keeping two hundred pages, and that four hundred camels were necessary to carry all his property. In spite of various predecessors he well deserves the title of "father of Persian literature," since he was the first who impressed upon every form of epic, lyric, and didactic poetry its peculiar stamp and its individual character. He is also said to have been the founder of the "diwán," that is, the typical form of the complete collection of a poet's lyrical compositions in a more or less alphabetical order which prevails to the present day among all Mohammedan writers. His poems filled, according to all statements, one hundred volumes and consisted of one million three hundred thousand verses; but of this there remain only fifty-two *kasidas*, *ghazals*, and *rubá'is*; of his epic masterpieces we have nothing beyond a few stray lines found here and there as illustrations of ancient Persian words and phrases in native dictionaries. But the most serious loss is that of his translation of Ibn Mukaffá's Arabic version of the old Indian fable book *Kalilah and Dimnah*, which he put into Persian verse at the request of his royal patron, and for which he received the handsome reward of 40,000 dirhems. In his *kasidas*, which are all devoted to the praise of his sovereign and friend, Rüdágí has left us unequalled models of a refined and delicate taste, very different from the often bombastic compositions of later Persian encomiasts, and these alone would entitle him to a foremost rank among the poets of his country; but his renown is considerably enhanced by his odes and epigrams. Those of a didactic tendency express in well-measured lines a sort of Epicurean philosophy—in the loftiest sense of the word—on human life and human happiness; more charming still are the purely lyrical pieces, sweet and fascinating songs, which glorify the two everlasting delights of glowing hearts and cheerful minds—love and wine. Rüdágí survived his royal friend, and died long after the splendid days of Nasr's patronage, the time of wealth and luxury, had passed away—poor and forgotten by the world, as one of his poems, a beautiful elegy, seems to indicate—in 954.

A complete edition of all the extant poems of Rüdágí, in Persian text and metrical German translation, together with a biographical account, based on forty-six Persian MSS., is found in Dr Ethé's "Rüdágí der Sámánidendichter" (*Göttinger Nachrichten*, 1873, pp. 663–742).

RUDD, or RED-EYE (*Leuciscus erythrophthalmus*), a fish of the family of Carps, generally spread over Europe, north and south of the Alps, also found in Asia Minor, and extremely common in suitable localities, viz., still and deep waters with muddy bottom. When adult, it is readily recognized by its deep, short body, golden-coppery tint of the whole surface, red eyes, and scarlet lower fins; the young are often confounded with those of the roach, but the pharyngeal teeth of the rudd stand in a double row, and not in a single one, as in the roach; also the first dorsal rays are inserted distinctly behind the vertical line from the root of the ventral fin. The anal rays are from thirteen to fifteen in number, and the scales in the lateral line from thirty-nine to forty-two. The rudd is :

fine fish, but little esteemed for food, and very rarely exceeds a length of 12 inches or a weight of 2 lb. It feeds on small freshwater animals and soft vegetable matter, and spawns in April or May. It readily crosses with the white bream, more rarely with the roach and bleak.

**RUDDIMAN, THOMAS (1674-1758)**, an eminent Scottish scholar, was born in October 1674, at Raggal, in the parish of Boyndie, Banffshire, where his father was a farmer. He studied Latin eagerly at the school of his native parish, and when sixteen started off to walk to Aberdeen, there to compete for a college bursary. On the way he was attacked by Gipsies, robbed of a guinea, which was all he had, and otherwise very cruelly treated; but he persevered in his journey, reached Aberdeen, and competed for and won the bursary. He then entered the university, and four years afterwards—on 21st June 1694—received the degree of M.A. For some time he acted as schoolmaster at Laurencekirk in Kincardine. There he chanced to make the acquaintance of Dr Pitcairne, of Edinburgh, who persuaded him to remove to the Scottish capital, where he obtained the post of assistant in the Advocates' Library. As his salary was only £8, 6s. 8d. per annum, he was forced to undertake additional employment. He engaged in miscellaneous literary work, took pupils, and for some time acted as an auctioneer. His chief writings at this period were editions of Wilson's *De Animi Tranquillitate Dialogus* (1707), and the *Cantici Solomonis Paraphrasis Poetica* (1709) of Arthur Johnstone (ob. 1641), editor of the *Deliciae Poetarum Scotorum*.

