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# NEW KINDS AND NEW FINDS OF MINERALS FROM CZECHOSLOVAKIA

Quite a number of new minerals was discovered on the territory of Czechoslovakia during the last two decades. The mineralogical wealth of this state was very enriched in this manner. Among these finds there are eight quite new kinds of minerals, as the result of the scientific investigations carried out namely by the younger generation.

The majority of the finds of new minerals was discovered by the research on different localities in the field, the minority is the result of the scientific revision of the older material from the collections of research-institutions e.g. universities, museums etc. — Brief characteristic of all these finds and their registration are the subject of the next report.

## NEW KINDS OF MINERALS

### COPPER ARSENIDES FROM KRKONOŠE MTS.

During 1958—1961 three very rare new kinds of copper arsenides were discovered and investigated by Z. JOHAN on the dumps of the old ore-mines N od Če ný Důl, E of Vrchlabí in Krkonoše Mts. (Giant Mts.) in NE Bohemia. They can be found in fine-grained aggregates in the carbonate-veins traversing the skarn and erlan rock intercalations in the complex of mica-schist.

**Koutekite** (1958), probably hexagonal $Cu_2As$. Its microscopic granular aggregates or isolated grains are dark blue in colour and macroscopically very rare. G = 8.48. Named after the Academician J. KOUTEK, Charles University, Prague.

**Novákite** (1959), tetragonal $(Cu, Ag)_4As_3$. It forms dark or steel-gray fine-granular aggregates or impregnations in carbonate, mostly calcite-veins. Often associated with native arsenic it drives back the surrounding sulphides. G = 6.7, H = 3—3.5. Named after the Professor J. NOVÁK, Charles University, Prague.

**Paxite** (1961) probably orthorhombic $Cu_2As_3$ (from greek pax = peace). Its very fine-granular aggregates with metallic lustre are light steel-gray in colour with black streak. They tarnish very quickly and use to be associated with arsenic and silver. Its significant feature contrary to koutekite and novákite is the good cleavage. G = 5.3. H = 3.5—4.

**Molybdite.** — On the well-known molybdenite and cassiterite deposit in Krupka, N of Teplice in Krušné hory (Ore Mts.) in NW Bohemia, F. ČECH and P. POVONDRA (1963) discovered the natural $MoO_3$. This is a component of the so-called "molybdenum-ochers". It was called after the old name molybdite, for the first time used by R. P. GREGG and W. G. LETTSOM (1859) as a collective name for all molybdenum-ochers. Its light yellow-greenish, very fine tabular or needle-like crystals with adamantine lustre occurred in the quartz-veins in pegmatite body situated in the complex of orthogneiss. Molybdite originated probably as a product of the hydrothermal alteration of molybdenite.

**Kettnerite.** — A very rare tetragonal (Ca, F) (BiO) $CO_3$ — kettnerite, is chemically very related to beyerite (without F). It has been found and described by L. ŽÁK and V. SYNEČEK (1957) from the cavities of quartz-veins also in Krupka, like the molybdite. Its rare tabular microcrystals isolated or in groups are brown or lemon-yellow in colour, often associated with bismuth or bismuthinite, and can be found on the quartz-crystals. Named after R. KETTNER, professor of geology, Charles University, Prague.

**Lipscombite.** — The first natural occurrence of tetragonal (Fe, Mn) $Fe_2$ $(OH \mid PO_4)_2$ was found in the pegmatites veins of Otov, NW of Domažlice, SW Bohemia. F. ČECH, K. PADĚRA and P. POVONDRA (1961) give its detailed investigations. It forms massive, black, max. 4 cm thick veins with blue-green streak or also accumulations associated with quartz, garnet and sulphides.

**Bukovskýite.** — Probably monoclinic $Fe_2$ $(AsO_4)$ $(SO_4)$ $(OH).7\ H_2O$, from the old dumps of Kaňk, N of Kutná Hora, E Bohemia, at first described 1930 (F. ULRICH) and named „Arsendestinezite". F. NOVÁK, P. POVONDRA and J. VTĚLENSKÝ (1968) accomplished its new detailed investigations and named it after professor A. BUKOVSKÝ, who made its first chemical analysis. Bukovskýite forms botryoidal noduls (max. size 60 cm), light yellow-greenish in colour. G = 2,334. It originates with the alteration of arsenopyrite on dumps during several last centuries.

**Sekaninaite.** — An iron riche member of the cordierite series was described by J. STANĚK and J. MIŠKOVSKÝ (1964). It occurs in the well known pegmatite veins in granulite at Dolní Bory, N of Velké Meziříčí, W Moravia. Already for a long time its beautiful columnar or spindle-like crystals (max. size 50 cm), blue-violet in colour were found here. They are often considerably altered in chlorite. Sekaninaite contains 17.5—17.85 % of FeO (cordierite contains max. 15.31 % FeO), is higher indices of refraction than cordierite and G = 2,772. It represents a new extreme end-member of the cordierite series. Named after J. SEKANINA, professor of mineralogy, University J. E. Purkyně, Brno, the author of its first investigation and description.

