*στρόμβος* seems to point to the humming top. The Latin name for the top was *turbo.* This word and the Greek *ῥόμβος* are sometimes translated by “ top ” when they refer to the instrument used in the Dionysiac mysteries, which, when whirled in the air by a string, produced a booming noise. This was no doubt the equivalent of the “ bull roarer ” (*q.v*.). Strutt *(Games and Pastimes,* 491) says that the top was known in England as early as the 14th century. For the scientific properties of the top see Gyroscope and Gyrostat.

This word must be distinguished from that signifying the highest or uppermost part of anything. It appears to have meant origin­ally a tuft or crest of hair, cf. Ger. *Zopf,* Du. *top,* Icel. *topps,* &c.; it is allied to Eng. “ tap,” a spike for a cask, and “ tip, point. Some etymologists have identified the two words, the toy being so called from spinning on its top or tip, but the two German forms seem to prove conclusively that the words are different.

**TOPAZ,** a mineral usually found in connexion with granitic rocks and used, when fine, as a gem-stone. It is believed that the topaz of modem mineralogists was unknown to the ancients, and that the stone described under the name of *τοπάζιος,* in allusion to its occurrence on an island in the Red Sea known as *τoπάζιος* *νησος,* was the mineral which is now termed chrysolite or peridot *(q.υ.).* The Hebrew *pitdah,* translated “ topaz ” in the Old Testament, may also have been the chrysolite.

Topaz crystallizes in the orthorhombic system, usually with a prismatic habit (figs. 1 and 2). Many of the crystals, like those from Saxony and Siberia, are rich in faces, and present with the prisms a complicated combination of pyramids and domes. The faces of the prism-zone are usually striated vertically. Doubly- terminated crystals are rare, and sometimes apparently hemi- morphic. The mineral presents a perfect cleavage transverse to the long axis of the prism, and the cleavage-plane often has a pearly lustre. The chemical composition of the topaz has given rise to much discussion, but it is now generally regarded as an aluminium fluo-silicate having the formula Al2F2SiO4. It was shown by Professor S. L. Penfield and Mr J. C. Minor that the fluorine may be partially replaced by hydroxyl. When strongly heated topaz suffers considerable loss of weight. Sir D. Brewster found in topaz numerous microscopic cavities containing fluids, some of which have received the names of brewsterlinite and cryptolinite. Possibly some of the liquid inclusions may be hydrocarhons.

The topaz, when pure, may be colourless, and if cut as a brilliant has been mistaken for diamond. It has, too, the same specific gravity, about 3·5. It is, however, greatly inferior in hardness, the hardness of topaz being only 8; and it has lower refractivity and dispersive powers: moreover, being an orthorhombic mineral, it possesses double refraction. From phenacite and from rock-crystal, for which it may be mistaken, it is distinguished by being biaxial and by having a much higher specific gravity. The topaz becomes electric by heating, by friction or by pressure. Colourless limpid topazes are known in Brazil as *pingos d'agoa,* or “ drops of water,” whilst in England they pass in trade as “ minas novas,” from a locality in the state of Minas Geraes in Brazil.

Coloured topazes usually present various shades of yellow, blue or brown. The pleochroism is fairly marked, the colour of the sherry-yellow crystals from Brazil being generally resolved by the dichroscope into a brownish-yellow and a rose-pink. The colour in many cases is unstable, and the brown topazes of Siberia are specially liable to suffer bleaching by exposure to sunlight. In 1750 a Parisian jeweller named Dumelle discovered that the yellow Brazilian topaz becomes pink on exposure to a moderate heat, and this treatment has since been extensively applied, so that nearly all the pink topaz occurring in jewelry has been artificially heated. Such “ burnt topaz ’’ is often known as “ Brazilian ruby,” a name applied also to the natural red topaz, which, however, is excessively rare. “ Brazilian sapphire ’’ is the term sometimes given to blue topaz, but the colour is usually pale. The delicate green topaz has been incorrectly called aquamarine, which is a name applicable only to the sea-green beryl *(q.υ.).* According to A. K. Coomáraswámy, yellow sapphire is often sold as topaz in Ceylon, where yellow topaz is unknown, whilst pink corundum is frequently called there “ king topaz.”

