Catalogue of Type Mineral Specimens (CTMS)

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The Catalogue of the Type Mineral Specimens (=CTMS) is an ongoing project of the IMA-Commission on Museums (CM). This report is an annex to the report of 2002.

1. Alterations of the CTMS during the last two years

1.1. The list of the valid mineral names

The CTMS includes, as a matter of principle, all mineral species with valid names, confirmed by the CNMMN. The main alteration of the CTMS is a result from inserting the new published mineral species (updated until 2002/2003 = about 200 names more since the end of 1999). But the alteration is also a result of renaming old minerals, subsequently to new definitions of a mineral group: Examples: **zeolites, labuntsovite-group** minerals, **högbomite-nigerite-taaffeite** minerals etc. Some alterations result from the discreditations of mineral names (only few). The newly discredited minerals will be tranfered to the special list "Minerals not recorded in Fleischer's Glossary of Mineral Species (1999 resp. 2004) but documented by type specimens".

1.2. New information concerning the type mineral specimens

From some museums we got information concerning new stored type specimens, or additional information to earlier registered type specimens. The most additional information has sent us Dr. Lydie Touret from the ENSM, Paris (Ecole Nationale Supérieure des Mines de Paris): the reference numbers and the donators of type specimens (more than 200), as well as all designations of the typelocalities. Other information are originating from Australia, Canada, Germany, Italy, Japan, and Switzerland.

1.3. Mineral Species discovered in Canada (and Species named after Canadians)

"The Canadian Mineralogist" published under this title 2003 the Special Publication No. 6, 372 pages. Previously to the publication of the book we had the possibility to exchange relevant informations with the author Laszlo Horvath.

2. The correct notation of the typelocality (TL) of a new mineral species

M+M-5 Meeting in Paris, September 2004. - The correct notation of the typelocality for a new mineral species was one of the main subject to be discussed on the CM-meeting in Paris. Unfortunately many notations of TL in the CTMS (but also in many international compilations) are geographically and/or geologically unsatisfactory.

2.1. The geographical definition of a typelocality

The typelocality in the CTMS is given at the end of a hierarchy of geographical terms. The first ones are (also) administration units. Three examples:

- **Jonesite:** TL = U.S.A. (country), California (state), San Benito (county), Santa Rita Peak (1 mile S of), San Benito River (headwaters of the), **Benitoite Gem mine**
- **Versiliaite:** TL = Italy (country), Toscana (regione), Lucca (province), Alpi Apuane, Stazzema (NE of), **Buca della Vena mine**

- **Blixite:** TL = Sweden (country), Värmland (län = region), Filipstad (kommun = area), Filipstad (village, town), **Långban** Mn-mine (Amerikastope)

If possible should be added specifications to the finding position in the mine, the quarry etc. Also should be mentioned if a mineral originate from a boring (many), from a dump (many), from a moraine (14 species alone from the Dara-Pioz Glacier, Tajikistan), from a bat cave (many), from other guano deposits etc. - or from an old mineral collection.

Undisclosed Typelocalities
Unfortunately a lot of TL are not exactly known. There are several reasons for that.
In the original publication is no TL recorded but only an "area". Examples: Middle Asia (without any specification, "the worst case"); China, Sichuan Province; Argentina, La Rioja Province, Sierra de Umango. In these cases it is (was) not always possible to define later the exact TL in a satisfactory manner.

Wrong Typelocalities in the first original publication
The examples for these cases concern old publications, and all mineral species from Switzerland. In fact the wrong TL are not far from the real ones. It is to assume, that other similar examples exist also from elsewhere:

- **Milarite** (Kenngott 1870): TL = Switzerland (country), Graubünden (canton), Tavetsch (area), **Val Giuv** (formerly Val Giuf) – and *not Val Milar.*
- **Paragonite** (Schaffhäutl 1843): TL = Switzerland (country), Ticino (canton), Leventina (a main valley),Val Chironico (N-side of the), **Alpe Sponda/Pizzo Forno** – and *not* Val Chironico *(S-Side), Monte Campione* (this name does no more exist on the swiss maps, but [Alpe] Campioni).
- **Tremolite** (de Saussure 1796): TL = Switzerland (country), Ticino (canton), Leventina (a main valley), (Alpe) **Campolungo** – and *not St. Gotthard* (area), *Val Tremola*. - Remark: Tremolite in dolomite does not exist in the Val Tremola; the PT-conditions of the alpine metamorphism were to low to produce this mineral in contrary to the area of Campolungo. A swiss petrologist is able to determine without any doubt the type specimens of H.B. de Saussure, stored in the museum of Geneva, as identical with the ones from Campolungo.