In 1714 he published *Rudiments of the Latin Tongue*, which is even yet his best known work. This was intended to be an easy introduction to Latin grammar, and was so successful that it at once superseded all others. Under various forms it has been in use, down to our own day, in the schools of Scotland. In 1715 he edited, with notes and annotations, the works of George Buchanan in two volumes folio. As Ruddiman was a Jacobite, the liberal views of Buchanan seemed to him to call for frequent censure. That censure is often rather implied than openly expressed; but it excited much opposition. A society of scholars was formed in Edinburgh to "vindicate that incomparably learned and pious author from the calumnies of Mr Thomas Ruddiman" by publishing a correct edition of his works. This they never did; but a number of obscure writers from this time attacked Ruddiman with great vehemence. He replied; and it was not till the year before his death that he said his "last word" in the controversy.

His worldly affairs, meanwhile, grew more and more prosperous. He founded (1715) a successful printing business, and after some time was appointed printer to the university. He acquired the *Caledonian Mercury* in 1729, and in 1730 was appointed keeper of the Advocates' Library, which post, owing to failing health, he resigned in 1752. He died at Edinburgh, 19th January 1758, and was interred in Greyfriars churchyard, where in 1806 a tablet was erected to his memory.

Besides the works mentioned, the following writings of Ruddiman deserve notice—an edition of Gavin Douglas's *Æneid* of Virgil (1710); the editing and completion of Anderson's *Selectus Diplomatum et Numismatum Scoticæ Thesaurus* (1739); *Catalogue of the Advocates' Library* (1733-42); an edition of Livy, famed for its "immaculate purity," in 4 vols. (1751). Ruddiman was for many years the representative scholar of Scotland. Writing in 1766, Dr Johnson, after reproving Boswell for some bad Latin, significantly adds—"Ruddiman is dead." When Boswell proposed to write Ruddiman's life, "I should take pleasure in helping you to do honour to him," said Johnson.

See Chalmers's *Life of Ruddiman* (1794); *Scots Magazine*, January 7, 1757; Boswell's *Life of Johnson*.

**RUDE, FRANÇOIS (1784-1855)**, a French sculptor of great natural talent and force of character, but of an ignorance

as to all that did not immediately concern his art which can best be described as out of date. He was born at Dijon, 4th January 1784, and came therefore in his youth under the influence of the democratic and Napoleonic ideals in their full force. Till the age of sixteen he worked at his father's trade as a stovemaker, amusing himself with modelling in his free hours only; but in 1809 he went up to Paris from the Dijon school of art, and became a pupil of Castellet, obtaining the Great Prize in 1812. After the second restoration of the Bourbons he retired to Brussels, where he got some work under the architect Van der Straeten, who employed him to execute nine bas reliefs in the palace of Tervueren, which he was then engaged in building. At Brussels Rude married Sophie Fremiet, the daughter of a Bonapartist compatriot, to whom he had many obligations; but, obtaining with difficulty work so ill-paid that it but just enabled him to live, he gladly availed himself of the opportunity of return to Paris, where in 1827 a statue of the Virgin for St Gervais and a Mercury Fastening his Sandals obtained much attention. His great success dates, however, from 1833, when he received the cross of the Legion of Honour for his statue of a Neapolitan Fisher Boy playing with a Tortoise, which also procured for him the important commission for all the ornament and one bas relief of the Arc de l'Étoile. This relief, a work full of energy and fire, immortalizes the name of Rude. Amongst other productions, we may mention the statue of Monge, 1848, Jeanne d'Arc (in garden of Luxembourg), 1852, a Calvary in bronze for the high altar of St Vincent de Paul, 1855, as well as Hebe and the Eagle of Jupiter, Love Triumphant, and Christ on the Cross, all of which appeared at the Salon of 1857 after his death. He had worked all his life long with the most extraordinary energy and given himself no rest in spite of the signs of failing health, and at last, on the 3d November 1855, he died suddenly with scarcely time to cry out. One of his noblest works, and easily accessible, is the tomb of Cavaignac, on which he placed beside his own the name of his favourite pupil Christophe. Although executed in 1840, this was not erected at Montmartre till the year after Rude's own death. His Louis XIII, a life size statue, cast in silver, is to be seen at the Duc de Luyne's chateau at Dampierre. Cato of Utica stands in the gardens of the Tuileries, and his Baptism of Christ decorates a chapel of the Madeleine.