## NEW FINDS OF MINERALS

### I. ELEMENTS

**Arsenolamprite.** — Z. JOHAN (1959) described together with the new arsenides-paragenesis also plate-like crystals of arsenolamprite, orthorhombic modification of arsenic native, from the old ore-mines of Černý Důl, E of Vrchlabí, NE Bohemia. Its black crystals are here associated with sulphides and arsenides in the carbonates vein.

### II. Sulphides and analogous minerals

**Moissanite.** — Minute blue-green or yellow-green tabular crystals, grains and fragments of the rare moissanite were discovered and described from the volcanic breccia situated between villages of Staré and Leská, SSE of Bílina, NE Bohemia by J. BAUER, J. FIALA and R. HŘÍCHOVÁ (1963). This is the third locality of this rare mineral in the world. Moissanite occurs in the limonite-layers of altered breccia.

#### The paragenesis of selenides

**Tiemannite** was the first rare Hg-selenide discovered in ČSSR. It was described by Z. JOHAN (1960) from the old mines of Černý Důl in Krkonoše Mts. as black or dark steel-gray fine-granular aggregates in veins of calcite.

From the carbonate-veins traversing the orthogneisses and hornstones complex of the crystalline schists of S Bohemia was described by A. BLUML, A. TACL and V. RUS (1964, 1966) a rich und mineralogically very interesting paragenesis of copper selenides. Between the villages of Lašovice and Předbořice, S of Krásná Hora on Vltava river, occur disseminated fine-granular aggregates of predominating **berzelianite** with the small amounts of **umangite**, **eucairite** (Ag), **clausthalite** (Pb), **tiemannite** (Hg) and only microscopic granular and uncertain **crookesite** (Tl, Ag). In the quite similar paragenesis, but in a greater quantity, occur copper selenides also in W Moravia, especially between the Town of Zďár on Sázava river and Pernštejn. They are investigated namely by M. KVAČEK, J. PLHAL, J. MATUŠKA and F. KUPKA (1963). In the carbonate-veins the selenides are associated with coppersulphides and pyrite. In a greater amount berzelianite prevails forming with other selenides great fine-granular or massive aggregates in carbonate. The main selenides-localities are four as follows: Bukov and Habří W of Pernštejn, Slavkovice and Petrovice WSW of Nové Město in Moravia. **Berzelianite** is associated with **umangite**, intergrowing the rare **clausthalite.** To the very rare selenides belong here: **crookesite**, **eucairite** (microscopic only) and also two new selenides: **eskebornite** and **tyrrellite** identified by M. KVAČEK (1965, 1967).

**Coloradoite** from the famous gold-bearing quartz veins of Jílové, S of Prague, was described by P. MORÁVEK (1957). Its rare dark brown isolated grains (max. size 8 mm) and granular aggregates grow to-

gether with gold native and tellurobismuthite. They are associated with sulphides in the dolomitic carbonate.

**Hawleyite,** was described by P. ČERNÝ (1957) from Bučník peak, SW of Komňa, ESE of Uherský Brod, SE Moravia, which is its second locality in the world. Associated with greenockite, gypsum, aragonite etc., it forms rare light yellow thin crusts in the cavities of the andesite-vein traversing the flysh-sandstones.

**Enargite,** till now in Bohemia uncertain, was described from three new localities in Slovakia. Its microscopic grains identified G. HALAHYOVÁ-ANDRUSOVOVÁ (1956) as inclusions in tetrahedrite of Dobšiná. Comparatively riche occurrence of enargite described M. RIEDER (1963) from old mines in Havraní dolina, NNE of Dobšiná (with tennantite) and M. ŠOUBA (1957) from the siderite-deposit of Gretl, S of Spišská Nová Ves. Enargite forms here columnar crystals (max. 5 mm in size), coarse fibers or aggregates with ankerite, quartz, hematite and sulphides.

**Polydymite** from the impregnations of epigenetic sulphides in a massive of gabbroid rocks of Kunratice, S of Šluknov, and Rožany, N of Šluknov, N Bohemia, was identified and described by V. HOFFMAN, F. KUPKA and Z. TRDLIČKA (1963). As a rare mineral polydymite forms grey microscopic grains or aggregates as fillings of the fissures namely of pyrrhotite.

**Wehrlite,** one of the rare minerals of the tellurobismuthite group was identified by J. SOBOTKA (1959) in quartz-veins of Libčice (old gold mine), SSE of Nový Knín, Central Bohemia. It occurs in minute rare silver-white grains or tabular crystals associated with gold and sulphides.

**Gudmundite** on its first occurrence was described by L. ŽÁK (1953) as small grains (max. size 5 mm), very similar to arsenopyrite in the antimonite-veins of Fiolník peak near Vlastějovice, WNW of Ledeč on Sázava river, E Bohemia. Its second occurrence was identified by K. PADĚRA (1956) as indistinct crystals or often fine-granular aggregates in antimonite veins between Pezinok and Pernek, N of Bratislava, W Slovakia.

