blue and a bluish or yellowish green. In blue tourmaline and in iolite—stones sometimes mistaken for sapphire—the dichroism is much more distinct. The blue colour in sapphire has been variously referred to the presence of oxides of chromium, iron or titanium, whilst an organic origin has also been suggested. On exposure to a high temperature, the sapphire usually loses colour, but, unlike ruby, it does not regain it on cooling. A. Verneuil succeeded in imparting a sapphire-blue colour to artificial alumina by addition of 1∙5% of magnetic oxide of iron and 0·5% of titanic acid *(Comptes rendus,* Jan. 17, 1910). According to F. Bordas, the blue colour of sapphire exposed to the action of radium changes to green and then to yellow. -

Under artificial illumination many sapphires appear dark and inky, whilst in some cases the blue changes to a violet, so that the sapphire seems to be transformed to an amethyst. According to lapidaries the hardness of sapphire slightly exceeds that of ruby, and it is also rather denser. Notwithstanding its hardness it has been sometimes engraved as a gem.

Ceylon has for ages been famous for sapphires. They occur, with many other gem-stones, as pebbles or rolled crystals in alluvial deposits of sand and gravel; the gem-gravel being known locally as *illam.* The principal localities are Ratnapura, Rakwana in the province of Sabara-Gamawa and Matara. Some of the slightly- cloudy Ceylon sapphires, usually of greyish-blue colour, display when cut with a convex face a chatoyant luminosity, sometimes forming a luminous star of six rays, whence they are called “ star- sapphires ” (see Asteria). The asterism seems due to the presence of microscopic tubular cavities, or to enclosure of crystalline minerals, arranged in a definite system. In 1875 sapphires were discovered in deposits of clay and sand in Battambang (Siam), where they have been worked on a considerable scale. They occur also with rubies in the provinces of Chantabun and Krat. Many of the Siamese sapphires are of very dark colour, some being so deeply tinted as to appear almost black by reflected light. In Upper Burma sapphires occur in association with rubies, but are much less important (see Ruby). Sapphires are also found in Kashmir, where they occur, associated with tourmaline, in the Zanskar range, especially near the village of Soomjam. Madagascar yields sapphires generally of very deep colour, occurring as rolled crystals. Sapphire is widely distributed through the gold-bearing drifts of Victoria, New South Wales and Queensland, but the blue colour of the Australian stones is usually dark, and it is notable that green tints are not infrequent. The Anakie sapphire-fields of Queensland are situated near Anakie station on the Central railway, to the west of Emerald and east of the Drummond Range. Sapphire occurs also in Tasmania. Coarse sapphire is found in many parts of the United States, and the mineral occurs of gem quality in North Carolina and Montana. The great corundum deposits of Corundum Hill, Macon county, N.C., have yielded good sapphires, and they are found also at Cowee Creek in the same county. In Montana, sapphires were discovered as far back as 1865, and have been worked on a large scale. They were originally found in washing for gold. The rolled crystals of sapphire occur, with garnet and other minerals, in glacial deposits, and have probably been derived from dykes of igneous rocks, like andesite and lamprophyre. They display much variety of colour, and exhibit peculiar brilliancy when cut, but are often of pale tints. The •principal localities are at Missouri Bar, Ruby Bar and other places near Helena, where they were first worked, and also at Yogo Gulch, near Utica. The Helena crystals are of tabular habit, being composed of the basal pinacoid with a very short hexagonal prism, whilst at Yogo Gulch many of the crystals affect a rhombohedral habit. The Montana sapphires and the matrix have been described by Dr G. F. Kunz, Professor L. V. Pirsson and Dr J. H. Pratt *(Amer. Jour. Sc.,* ser. 4, vol. iv., 1897). The sapphire occurs also in Europe, being found in the Iserweise of Bohemia and in the basalt of the Rhine valley and of Le-Puy-en-Velay in France, but the European stones have no interest as gems.

Although the term sapphire is primarily applied to blue corundum, it is often used in a general sense so as to include all corundum of gem quality, regardless of colour. Hence clear colourless corundum is known as white sapphire or “ leucosapphirc.” Such stones have been occasionally cut as lenses for microscopes, being recommended for such use by their high refractivity, weak dispersion and great hardness. White topaz is sometimes called “ water-sapphire,” a name which should, however, be restricted to iolite (*q.v.*). Yellow corundum is not uncommon in Ceylon and is termed yellow sapphire or “ oriental topaz,” the prefix “oriental ” being often applied to corundum. When of pale yellowish-green colour the sapphire is called “ oriental chrysolite,” when greenish-blue “ oriental aqua­marine,’ when of brilliant green colour “ oriental emerald,” and when violet “ oriental amethyst.” (For figure of crystal of sapphire see Corundum and for artificial sapphire see Gem, *§ Artificial.)*

The so-called “ Hope sapphires ” of trade have been shown to be artificial blue spinels, coloured by cobalt.