**RUDE STONE MONUMENTS.** The raising of commemorative monuments of such an enduring material as stone is a practice that may be traced in all countries to the remotest times. The highly sculptured statues, obelisks, and other monumental erections of modern civilization are but the lineal representatives of the unhewn monoliths, dolmens, cromlechs, &c., of prehistoric times. Judging from the large number of the latter that have still survived the destructive agencies (notably those of man himself) to which they have been exposed during so many ages, it would seem that the ideas which led to their erection had as great a hold on humanity in its earlier stages of development as at the present time. In giving some idea of these rude monuments in Britain and elsewhere, it will be convenient to classify them as follows (see vol. ii. p. 383, figs. 1-4). (1) Isolated pillars or monoliths of unhewn stones raised on end are called *Menhirs* (*maen*, a stone, and *hir*, long). (2) When these monoliths are arranged in lines they become *Alignments*. (3) But if their linear arrangement is such as to form an enclosure (*enceinte*), whether circular, oval, or irregular, the group is designated by the name of *Cromlech* (see CROMLECH). (4) Instead of the monoliths remaining separate, they are sometimes placed together and covered over by one or more capstones so as to form a rude chamber; in this case

the monument is called a *Dolmen* (*daul*, a table, and *maen*, a stone). This megalithic chamber is sometimes partially or wholly imbedded in a mound of earth or stones so as to form a tumulus or cairn. As, however, there are many tumuli and cairns which do not contain megalithic chambers, we have only partially to deal with them under the category of rude stone monuments.

*Menhirs.*—Rude monoliths fixed on end (see vol. ii. p. 383, fig. 1) have been used in all ages for a variety of purposes, commemorative and religious. Stone pillars were also used ceremonially on the accession of kings and chiefs. In Scotland, when stones were thus used, they were called *Tanist Stones*, the most celebrated of which was the *Lia Fail*, formerly at Scone (now at Westminster Abbey), on which the kings of Scotland used to be crowned. We read also of *Hare or Hoer Stones*, *Cambus or Camus Stones*, *Catleath*, *battle Stones*, "*Witch Stones*," "*Druid Stones*," &c. The *Hawk's Stone*, or *Saxum Falconis*, at St Madoes, Perthshire, was erected in memory of the defeat of the Danes at Luncarty, and a monolith now standing on the field of Flodden is said to mark the place where King James fell. When menhirs were grouped together their number was often significant, e.g., twelve (Josh. iv. 5) or seven (Herod., iii. 8). Some standing stones are found to have been artificially perforated, and these superstition has invested with some curious functions. As examples of this class may be mentioned the famous Stone of Olin, near the circle of Stennis, the *Clach-Charra*, or Stone of Vengeance, at Onich near Balachulish in Argyllshire, and *Men-en-tol* in Cornwall. Two rude monoliths in Scotland bear inscriptions,—the famous Newton Stone in the district of Garioch, and the *Cat Stone* near Edinburgh. Many others have cup-marks and spirals or concentric circles. In Ireland, Wales, and the north of Scotland, they are occasionally found with *ogam* inscriptions, and in the north-east of Scotland (Pictland) with symbolical figures, which were subsequently continued on the beautifully sculptured stones of early Christian date which are peculiar to that locality.

Menhirs are found in all megalithic countries. In the British Isles they are very abundant, more especially in the less cultivated districts. In France over 1600 isolated examples have been recorded, of which about the half, and by far the most remarkable, are within the five departments which constitute Brittany. In the rest of France they are generally small, and not to be compared in grandeur to those of Brittany. At Locmariaquer (Morbihan) is the largest menhir in the world. It is in the form of a rude but smooth-sided obelisk, and lies on the ground broken into four portions, the aggregate length of which amounts to 20·50 metres (about 67 feet). It was made of granite, foreign to the neighbourhood, and its weight, according to the most recent calculations, amounted to 347,531 kilogrammes or 342 tons (*L'Homme*, 1885, p. 193). The next largest menhir is at Plésidy (Côtes-du-Nord), measuring about 37 feet in height. Then follows a list of sixty-seven gradually diminishing to 16 feet in height, of which the first ten (all above 26 feet) are in Brittany. As regards form, these menhirs vary greatly. Some are cylindrical, as the well-known "*Pierre du champ Dolent*" at Dol (height 30 feet), and that of Cadiou in Finistère (28 feet); while that of Penmarch (26 feet) takes the shape of a partially expanded fan. On the introduction of Christianity into France its adherents appear to have made use of these menhirs at an early period; many of them at present support a cross, and some a Madonna. The scattered positions of some monoliths and the no less singular grouping of others show that, although they were sometimes used as landmarks, this was only a secondary function. It is not uncommon to find a monolith overtopping a tumulus, thus simulating the *Bauta* (grave or battle) Stones of Scandinavia. In England, monoliths are often associated with the stone circles, as the King's Stone at Stanton Drew, Long Meg at Little Salkeld, the Ring Stone at Avebury, &c. One of the finest British monoliths stands in the churchyard of Rudston, Yorkshire. Examples of a large size are met with in Algeria, Morocco, India, Central Asia, &c.