**Skutterudite.** — Both till now known Co-Ni arsenides from Jáchymov in Bohemia were revised and investigated by F. MRŇA, D. PAVLŮ (1957 - - 1963) and M. KVAČEK (1965). There was found, that they contain less amount of As and have very variable relation Co to Ni. Therefore all specialists are of the opinion, that they deal with skutterudite, mostly with Ni-skutterudite in this case.

**Rezbanyite,** rare granular, steel-gray in colour, associated with sulphides, was for the first time identified by K. PADĚRA, V. BOUŠKA and J. PELIKÁN (1955) from the quartz-veins in phyllite-series near Dobšiná, E Slovakia. In similar paragenesis rezbanyite occurs on the siderite-deposit of Hummel, WSW of Košice, E Slovakia and was described by Š. BAJANÍK (1960). Its third occurrence was discovered by M. KODĚRA

(1965) as small rare grains, associated with chalcopyrite and other sulphides in the Rosalia-vein of Banská Hodruša near Banská Štiavnica, Central Slovakia.

**Geocronite.** — An uncertain find of only microscopic grain of this rare mineral described by G. PÁNTÓ (1940) from the abandoned antimonite--deposit in Čučma, N of Rožňava, E Slovakia. F. VRABKA and K. PADĚRA (1957) safely identified rare steel-gray crusts of geocronite on granular galena-veins of Bohutín, N of Příbram, central Bohemia. Its another occurrence discovered C. VARČEK (1965) in ore-deposit of Nižná Slaná, NW of Rožňava, E Slovakia. The rare small indistinct crystals or fine-granular aggregates are associated with sulphides in quartz-veins here.

**Meneghinite** was discovered in gold-bearing quartz-veins near Jílové (Radlík-vein), SSE of Prague, Central Bohemia. J. SOBOTKA (1959) described its small black-grey aggregates of columns of fine needles.

**Cosalite** from the anomal concentration of Bi-minerals on the gold--bearing veins of Jílové (Pepř mine), SSE of Prague, was described by P. MORÁVEK (1956). It forms small steel-grey, fine-granular aggregates. Minute columnar crystals (max. 1 cm in size) associated with sulphides discovered by J. H. BERNARD (1964) in the siderite-veins of Prakovce, SSW of Gelnica, E Slovakia.

**Kobellite,** similar to jamesonite, rare mineral, in steel-grey or needle--like or columnar crystals (max. 4 mm in size) was found on five localities. From the vein of quartz in Jílové (Pepř mine), SSE of Prague was described by P. MORÁVEK (1956). On the siderite-veins with quartz and sulphides in E Slovakia was identified by Z. TRDLIČKA and F. KUPKA (1957) in Smrekový vrch near Smolník, W of Košice, by Z. TRDLIČKA and V. HOFFMAN (1967) from Smolník-mine, by F. NOVÁK (1961) from Rožňava (Mária-vein), and finaly by J. VÁCLAV (1964) in David-vein of Henclová, S of Spišská Nová Ves.

## III. OXIDES AND CARBONATES

**Gahnite** occurrences were previously supposed to be a green spinel. Rare dark-green grains (max. 1 cm in size) were identified as gahnit by J. STANĚK (1960) in pegmatite-veins of Otov, NW of Domažlice, SW Bohemia. The same author described also abundant dark-green octahedrons or grains of gahnite (max. 5 mm in size) from the pegmatite of Maršíkov, NE of Šumperk, N Moravia.

**Gahnospinel** containing 21 percent of ZnO was described by J. VTĚLENSKÝ (1958) from the alluvion of Otava-river near Modlešovice E of Strakonice, S Bohemia. It occurs as minute blue-green octahedrons or its fragments (0.1—0.2 mm in size).

**Pyrophanite** was identified by L. ŽÁK (1967) from the deposit of pyrite and Mn-ores of Chvaletice, E of Kolín, E Bohemia. It occurs as fine veins in hornstone or rarely forms black tabular crystals (max. 10 mm in size) associated with the rare melanophlogite.

**Stibiconite** (hydroroméite) occurs as light-yellow powder forming pseudomorphoses after antimonite-crystals (max. size 3 cm). It was described by F. NOVÁK and F. KUPKA (1957) from the oxidation-zone of the antimonite-deposit in Nová Baňa, WSW of Banská Štiavnica, Central Slovakia.

**Microlite,** a rare accessory mineral of pegmatite was found in altogether five localities. Its yellow-brown crystals (max. 5 mm in size) and fine-granular aggregates described by F. ČECH and J. STANĚK (1960) from the lithium bearing pegmatite of Nová Ves, WSW of České Budějovice, S Bohemia. — By the same authors microlite was identified as minute brown grains in albite-pegmatite near Maršíkov (Scheibengraben), NE of Šumperk, N Moravia. In the lepidolite-pegmatite in Dobrá Voda, NE of Velké Meziříčí, microlite forms grey border round stibiotantalite-grains and was investigated by J. STANĚK (1962). From the albite-pegmatite veins of Dolní Bory, N of Velké Meziříčí, W Moravia, described P. ČERNÝ (1965) light-brown granular microlite. It forms very rare isometric crystals (max. 0.7 mm in size) also in the desilicated pegmatite-veins in Věžná, S of Bystřice on Pernštejn, NW Moravia and was described from here by F. ČECH (1963).