Sapphirine is a rare mineral, not related to sapphire except in

colour. It is a silicate, containing aluminium, magnesium and iron, brought originally from Greenland, and since found in a rock from the Vizagapatam district in India. (F. W. R.\*)

SAPPHO (7th-6th centuries b.c.), Greek poetess, was a native of Lesbos, contemporary with Alcaeus, Stesichorus and Pittacus, in fact, with the culminating period of Aeolic poetry. One of her brothers, Charaxus, fell in love with a courtesan named Doricha upon whom he squandered his property. Sappho wrote an ode, in which she severely satirized and rebuked him. Another brother, Larichus, was public cup-bearer at Mytilene—a position for which it was necessary to be well born. It is said that she had a daughter, named after her grandmother Cleis, and she had some personal acquaintance with Alcaeus. He addressed her in an ode of which a fragment is preserved: “ Violet- weaving (or dark-haired), pure, sweet-smiling Sappho, I wish to say somewhat, but shame hinders me ”; and she answered in another ode: “ Hadst thou had desire of aught good or fair, shame would not have touched thine eyes, but thou wouldst have spoken thereof openly.” The story of her love for the disdainful Phaon, and her leap into the sea from the Leucadian promontory, together with that of her flight from Mytilene to Sicily, has no confirmation ; we are not even told whether she died of the leap or not. Critics again are agreed that Suïdas was simply gulled by the comic poets when he tells of her husband, Cercolas of Andros. Both the aspersions which these poets cast on her character and the embellishments with which they garnished her life passed for centuries as undoubted history. Six comedies entitled *Sappho* and two *Phaon,* were produced by the Middle Comedy; but, when we consider, for example, the way in which Socrates was caricatured by Aristophanes, we are justified in putting no faith whatever in such authority. We may conclude that Sappho was not utterly vicious, though by no means a paragon of virtue. All ancient tradition and the character of her extant fragments show that her morality was what has ever since been known as “ Lesbian.”

At Lesbos she was head of a great poetic school, for poetry in that age and place was cultivated as assiduously and appar­ently as successfully by women as by men. Her most famous pupils were Erinna of Telos and Damophyla of Pamphylia. In antiquity her fame rivalled that of Homer. She was called “ the poetess,” he “ the poet.” Different writers style her “ the tenth Muse,” “ the flower of the Graces,” “ a miracle,” “ the beautiful,” the last epithet referring to her writings, not her person, which is said to have been small and dark.

Her poems were arranged in nine books, on what principle is un­certain; she is said to have sung them to the Mixo-Lydian mode, which she herself invented. The perfection and finish of every line, the correspondence of sense and sound, the incomparable command over all the most delicate resources of verse, and the exquisite symmetry of the complete odes which are extant, raise her into the very first rank of technical poetry at once, while her painting of passion, which caused Longinus to quote the ode to Anactoria as an example of the sublime, has never been since surpassed, and only approached by Catullus and in the *Vita Nuova.* Her fragments also bear witness to a profound feeling for the beauty of nature. The ancients also attributed to her a considerable power in satire, but in hexameter verse they considered her inferior to her pupil Erinna.

The fragments of Sappho have been preserved by other authors incidentally. Three fragments ascribed to her have been found on Egyptian papyri within recent years. The first two were published by W. Schubart in *Sitzungsberichte* *d.* *königl. preuss. Akademie* *d. Wissenschaften* (1902), i. 195 and re-edited (with bibliography) in the *Berliner Klassikertexte,* v. 2 (1907) ; the third, discovered in 1879, and attributed to Sappho by Blass, is re-edited in in the *Berlin. Klass.* v. For these three fragments see especially J. M. Edmonds, in *Classical Review* (June, 1909), pp. 99-104 (text, trans., comment.) and on the text of the “ Ode to the Nereids ” in *Classical Quarterly* (October, 1909). The poems were separately edited with translation by Wharton (3rd ed., 1895); also in H. Weir Smyth’s *Greek Melic Poets* (1900). See also P. Brandt, *Sappho* (Leipzig, 1905) ; B. Steiner, *Sappho* (1907). (J. A. Pl.)

SAPPORO, the official capital of the island of Yezo, Japan, situated in 43° 4' N. and 141° 21'E. Pop. 39,000. It was chosen in 1870, and owed its prosperity at the outset chiefly to the public institutions established by the Japanese government in con­nexion with the colonization bureau, which had for its object the development of the resources of Yezo. It is now a garrison town