*Alignments.*—The most celebrated monuments of this class are in the vicinity of Carnac in Brittany. They are situated in groups at Ménez, Kermario, Kerlescant, Erdeven, and St Barbe—all within a few miles of each other, and in the centre of a district containing the most remarkable megalithic remains in the world. The first three groups are supposed by some archaeologists to be merely portions of one original and continuous series of alignments, which extended nearly 2 miles in length in a uniform direction from south-west to north-east. Commencing at the village of Ménez, the menhirs are arranged in eleven rows. At first they stand from 10 to 13 feet above the ground, but, as we advance, they become gradually smaller till they attain only 3 or 4 feet, when they cease altogether. After a vacant space of about 350 yards we come to the Kermario group, which contains only ten lines, but they are nearly of the same magnitude as at the beginning of the former group. After a still greater interval the menhirs

again appear, but this time in thirteen rows, at the village of Kerlescant. In 1881 M. Felix Gaillard, Plouharnel, made a plan of the alignments at Erdeven, which shows that, out of a total of 1120 menhirs which originally constituted the group, 290 are still standing, 740 fallen, and 90 removed. The menhirs here may be traced for nearly a mile, but their linear arrangement is not so distinct, nor are the stones so large as those at Carnac. About fifty alignments are known in France. At Penmarch there is one containing over two hundred menhirs arranged in four rows. Others, however, are formed of only a single row of stones, as at Kerdouadec, Leuré, and Camaret. The first is 480 m. in length, and terminates at its southern extremity in a kind of *croix gammée*. At Leuré three short lines meet at right angles. The third is situated on the rising ground between the town of Camaret and the point of Toulanguet. It consists of a base line, some 600 yards long, with forty-one stones (others have apparently been removed), and two perpendicular lines as short offsets. Close to it are a dolmen and a prostrate menhir. These monoliths are all of coarse quartz and of small size, only one, at Leuré, reaching a height of 9 feet. Alignments are also found in other countries. In the Pyrenees they are generally in single file,—mostly straight, but sometimes reptiliform. One at Peyrelade (Billière) runs in a straight line from north to south for nearly 300 yards, and contains ninety-three stones, some of which are of great size. At St Columb in Cornwall, there is one called the *Nine Maidens*, which is formed of eight quartz stones, extending in a perfectly straight line for 262 feet. In Britain they are more frequently arranged in double file, or in avenues, leading to or from other megalithic monuments, such as still exist, or formerly existed, at the circles of Avebury, Stonehenge, Shap, Callernish, &c. The only example in England comparable to the great alignments of Carnac is in the Vale of the White Horse in Berkshire. Here the stones, numbering about eight hundred, are grouped in three divisions, and extend over an irregular parallelogram which measures from 500 to 600 yards in length and from 250 to 300 yards in breadth. Sir Henry Dryden describes groups of a similar character in Caithness, as at Garry, Whin, Camster, Yarhouse, and the "many stones" at Clyth. Alignments in single and multiple rows have also been observed in Shetland, India, Algeria, &c.