**Melanophlogite**; its second world-locality was described by L. ŽÁK (1967) in the Mn-ores deposit of Chvaletice, E of Kolín, E Bohemia. The transparent minute cubes (1—3 mm in size) occurred very rarely on the chalcedony-crusts in the cavities of the rhodochrosite-horizon here.

**Cryptomelane** was identified by P. ČERNÝ (1961) on the Mn-ore deposit of Přední Arnoštov, NNW of Jevíčko, NW Moravia. Its lath-shaped, fine-granular or compact aggregates, steel-grey in colour, occur as fillings of the fissure of the Permian sediments. It usually was associated with pyrolusite and calcite.

**Vernadite,** a rare mineral of the cryptomelane series, was discovered by powder pattern method and described by M. KVAČEK and A. PFEIFEROVÁ (1966) in the Devonian limestone in Javoříčko, WSW of Litovel, Central Moravia. Associated with pyrolusite it is similar to the reniform psilomelane.

**Ramsdellite,** macroscopically and also chemically similar to pyrolusite, was identified by E. BERNARDOVÁ and E. SLÁNSKÝ (1960) in the deposit of Horní Blatná, NNW of Karlovy Vary and in Přebuz, ENE of Kraslice, W Bohemia. Its black-grey compact or rodlike aggregates are associated here with pyrolusite and form impregnations in the red-brown quartz-veins.

**Wodginite** on its third locality of the world was found only once in the lithium-pegmatite near Krasonice, ENE of Dačice, W Moravia. Its brown grain (4×3 mm in size) occurs in albite associated with columbite-tantalite and was described by J. LUNA (1965).

**BLOMSTRANDINE** (priorite), a rare to allanite similar pegmatite mineral, was described by F. ČECH (1957) at the first time from pegmatite vein near Slavičky and also from the environs of Vladislav, E of Třebíč,

W Moravia. It occurs here as minute grains or columnar crystals (2—3 mm in size), dark brown in colour (also red-brown) with resinous luster.

**Montroseite**, very similar to goethite, was identified by B. V. BRODIN and J. M. DYMKOV (1961) in the famous ore-veins with calcite at Příbram, Central Bohemia. Its 1.5 cm thick black crusts with reniform surface, composed of lath-shaped needles in calcite are often associated with pitchblende.

**Huntite.** — The new mineral named ondřejite and described by J. V. KAŠPAR (1944) from the cavities of Devonian limestone of N Moravia, was newly revised and investigated by K. PADĚRA and P. POVONDRA (1964). These authors found, that original material from Zbrašov aragonite--caves is not a new mineral, but more a mixture of huntite with magnesite.

**Rosasite**, or better said mineral related to rosasite, was described by J. KOUŘIMSKÝ (1957) from the ore-vein near Vrančice, SSE of Příbram, Central Bohemia. Macroscopically very similar to malachite, it contains only traces of Zn, but access of Pb. Therefore it stands between rosasite and schuilingite. Its light blue-green needles and radiated or earthy aggregates occur in the cavities of the vein-quartz.

**Stichtite**, on its fifth world-locality, was investigated by J. ULRYCH (1966) from serpentine body of Slatinka, N of Letovice, Central Moravia. On the fissures of this rock we find thin layers of pink-violet stichtite composed of minute tabular crystals (max. 1.5 mm in size). It is associated namely with antigorite and chrysotile.

**Hambergite** occurring as colourless or grey-whitish grains in quartz of the lithium-pegmatite near Sušice, SE of Klatovy, SW Bohemia, was identified by J. MIŠKOVSKÝ (1955). It was described also by F. ČECH (1957) from the lithium-pegmatite vein of Ctidružice, SSE of Moravské Budějovice, SW Moravia. It occurs here associated with bertrandite in the cavities after the decomposed beryl crystals.

## IV. SULPHATES AND PHOSPHATES

**Brochantite** occurrences in Czechoslovakia were uncertain till now. Its first safely identified find was described by F. ČECH (1954, 1957) from the copper-ore veins of Ludvíkov, SW of Vrbno, N Silesia. The minute emerald-green columnar, rarely also tabular crystals (max. 1 mm in size) associated with copper-minerals were found in the cavities of vein quartz. In similar paragenesis foliated bronchantite was described by F. ČECH (1961) from the old copper-mines of Borovec near Štěpánov, E of Bystřice on Pernštejn, NW Moravia.