The topaz is cut on a leaden wheel, and polished with tripoli. It is generally step-cut, or table-cut, but its beauty is best developed when in the form of a brilliant. Cut topazes of large size are known, and it is said that the great “ Braganza diamond ” of Portugal is probably a topaz.

Topaz usually occurs in granitic and gneissose rocks, often in greisen, and is commonly associated with cassiterite, tourmaline and beryl. Tt seems to have been formed, in many cases, by pneumato­lytic action. In the west of England it is found in Cornwall, notably at St Michael’s Mount and at Cligga Head near St Agnes. It occurs also in Lundy Island. The finest British topaz is found in the Cairngorm group of mountains in the central Highlands, especially at Ben a Buird. Rolled pebbles occur in the bed of the Avon in Banffshire. Beautiful, though small, crystals occur in the drusy cavities of the granite of the Mourne Mountains in Ireland. The famous topaz-rock of the Schneckenstein, near Auerbach, in Saxony, yields pale yellow crystals, formerly cut for jewelry, and it is said that these do not become pink on heating. Fine topazes occur in Russia, at several localities in the Urals and in the Adun-chalon Mountains, near Nerchinsk, in Siberia. A very fine series from the Koksharov collection is in the British Museum. Beautiful crystals of topaz are found in Japan, especially at Taka- yama in the province of Mino, and at Tanokamiyama in Omi province. Ceylon and Burma occasionally yield topazes. Brazil is a famous locality, the well-known sherry-yellow crystals coming from Ouro Preto, formerly called Villa Rica, the capital of Minaa Geraes., where they occur in a kaolmitic matrix, resulting from the alteration of a mica-schist, which is regarded by Professor O. A. Derby as a metamorphosed igneous rock. Topaz occurs in the tin-drifts of New South Wales, especially in the New England district; it has been discovered in the Coolgardie goldfield, West Australia; and it is found also in the tinfields of Tasmania and on Flinders Island in Bass’s Strait. Fine topaz has been worked near Pike’s Peak in Colorado, and in San Diego county, California. The mineral occurs in rhyolite at Nathrop in Chaffee county and Chalk Mountain in Summit county, Colorado, and in trachyte near Sevier Lake, Utah. The occurrence of topaz in these volcanic rocks is very notable, and contrasts with its common occurrence in granites. It is found in like manner in rhyolite at San Luis Potosi in Mexico; and beautiful little limpid crystals accompany stream-tin at Durango. Common topaz occurs in coarse crystals at many localities. *A* columnar variety from the tin-districts of Saxony and Bohemia, and from Mt Bischoff in Tasmania, is known as pycnite *(πvκvός,* dense) ; whilst a coarse opaque topaz from granite near Falun, in Sweden, has been termed pyrophysalite *(πυρ,* fire; φυσαω, to blow), in allusion to its behaviour when heated.

“ Oriental topaz ” is the name sometimes given to yellow corundum, a mineral readily distinguished from true topaz by superior hardness and density. Yellow and smoke-tinted quartz, or cairn- gorm, is often known as “ Scotch topaz ” or " Spanish topaz,” according to its locality; but these, on the contrary, are inferior in hardness and density. The chief differences between the three minerals may be seen in the following table, in which they are arranged in order of hardness, density and refractivity:—

|  |  |  |  |
| --- | --- | --- | --- |
|  | Scotch Topaz. | True Topaz. | Oriental Topaz. |
| Hardness | 7 | 8 | 9 |
| Specific gravity | 2·6 | 3∙5 | 4 |
| Refractive indices | 1·54, 1∙55 | 1∙61, 1∙62 | 1∙76, 1∙77 |
| Crystallization | Hexagonal | Orthorhombic | Hexagonal |
| Chemical composition | SiO2 | Al2F2SiO4 | Al2O3 |

(F. W. R.\*)

**TOPEKA,** a city and the county-seat of Shawnee county, Kansas, U.S.A., the capital of the state, situated on both sides of