*Cromlechs.*—Enclosures (*enceintes*) formed of rude monoliths, placed at intervals of a few yards, have generally a circular or oval shape. Rectangular forms are, however, not unknown, examples of which may be seen at Curcuuno (Morbihan), near the celebrated dolmen of that name, and at Saint Just (Ille-et-Vilaine). The former measures 37 by 27 yards, and is now composed of twenty-two menhirs, all of which are standing (some fallen ones having been recently restored by the Government). About a dozen menhirs would appear to be wanting. A donkey-shoe-shaped enclosure has been described by Sir Henry Dryden, in the parish of Latheron, Caithness. It is 226 feet long and 110 feet wide in the middle, and the two extremities are 85 feet apart. Stone circles are frequently arranged concentrically, as may be seen in the circle at Kenmore, near Aberfeldy, Perthshire, as well as in many other Scotch, Irish, and Scandinavian examples. More rarely one large circle surrounds secondary groups, without having a common centre, as was the case at Avebury, where the outer circle, 1200 feet in diameter, included two others, each of which contained an inner concentric circle. At Boscawen, in Cornwall, there is a group of circles confusedly attached, and, as it were, partially overlapping each other. Circles may also be connected by an alignment or avenue, as at Stanton Drew, Dartmoor, &c. Cromlechs are often associated with other megalithic monuments; thus at the head of the great Carnac alignments are the remains of a large circle which can be readily traced, notwithstanding that some houses are constructed within its area. In the British Isles and the north of Europe cromlechs frequently surround the dolmens, tumuli, or cairns. A few examples of a dolmen surrounded by one or more concentric circles have also been recorded by M. Cartailhac, in the department of Aveyron in France. Outside the cromlech there is also frequently to be found a circular ditch or vallum, as at Avebury, Stonehenge, Arbor Low, Brogar, &c. The most remarkable megalithic monument of this class now extant is Stonehenge, which differs, however, from its congeners in having the stones of its second inner circle partially hewn and attached by large transverse lintels. The largest cromlech in France stands on the Ile-aux-Moines (Morbihan), in the village of Kergonan. About half of it is destroyed by the encroachment of the houses. The remaining semi-circumference (slightly elliptical) contains thirty-six menhirs from 6 to 10 feet high, and its diameter is about 100 metres (328 feet). Only a few of the British cromlechs exceed these dimensions, among which may be mentioned Avebury (1260 by 1170 feet), Stonehenge (outer circle 300 feet, inner 106 feet), Stanton Drew (360 feet), Brogar (345 feet), Long Meg and her Daughters (330 feet). One near Dumfries, called the *Twelve Apostles*, also closely approaches the 100-metre size; but, generally speaking, the Scotch and Irish examples are of smaller proportions, rarely

exceeding 100 feet in diameter. That most of the smaller circles have been used as sepulchres has been repeatedly proved by actual excavations, which showed that interments had taken place within their area. It is difficult, however, to believe that this could have been the main object of the larger ones. At Mayborough, near Penrith, there is a circle entirely composed of an immense aggregation of small stones in the form of a gigantic ring enclosing a flat area, about 300 feet in diameter. Near the centre there is a fine monolith, one of several known to have formerly stood there. Of the same type is the Giant's Ring near Belfast, only the ring in this instance is made of earth, and it is considerably larger in diameter (580 feet); the central object is a fine dolmen. It is more probable that such enclosures were used, like many of our modern churches, for the double purpose of burying the dead and addressing the living.

**Dolmens.**—In its simplest form a dolmen consists of three, four, or five stone supports, covered over with one selected megalithic called a capstone or table. A well-known example of this kind in England is Kit's Cotty House, between Rochester and Maidstone, which is formed of three large supports, with a capstone measuring 11 by 8 feet. From this simple form there is an endless variety of upward gradations till we reach the so-called Gaint Graves and Grottes aux Fées, which are constructed of numerous supports and several capstones. A dolmen (*allée couverte*) situated in a plantation at the outskirts of the town of Saumur is composed of four flat supports on each side, with one at the end, and four capstones. The largest capstone measures 7.5 metres in length, 7 in breadth, and 1 in thickness. The chamber is 18 metres long, 6.5 broad, and 3 high. Another near Essé, called "la Roche aux Fées," is equally long, and is constructed of thirty supports, with eight capstones, including the vestibule. Dolmens of this kind are extremely rare in the British Isles, the only one approaching them being Calliagh Birra's House in Ireland. These (generally known as *allées couvertes*) and many other examples of the simple dolmen show no evidence of having been covered over with a mound. When there was a mound it necessitated, in the larger ones, an entrance passage, which was constructed, like the chamber, of a series of side stones or supports and capstones. Some archaeologists maintain that all dolmens were formerly covered with a cairn or tumulus, a theory which undoubtedly derives some favour from the condition of many examples still extant, especially in France, where all stages of degradation are seen, from a partial to a complete state of denudation. The *allées couvertes* of France, Germany, and the Channel Islands had their entrance at the end; but, on the other hand, the Hunnebedden of Holland had both ends closed and the entrance was on the side facing the sun. The covered dolmens are extremely variable in shape,—circular, oval, quadrangular, or irregular. The entrance gallery may be attached to the end, as in the Grotte de Gavrinis, or to the side, as in the Gaint's Grave (Jettestuer) at Oem near Roskilde. In other instances there is no distinct chamber, but a long passage gradually widening from the entrance; and this may be bent at an angle, as in the dolmen du Rocher (Morbihan). Again, there may be several chambers communicating with one entrance, or two or three separate chambers having separate entrances, and all imbedded in the same tumulus. An excellent example of this kind is the partially destroyed tumulus of Rondosec, near Plonharnal railway station, which contains three separate dolmens. That such variations are not due to altered customs, in consequence of wideness of geographical range, is shown by M. de Mortillet, who gives plans of no less than sixteen differently shaped dolmens (*Musée préhistorique*, pl. 58), all within a confined district in Morbihan.