**Cyanotrichite** (lettsomite) was described by F. ČECH and P. LÁZNIČKA (1965) as rare azur-blue fibrous aggregates of minute needle-like crystals in cavities of vein quartz. Its locality are the vast old dumps of the abandoned copper-mines of Lubietová-Podlipa, NE of Banská Bystrica, Central Slovakia.

**Linarite**, a rare secondary mineral, was described from two localities. Its minute or microscopic tabular crystals deep blue in colour occurring in cavities of limonite from the abandoned mines of Nová Ves, N of Rýmařov, N Moravia, were identified by J. SEKANINA (1951). B. FOJT (1959) discovered and described its druses of columnar crystals from new mined ore-veins of Zlaté Hory, ESE of Jeseník, N Silesia. Linarite occurs here in the cavities of limestone and was previously supposed to be azurite.

**Betpakdalite**, a new mineral from the so called molybdenumochers group, on its second locality of the world was described by F. ČECH (1962, 1963). Its lemon-yellow thin layers coating the walls of cavities in vein quartz were found in the wellknown deposit of Krupka, N of Teplice, N Bohemia.

## NEW FINDS OF PHOSPHATES FROM THE BOHEMIAN AND MORAVIAN PEGMATITES

Many new finds of phosphates were discovered in Czechoslovakian pegmatite veins during last years. Basic and waterless phosphates, containing mostly Fe, Mn and Ca predominate ammong them. Crystallized minerals are very rare, because the phosphates from mostly only irregular granular crystalline accummulations, rarely also veins in pegmatite veins. They are often closely mutually intergrown and therefore their investigation is sometimes difficult. Their **main localities** are situated in W Bohemia in the environs of Domažlice town (namely Otov, Ohnišťovice, Meclov — villages NW of the town) and near Vernéřov, E of Aš town. Very riche localities are in W Moravia, especially N of Velké Meziříčí (the villages of Dolní Bory, Cyrilov, Vídeň and Rousměrov), Krasonice ENE of Dačice, and in N Moravia Maršíkov, NW of Šumperk.

**Hurlbutite** on the fourth locality of the world, occurring as small light pink, fine-granular aggregates associated with rare scholzite, in albite with muscovite, is known from Otov, N of Domažlice. It was described by J. STANĚK (1966).

**Heterosite** was uncertain in Czechoslovakia for a very long time. The first occurrence was safely identified by J. STANĚK (1955), as lamellar intergrowth with graftonite from Cyrilov, N of Velké Meziříčí. J. LUNA (1962) described its dark brown granular aggregates from lithium-bearing pegmatite of Krasonice. Red-violet and violet-brown heterosite was identified by M. NOVOTNÝ (1956) in Ohnišťovice. J. STANĚK (1960) found heterosite associated with triphyline and graftonite, all as the most common phosphates in Otov.

**Ferrisicklerite**, as a green and brown border round the accummulations of phosphates was described by M. NOVOTNÝ (1956) from Ohnišťovice (Větrný peak). It was also mentioned by Z. VEJNAR (1965) from Meclov and as a probable mineral by J. LUNA (1962) from Krasonice, Moravia.

**Sarcopside** in shape of light brown columnar aggregates from Domažlice (Veselá peak), uncertain till now, was safely identified by F. ČECH,

K. PADĚRA and P. POVONDRA (1961). They describe it also from Otov, where it is associated with graftonite and garnet. Its another occurrence is mentioned by J. STANĚK (1967) from Dolní Bory.

**Graftonite** was known associated with sarcopside from Domažlice and safely determined by F. ČECH, K. PADĚRA and P. POVONDRA (1962). In Cyrilov, W Moravia, graftonite is very common as brown-red granular aggregates, described by F. ČECH, P. POVONDRA and J. STANĚK (1964). It was identified by X-rays method also in the granite from Přibyslavice, E Bohemia, and described by F. ČECH, K. PADĚRA and P. POVONDRA (1962). Granular, pink and brown graftonite, associated with triplite, triphyline and heterosite, is very abundant in Ohnišťovice and Otov, where it was identified by M. NOVOTNÝ (1956).

**Alluaudite,** quite common with triphyline in accummulations of phosphates. The mineral was identified for the first time by J. STANĚK (1955) from Cyrilov, W Moravia. Its detailed investigations by J. STANĚK (1967) were made on the material from Dolní Bory. It occurs here as fine granular or massive dark green aggregates associated with sarcopside.

**Hübnerkobelite,** chemically related to alluaudite, as an uncertain mineral only, was mentioned from Cyrilov by J. STANĚK (1955) and by F. ČECH and K. PADĚRA (1958) from Přibyslavice, E Bohemia.

**Griphite,** uncertain only, dark-brown in colour, was found once near Otov and mentioned by F. ČECH, K. PADĚRA and P. POVONDRA (1961).

**Wagnerite** was described by J. STANĚK (1965) from Dolní Bory. It forms white-grey, 1—2 mm thin coatings on quartz, associated with pyrite and garnet. It was found once only.