Discredited Typelocality
This concerns a good defined typelocality from where a mineral has been once first described; but later turned out, that the repective mineral does not exist there.

- **Lillianite** (Keller 1889). TL = USA (country), Colorado (state), Lake (county), Leadville District, Printer Boy Hill, Lillian mine. - The mineral found at the Lillian mine is a mixture of galena, bismuthinite, and argentite with the aproximate composition of the today accepted "lillianite" (Emmons et al. 1927). – New definition of the species by Ontoev D O in: Doklady Akad. Nauk SSSR (1959) 126 (4), 855-858 (and 1 table). New TL = Russia, Transbaikalia, Chita Oblast, Kalanguy (~ 20 km NNE of), Bukuka W-mine.

Lost Typelocalities
Several TL are no more accessible today. There are many reasons for that, and when this is known, it should be mentioned in the CTMS. No more accessible are for example many closed mines, the recultivated quarries, the exact old boring places. Here a special example:

- The TL of **Rowlandite-(Y), Thorogummite,** and **Yttrialite-(Y)** are today innundated by the Buchanan artifical Lake along the Colorado River, Texas.

Unusual Typelocalities (with special remarks in the CTMS)
The following list could be considerably completed:

- In the burning dumps of coal mines and quarries of the Chelyabinsk Basin, S-Urals (Kopeisk, Korkino, and Krasnogorsk) have been found and described more than 40 new compounds. But only 7 of them are today accepted (by the CNMMN) as "real" mineral species: **Dmisteinbergite, Efremovite, Fluorellestadite, Godovikovite, Rorisite, Srebrodolskite,** and **Svyatoslavite** (not clear is the acceptance of the "minerals" Bazhenovite and Tinnunculite).
- A fire of an ore body induced in the United Verde Cu-mine, Yavapai County, Arizona, in the vents, under fumarolic conditions, the formations of new mineral species, mainly ferric iron sulfates: **Butlerite, Guildite, Ransomite**, **Yavapaite,** but also elementary **Selenium** and the inadequately described Lausenite and Jeromite.
- Incrustations or efflosescences on or in man-made metallic or wooden objects: **Arcanite** (Santa Ana mine, California; in a pine railroad tie), **Calclacite** (IRSNB, Bruxelles; fibrous efflorescence on certain limestones, stored in wooden drawers), **Chalconatronite** (Harvard University Art Museum; greenish-blue incrustations on ancient bronze basket from Egypt), **Hydroromarchite** and **Romarchite** (Winnipeg River, Boundary Falls; alteration products on tin pannikins).
- New mineral species found on the Ocean floor: **Caminite**: Pacific Ocean, East Pacific Rise at 21° N, on the wall of a black-smoker chimney. **Diaoyudaoite**: China, East China Sea, Senkaku Islands, Daioyu-dao Island (near), in a heavy mineral fraction of the surface layer of sea-floor muds, taken at about 1500 m water depth near Diaoyu-dao. **Earlandite:** Antarctica, Weddell Sea, „Scotia" Station 417, at 2580 metres depth. **Isocubanite**: Pacific Ocean, East Pacific Rise, found in modern black-smokers sulfide chimney. **Weddellite:** Antarctica, Weddell Sea, deep-sea deposit.
- Special lists have been made for all minerals discovered first in meteorites (**CTMS-Meteorites** = 51 species) and in lunar rocks (**CTMS-Moon** = 5 species)

2.2. The occurrence of a new mineral species

The definition of the geological conditions which caused the new mineral species at its typelocality is **not yet introduced in the CTMS**. But very often the knowledge of these conditions is very essentiel. For this reason we tried to enlarge in this sense some of the CTMS-country lists: Japan, Switzerland, China (often for geographically undisclosed TL) – and on other lists only sporadically under "Remarks".