No dolmens exist in eastern Europe beyond Saxony. They reappear, however, in the Crimea and Circassia, whence they have been traced through Central Asia to India, where they are widely distributed. Similar megalithic structures have also been recognized and described by travellers in Palestine, Arabia, Persia, Australia, the Penrhyn Islands, Madagascar, Peru, &c. The irregular manner in which dolmens are distributed along the western parts of Europe has led to the theory that all these megalithic structures were erected by a special people, but as to the when, whence, and whither of this singular race there is no knowledge whatever. Though the European dolmens have a strong family likeness, however widely apart, they present some characteristic differences in the various countries in which they are found. In Scandinavia they are confined to the Danish lands and a few provinces in the south of Sweden. Here the exposed dolmens are often on artificial mounds, and surrounded by cromlechs which are either circular (*runddysser*) or oval (*langdysser*). In Sweden the *sepulture à galerie* is very rarely entirely covered up as in the giant graves of Denmark.

Hanover, Oldenburg, and Mecklenburg are very rich in the remains of these monuments. At Riestedt, near Uelzen in Hanover, there is, on the summit of a tumulus, a very singular dolmen of oblong form, which measures about 40 feet long and over 6 feet in breadth. Another at Naschendorf, near Wismar, consists of a mound surrounded by a large circle of stones and a

covered chamber on its summit. Remains of a megalithic structure at Rudenbeck, in Mecklenburg, though now imperfect, show that originally it was constructed like an *allée couverte*. It had four supports on each side, two at one end (the other end forming the entrance), and two large capstones. The length had been about 20 feet, breadth 7½ feet, and height from the floor to the under-surface of roof about 3 feet. According to Bönstetten, no less than two hundred of these monuments are found distributed over the three provinces of Lüneburg, Osabrück, and Stade; and the most gigantic examples in Germany are in the duchy of Oldenburg.

In Holland, with one or two exceptions, they are confined to the province of Drenthe, where between fifty and sixty still exist. Here they get the name of Hunnebedden (Huns' beds). The Borger Hunnebed, the largest of this group, is 70 feet long and 14 feet wide. In its original condition it contained forty-five stones, ten of which were capstones. They are all now denuded, but some show evidence of having been surrounded with a mound containing an entrance passage. Only one dolmen has been recorded in Belgium; but in France their number amounts to 3410. They are irregularly distributed over seventy-eight departments, six hundred and eighteen being in Brittany. In the centre of the country they are also numerous, no less than four hundred and thirty-five being recorded in Aveyron, but they are of much smaller proportions than in the former locality. From the Pyrenees the dolmens are sparsely traced along the north coast of Spain and through Portugal to Andalusia, where they occur in considerable numbers. Crossing into Africa they are found in large groups in Morocco, Algeria, and Tunis. General Faidherbe writes of having examined five or six thousand at the cemeteries of Bou Merzoug, Wady Berda, Tebessa, Gastal, &c.<sup>1</sup> In the Channel Islands every species of megalithic monument is met with. At Mont Cochoon, near St Helier, there was lately discovered in a mound of blown sand an *allée couverte*, and close to it a stone circle surrounding a dolmen.<sup>2</sup> In the British Isles they are met with in many localities, particularly in the west of England, Anglesey, the Isle of Man, Ireland, and Scotland. In the country last named, however, they are not the most striking feature among its rude stone monuments—the stone circles and cisted cairns having largely superseded them.