**Zwieselite,** similar to triplite, occurs as massive dark-brown aggregates near Cyrilov and was identified by F. ČECH, P. POVONDRA and J. STANĚK (1964). Its another occurrence was described from Dolní Bory by J. STANĚK (1966).

**Wolfeite,** chemically related to triploidite ($Fe^{\cdot\cdot} > Mn^{\cdot\cdot}$), was mentioned from Otov by F. ČECH, K. PADĚRA and P. POVONDRA (1961) and it was analyzed as so called „triplite" from Cyrilov by F. KOVÁŘ and F. SLAVÍK (1900).

**Scorzalite,** similar to lazulite, was identified as a very rare mineral from Dolní Bory by J. STANĚK (1966). Its fine, deep-blue fine-granular or massive coatings were found on the fissures of the pink andalusite with muscovite.

**Lipscombite,** chemically related also to lazulite, was known only as artificial till now. F. ČECH, K. PADĚRA and P. POVONDRA (1961) published detailed description of its first natural find of the world from Otov. Natural lipscombite forms massive, black aggregates with blue-green surface as veins (max. 4 cm thick) or accummulations with sulphides garnet and zircon in quartz. In its cavities small druses of the rare huréaulite crystals and clinostrengite were found.

**Rockbridgeite,** macroscopically similar to dufrenite, but chemically related to lipscombite, was found for the first time near Cyrilov (Moravia) and described by J. STANĚK (1955). Its columnar or fibrous aggregates are brown in colour. It is also possible, that in this case the mineral is frondelite. Rockbridgeite was mentioned also from Dolní Bory by T. KRUŤA (1965), from Otov by F. ČECH, K. PADĚRA and P. POVONDRA (1961) and at last from Přibyslavice, E Bohemia, by F. ČECH and K. PADĚRA (1958).

**Augelite** from its second occurrence in Europe was described from Dolní Bory by J. STANĚK (1953) and from Otov (1960). Only one yellow-grey grain was found in Otov till now. Blue or blue-grey grains of augelite in amblygonite were found very abundantly near Vernéřov, NNW of Cheb, W. Bohemia. They were identified and described by F. ČECH (1962).

**Crandallite.** — Its only one locality was described by F. ČECH (1962). In the deposit of Sn and Li-ores near Vernéřov, W Bohemia, it forms white or bluish granular aggregate associated with augelite and apatite.

**Huréaulite** was described by F. ČECH, K. PADĚRA and P. POVONDRA (1961) from Otov. Rare druses of its minute light pink crystals or fine granular aggregates are situated in the cavities of lipscombite.

**Scholzite** was identified once only by J. STANĚK (1966) in Otov, its third occurrence in the world. It forms fine whitish coatings with small crystals (max. 0.5 mm in size) on the sphalerite crystals in the druse-cavity of pegmatite. The mineral originated by the alteration of sphalerite.

**Clinostrengite** was discovered by J. STANĚK (1955) in Cyrilov. It occurs as small (max. 1 mm in size) indistinct pink crystals, associated with strengite in the cavities of the pegmatite veins. Its light pink small crystals are mentioned also from Otov by F. ČECH, K. PADĚRA and P. POVONDRA (1961).

**Messelite,** a doubtful mineral till now, was investigated in detail from granite of Přibyslavice, S of Čáslav, E Bohemia, by F. ČECH and K. PADĚRA (1958). It was described from the phosphate accummulations, associated namely with triphyline, apatite and vivianite. Granular aggregates of messelite, pink or whitish-green in colour, surround the grains of triphyline here. A replacement of triphyline by messelite is common here.

**Fairfieldite** was identified by J. STANĚK (1955) from Cyrilov only once till now, as small yellow grains on triplite. A mineral related to fairfieldite was described from Otov (Větrný peak) by M. NOVOTNÝ (1956), in small tabular crystals (max. 1 mm in size), in the cavity of the phosphate accummulation with graftonite.

**Laueite** was described by F. ČECH and K. PADĚRA (1958) from Otov. It is very rare in cavities of phosphates in small, yellow or yellow-brown columnar crystals (3 mm in size). It often occurs with berounite and dark green rockbridgeite. Also J. STANĚK (1965) mentioned a find of

yellow-brown laueite in the cavities of quartz in Dolní Bory, W Moravia.

**Mithridatite,** chemically related to bořickýite, from Otov was described by F. ČECH, K. PADĚRA and P. POVONDRA (1961). It was relatively abundant here, occurring with lipscombite as accummulation or veins in quartz. Its dark green-brown radial fibrous aggregates were found on the dumps. Mithridatite was mentioned also by J. STANĚK (1963) from Cyrilov.

■

**Isokite,** described for the first time from Isoko in Rhodesia, was identified also by D. J. FISHER (1957) from Horní Slavkov (form. Schlaggenwald), SSW of Karlovy Vary, W Bohemia. The author found isokite as a product of the hydrothermal desintegration of triplite. Isokite is fine granular, light brown in colour and contains remnants of triplite here.