- **Grimselite:** Occurrence = formed by efflorence on granitic walls in a gallery, which has been excavated about 20-30 years before the mineral has been discovered. The mineral is microcristalline, yellow, watersoluble and associated with schröckingerite, an other secondary U-bearing mineral (Switzerland).
- **Haradaite:** Occurrence = platy crystals in veinlets cutting rhodonite-Mn-goldmanite ores of the metamorphosed manganese ore deposit (Japan)
- **Chromium:** Occurrence = in artificial heavy sands of massive ores in the contact zone between ultrabasic rocks and siliceous marble with PGM, pyrrhotite, pentlandite and chalcopyrite (China, Sichuan Province, undisclosed TL).
- **Magnesiostaurolite:** Occurrence = formed by high pressure metamorphism in the Dora Maira massif as inclusions in pyrope megablasts with talc, clinochlore, kyanite, and rutile (Italy).
- **Zykaite:** Occurrence = from the dump of the ancient Ŝafary mine; fillings in cavities after leaching sulfides (Czech Republic)
- Until now only one mineral has been described out of a fluid inclusion. **Diomignite:** Canada, Winnipeg Division, Lac du Bonnet area, Tanco pegmatite mine. REM: The species occurs as daughter minerals in fluid inclusions of spodumene.

Under the key-word “occurrence” could be added many informations concerning the surrounding rocks, the type of mineralogical formations (authigenic, hydrothermal ore veins, alpine fissures, metamorphous, efflorescence, volcanic emanations, placer, etc.).

2.3. The quality of a typelocality should be classified! A proposal and a first draft

- **A.** Typelocalities with exact geographical and geological definitions. With the GPS it should be today even possible to insert the exact (!) coordinates of the geographical longitude and latitude. It is possible to refund a respective typelocality with the given definitions. - We hope, that most of the known typelocalities belong to this type A. – **Example**: Japan, Honshu, Okayama Pref. (W), Bitchū town (syn. Bicchu), Fuka mine. - It is the typelocality with the bigest amount of new species from Japan: Underground mine for very pure calcite, which was used by a toothpaste company. Interesting species occur in high-temperature, boron-bearing, very low-Fe calcium-silicate skarn, between the calcite orebody and igneous intrusives. New species: **Bicchulite, Clinotobermorite, Fukalite, Henmilite, Kusachiite, Morimotoite, Okayamalite, Oyelite, Parasibirskite, Takedaite, Wollastonite-7T.**
- **B.** Typelocalities with good geographical and geological definitions – but with a loss of there accessibilities. – **Examples**: see above under 2.1. “Lost Typelocalities”.
- **C.** Typelocalities with exact geographical definitions but with uncertainities about the origine of the mother rock of the new mineral species. There are several possibilities for these cases: Placer deposits, blocks of a moraine, isolated boulders etc. – **Example**: **Ferrohögbomite-2*N*2*S***: Algeria, Sahara, Grand Erg Oriental, Aïn Taïba (from a isolated rock of unknown provenance); associated minerals are ilmenite, pseudorutile, hercynite, magnetite (the last largely replaced by hematite). It seams to be a typical mineral of a metamorphic environment (T > 500° C). Described by Heiny C, Gnos E, Grobety B, Armbruster T in Eur. J. Mineral. (2002) 14, 957-967. 5.LC.105.
- **D.** Typelocalities with insufficient geographical definitions but with a good definition of the geological environment and the type of the mineral deposit. It exist a lot of such typelocalities! – **Examples**. **Borax:** China, Tibet, “since very early times from the salt lakes in Tibet”, Agricola G in De re metallica (1546) Lib. 7, p. 193. – **Clinochalcomenite:** “In the brecciated zone of a Devonian carbonaceous slata in a U-mineralization area in China“, probable from the Gansu Province. Described by Luo Keding, Wei Jun, Zhang Jingyi, Gu Qifang in Kexue Tongbao (1980) 25, 85-89
- **E.** Typelocalities with unsufficient geographical and geological definitions. – **Example**: **Kalicinite** (with good type specimens!): Switzerland, Valais, Chippis, “under a dead tree”, described by Pisani F in C. R. Acad. Sci., Paris (1865) 60, 918.