In the absence of historical knowledge all these megalithic structures were formerly regarded as of Celtic origin. By some they were supposed to have been constructed by the Druids, the so-called priests of the Celts; and hence they were often described, especially since the time of Aubrey and Stukely, under the name of Celtic or Druidical monuments. But this theory is disproved by the fact that the ethnographical range of the Celtic races does not correspond with the geographical distribution of these rude stone monuments. Thus, for example, in Europe, not to speak of their localization in non-Celtic countries, the megaliths occupy an elongated stretch of territory on its western seaboard extending from Pomerania to North Africa. This area crosses at right angles the lands supposed to have been occupied by the Celtic or Aryan races on their westward waves of migration. There can be no doubt from investigations of the contents of dolmens that their primary object was sepulchral, and that the megalithic chambers, with entrance passages, were used as family vaults. Against the theory that any of them were ever used as altars there is *prima facie* evidence in the care taken to have the smoothest and flattest surface of the stones composing the chamber always turned inwards. Moreover, cup marks, and other primitive markings when found on the capstones or supports, are almost invariably on their inside, as, for example, at the dolmens of Kerriaval, Kercado, Dol au Marchant, Gavrinis (Morbihan), and the great tumulus at New Grange (Ireland). From its position in the centre of a large circular enclosure no dolmen could be more suggestive of public sacrifices than that within the Giant's Ring near Belfast; yet nothing could be more inappropriate for such a purpose than its capstone, which is in fact a large granite boulder presenting on its upper side an unusually rounded surface.

No chronological sequence can be detected in the evolution of the rude stone monuments, with perhaps the exception of the primitive cist which gave origin to the *allées couvertes*, giant graves, &c., and these again to the tumuli with microlithic burials. Much less can their appearance in different countries be said to indicate contemporaneity. The dolmens of Africa are often found to contain objects peculiar to the Iron Age, and it is said that in some parts of India the people are still in the habit of erecting dolmens and other megalithic monuments. Scandinavian archaeologists assign their dolmens exclusively to the Stone Age. It would therefore appear as if a subsequent stage of degradation occurred, when a tamer style of interment ensued, and the Bronze Age barrows replaced the dolmens, and these again gave way to the Iron Age burials—the ship-barrows and large tumuli of the vikings, as manifested in the three tumuli of Thor, Qdin, and Freya at

<sup>1</sup> *Compte Rendu du Congrès International d'Anth. et d'Arch.*, Bruxelles, p. 406.  
<sup>2</sup> *Société Jersiaise, 9<sup>e</sup> Bulletin*, 1884.

Jamla Upsala, and the Gokstad mound on the Sandefjord, the scene of the recent discovery of the viking ship.

**Literature.**—Ferguson, *Rude Stone Monuments*; *Compte Rendu du Congrès International d'Anthropologie et d'Archéologie Préhistoriques*; by G. de Mortillet, *Les Études Préhistoriques*; Lubbock, *Prehistoric Times*; *Inventaire des Monuments Mégalithiques de France*; Bönstetten, *Essai sur les Dolmens*; *Proceedings*, &c., of the various antiquarian societies. (R. M. U.)

**RUDOLPH I.** (1218–1291), German king, eldest son of Albert IV., count of Hapsburg, was born on the 1st May 1218. By marriage and in other ways he greatly extended his hereditary dominions, so that when he became king he was lord not only of Hapsburg but of the counties of Kyburg and Lenzburg and of the landgraviate of Alsace. At different times he carried on war with the bishop of Strasburg, the abbot of St Gall, and the city of Basel. He was engaged in his second struggle with Basel in 1273 when Frederick, burgrave of Nuremberg, brought the intelligence that he had been elected to the German crown. Basel at once submitted, and Rudolph went to Aix-la-Chapelle, where he was crowned on the 28th October 1273. The princes had become so independent during the Great Interregnum that they would have preferred to have no supreme ruler; but Pope Gregory X. had threatened that if they did not elect a king he would himself appoint one. The pope now cordially supported Rudolph, who proved to be much more energetic than the electors had anticipated. Having secured the friendship of the palgrave Louis and Duke Albert of Saxony by allowing them to marry his daughters, he advanced against Ottocar, king of Bohemia, and Henry, duke of Bavaria, both of whom had refused to do him homage. Henry was soon won over to the new king's side, and then Ottocar had to sue for peace. His request was granted only on condition that he should cede Austria, Styria, Carinthia, and Carniola. By and by Ottocar again rebelled, and was slain in 1278 in a battle fought on the Marchfeld. Rudolph gave Bohemia and Moravia to Wenceslaus, Ottocar's son; but Austria, Styria, and Carniola he granted to his own sons, Albert and Rudolph. Carinthia was given to Meinhard, count of Tyrol, who agreed that if his descendants in the male line died out the land should pass to Rudolph's family. Rudolph compelled Otho, count of Upper Burgundy, and other nobles, who tried to make themselves independent of the German crown, to acknowledge his supremacy; and he recovered certain fiefs in what is now Switzerland, which had been seized by the count of Savoy. He also restored peace in Bohemia, and gave his daughter in marriage to the young king, Wenceslaus. He often visited troubled parts of the kingdom, settling local disputes, and destroying the towers of robber barons. On the whole, his rule was a beneficent one, but he did not succeed in re-establishing the authority of the crown, nor did he see how great an element of strength he might have found in an alliance with the cities. The electors he was forced to confirm in the possession of important rights, which were maintained under his successors. His reign is memorable chiefly because he was the founder of the greatness of the house of Hapsburg. In 1281 his first wife died, and in 1284 he married Elizabeth, daughter of Hugo IV., duke of Burgundy. He died at Gernersheim on the 15th July 1291.