**Vésigniéite,** a light yellow-green basic Ba-Cu vanadate, was found during 1953—1954 in three Czechoslovakian localities. It was found here before its first description by C. GUILLEMIN (1955) from various localities in USSR and Thuringia. K. PADĚRA and Z. JOHAN (1957) described it from the deposit of Vrančice, SSE of Příbram, Central Bohemia, from the melaphyre rocks near Lomnice on Popelka river, NE Bohemia, and also in the carbonate noduls of Permian sediments in Horní Kalná, N of Nová Paka, NE Bohemia. Vésigniéite occurs as very small light yellow-green foliated aggregates in all these localities.

**Gorceixite** was identified by P. POVONDRA and E. SLÁNSKÝ (1966) in altered phonolite of Vysoké Březno and Malé Březno, SW of Most, NW Bohemia. Microscopically very similar to the related kaolinite it occurs in the thin white or brown-red veins.

**Strunzite** from the deposit of Mn-ores near Morašice, SW of Přelouč, E Bohemia, was originally described by F. SLAVÍK (1928) as cacoxenite. But after C. FRONDEL (1957) had identified the new mineral strunzite from the famous Hagendorf in Bavaria, F. Čech and E. SLÁNSKÝ (1959) revised the old determination and proved, that the mineral from Morašice is strunzite indeed. It occurs as straw-yellow aggregates of radial fine fibers (max. 5 mm in size).

**Planerite** was newly proved to be an independent kind of mineral after its detailed investigations by F. ČECH, P. POVONDRA and E. SLÁNSKÝ (1961). They identified it in th old abandoned limonite-mine of Poniklá on Jizera river, NNW of Jilemnice, NE Bohemia, where this mineral was originally supposed to be turquoise. It occurs as azure-blue or greenish-blue thin layers of fine parallel fibres with botryoidal surface on quartz or limonite.

## V. SILICATES

**Willemite** was described for the first time by A. A. MALACHOV and J. KOUŘIMSKÝ (1956) from the polymetallic-ore deposit in Vrančice, SSE of Příbram, Central Bohemia. It occurs as white or light grey,

short prismatic, striated crystals with vitreous luster or radiated, granular and massive aggregates. There are known three generations here. Willemite was found associated with native silver and chalcocite.

**Tephroite** was at first mentioned microscopic only by J. KRATOCHVÍL (1968) from Chvaletice deposit, E of Kolín, E Bohemia. J. POKORNÝ and F. KUPKA (1957) described it from Zdechovice, NNE of Čáslav, E Bohemia, in detail. Tephroit occurred as small dark brown grains or granular aggregates, associated with garnet, rhodonite and Mn-anthophyllite in the core from the contact deposit of Mn-ores with pyrite.

**Oyamalite** was only mentioned at the first by E. BURKART (1953) from pegmatite vein of Dolní Bory, N of Velké Meziříčí, W Moravia. P. ČERNÝ (1959) described in detail the second find of oyamalite from pegmatite in serpentine rock body of Věžná, S of Bystřice on Pernštejn, NW Moravia. The metamict oyamalite occurs as radial columnar aggregates or short prismatic crystals (max. 5 mm in size), grey-black in colour on monazite or ilmenorutile. Its surface is usually whitish grey.

**Bismutoferrite**, a long time uncertain mineral, was identified by F. ČECH (1966) and investigated in detail from four occurrences in the W of Krušné hory (Ore Mts.). It is very common here, associated namely with native bismuth. It occurs as dirty or greenish-yellow pulverulent or earthy aggregates in veins or as thin coatings on quartz. Its localities are: Jáchymov, Háje (form. Zwittermühl), NW of Jáchymov, Smrkovec (form. Schönficht), NNW of Mariánské Lázně and Horní Rotava, SE of Kraslice.

**Chapmanite**, macroscopically rather similar to nontronite, was found on three localities. The first of these was between Smilkov and Plachova Lhota villages, SSW of Votice, Central Bohemia, and it was described by F. ČECH and P. POVONDRA (1963). Chapmanite occurs as olive-green or yellow compact or earthy thin veins and coatings in graphitic gneiss. J. SOBOTKA (1964) identified another similar locality of chapmanite in the abandoned antimonite-mines in gneiss near Boněnov, SSE of Mariánské Lázně, W Bohemia. The same author described (1965) the third locality of this mineral in the abandoned antimonite-mines near Chříč, SSW of Rakovník, W Bohemia. Chapmanite of this locality was previously supposed to be a new mineral named höferite.

**Ilvaite** (lièvrite) was described by H. REH (1932) as a rare and only microscopic mineral from hematite deposit of Vysoká Pec village, E of Kraslice, W Bohemia. Its macroscopic samples were identified in the old mines in magnetite-bearing skarn near Županovice, SSW of Jemnice, W Moravia. D. NĚMEC (1964) described its fine-granular or massive black aggregates associated with calcite from the fissures of skarn, where they occur rarely only. The material for investigation came of the core from the depth of 200 m. Ilvaite from this locality is a rare case of its secondary origin.