See Lorenz, *Deutsche Geschichte im 13 und 14 Jahrh.* (1867); Huber, *Rudolf vor seiner Thronbesteigung* (in the *Annalen der kaiserlichen Akademie*, 1873); Hirn, *Rudolf von Habsburg* (1874).

**RUDOLPH II.** (1552–1612), Holy Roman emperor, was the son of the emperor Maximilian II., and was born on the 18th July 1552. In 1572 he obtained the crown of Hungary, in 1575 that of Bohemia, with the title "King of the Romans"; and in 1576, after his father's death, he became emperor. He was of an indolent and melancholy disposition, and preferred the study of astrology and alchemy to the responsibilities of government. He

surrendered himself absolutely to the control of the Jesuits, under whose influence he had been brought up at the gloomy court of Spain; and in his hereditary lands they laboured assiduously to destroy Protestantism. The Protestants were deprived of the right of public worship in Vienna and other towns; their schools were closed, and many of their preachers banished. Almost all public offices, too, were placed in the hands of Roman Catholics. In the lands which Rudolph ruled, not by hereditary right, but as emperor, his advisers could exercise less authority; but there also they did what they could to foster the Catholic reaction. In 1607 Maximilian, duke of Bavaria, was allowed to seize the imperial city Donauwörth, the Protestant inhabitants of which had quarrelled with the abbot. This and other high-handed proceedings alarmed the Protestants of Germany, and in 1608, under the leadership of Frederick IV., elector of the Palatinate, they formed a confederation called the Union for the protection of their interests. The Catholic princes, guided by Duke Maximilian of Bavaria, responded by forming the League. Civil war seemed inevitable, but it was postponed by the murder of Henry IV. of France, who had promised to support the Union, and by the death of the elector Frederick IV. Meanwhile, the greatest confusion prevailed in Hungary, due in part to religious oppression, in part to a war with the Turks. In 1604 the Hungarians rebelled, and peace was not restored until 1606, when Matthias, the emperor's brother, with the sanction of his younger brothers, who acknowledged him as head of the family, came to terms both with the Hungarians and with the sultan. Matthias allied himself with the Protestants, and compelled Rudolph to give up to him Hungary, Moravia, and the greater part of Austria. The emperor then tried to strengthen his position by granting to the nobles, knights, and towns of Bohemia perfect religious freedom, with the right to build Protestant churches and schools on their own and on the royal lands. Even after they had obtained the letter of majesty in which these concessions were embodied, the Bohemians did not trust Rudolph; and, when at his request the archduke Leopold appeared in their country with an army, they invited Matthias to come to their aid. Matthias went, and the emperor had no alternative but to resign to him in 1611 the remainder of his hereditary territories. Rudolph died on the 20th January 1612.

See Kurz, *Geschichte Oesterreichs unter Kaiser Rudolf* (1821); Gindely, *Rudolf II. und seine Zeit* (1863–65).

**RUDOLSTADT**, capital of the German principality of Schwarzburg-Rudolstadt, and chief residence of the prince, is situated on the left bank of the Saale, 18 miles due south of Weimar, in one of the most beautiful districts of Thuringia. The picturesque little town is a favourite summer watering-place, with pine baths, as well as a frequented tourist resort. Besides containing the Government buildings of the little principality, Rudolstadt is fairly well provided with schools and other institutions, including a library of 60,000 volumes. The residence of the prince is in the Heidecksburg, a palace on an eminence 200 feet above the Saale, rebuilt after a fire in 1735, and containing various show apartments. The Ludwigsburg, another palace within the town built in 1742, accommodates the natural history collections belonging to the prince. The principal church dates from the end of the 15th century. In the Anger, a tree-shaded public park between the town and the river, is the theatre. Various memorials in and near the town commemorate the visits of Schiller to the neighbourhood in 1787 and 1788. The industries of the district include the manufacture of porcelain and of dyestuffs, wool-spinning, and bell-founding. The population (4100 in 1817) was 8747 in 1880.