**Pumpellyite** was identified and described by S. VRÁNA (1966) at three localities. The first two: Ždiarska dolina (valley), S of Liptovská Teplič-

ka, and Kvetnica, S of Poprad, are in the amygdaloidal melaphyre rocks in the Nízké Tatry Mts., W Slovakia. Pumpellyite occurs here as stripes of radial aggregates grey-green in colour, associated with epidote, calcite and quartz in veins. Very interesting is the occurrence of pumpellyite on its third locality in the valley of Rakový potok (creek), NNE of Bratislava, W Slovakia. It occurs on the fissures of the polymict breccia as borders of the fillings, associated with axinite, calcite and actinolite. There is the second association with axinite known in the world.

**Milarite**, a very rare mineral of pegmatite veins was identified on two localities. P. ČERNÝ (1960) described it from pegmatite vein traversing serpentine body near Věžná, S of Bystřice on Pernštejn, NW Moravia. Milarite occurs as acicular or prismatic colourless crystals (max. 15 mm in size) or radial aggregates on quartz, microcline-perthite or in the cavities after crystals of decomposed beryl. J. STANĚK (1964) described four small crystals of milarite only (max. 4 mm in size) from the well known locality near Maršíkov, NE of Šumperk, N Moravia. They occur on the druses of crystallized tourmaline and bertrandite in cavities of pegmatite vein.

**Epididymite** on its third occurrence of the world was described by P. ČERNÝ (1963) from the desilicated pegmatite vein traversing serpentine body near Věžná, S of Bystřice on Pernštejn, NW Moravia. This locality is its first other occurrence than in alkaline pegmanites. Epididymite occurs here as a product of the hydrothermal decomposition of beryl and forms small white fibrous aggregates.

**Stokesite** on its second and third world-localities was mentioned by P. ČERNÝ (1965) from pegmatite vein near Věžná, S of Bystřice on Pernštejn, NW Moravia. It was described in detail by F. ČECH (1961) from lithium-bearing pegmatite of Ctidružice, SSE of Moravské Budějovice, SW Moravia. It occurs as thin, white microscopic fibrous fillings in the fissures of cassiterite crystals. Stokesite was identified roentgenometrically and by spectrographic analysis.

**Stevensite**, or better said the mineral similar to stevensite, was described by J. BRADNA and Z. DOUBEK (1963). It occurs as white or yellowish product of decomposition of natrolite in the cavities of basalt rocks of Veliš peak near Jičín, NE Bohemia.

**Hyalophane** was discovered on three localities of the pyrite and Mn-ores deposit in the area of Chvaletice, E Bohemia. The first of these was described by L. ZÁK (1957) from Litošice, NE of Čáslav. Light green-grey granular aggregates of hyalophane, associated with tremolite-asbestos, rhodochrosite and pyrite occur here in Algonkian graphitic schists. Quite similar occurrences of granular, white or pinkish hyalophane were described also by F. NOVÁK and V. HOFFMAN (1960) directly from Chvaletice and by Z. TRDLIČKA (1964) from Sovolusky, ENE of Čáslav.

**Cancrinite** was identified by J. KLOMÍNSKÝ (1961) from the massif of granodiorite near Čistá, SW of Rakovník, W Bohemia. It occurs only

as microscopic, white or pale-pink grains in the veins of biotite alkaline syenite.

**Helvite** occurs as dark brown or black grains (max. 1 cm in size), similar to cassiterite, associated with microcline-perthite, albite, apatite and other minerals in pegmatite vein near Sušice, SSE of Klatovy, SW Bohemia. It was described by F. ČECH and F. NOVÁK (1961). More common finds of helvite were identified by F. NOVÁK and J. JANSA (1963, 1965) in the deposit of Mn-ores in Chvaletice, E of Kolín, E Bohemia. Yellow or yellow-brown fine-granular aggregates of helvite occur in dark-grey hornstone rock. Helvite contains 10 percents of beryllium here.

**Mordenite** (ptilolite) was described in Czechoslovakia for the first time as ptilolite by B. BOBKOVÁ (1932) from the fissures of amygdaloidal melaphyre rocks near Zďárek, SSE of Liberec, N Bohemia. It was associated with chalcedony, quartz, calcite and barite here. P. ČERNÝ (1967) identified this mineral as mordenite from the fissures of melaphyre rocks at Kozákov-peak (Votrubec-quarry), E of Turnov, NE Bohemia. Mordenite is here a member of a riche zeolites paragenesis and occurs as white grey, needle-like crystals (max. 8 mm in size), associated with fine crystals of heulandite, chabasite, analcite and other interesting zeolites.

**Wellsite,** morphologically similar to the polysynthetic compounds of harmotome or phillipsite, was described from Czechoslovakia on its third world-locality. Its rare white small, often skeleton crystals, sometimes intergrown through with calcite, occur in cavities and fissures of the oligoclase vein near Věžná, S of Bystřice on Pernštejn, NW Moravia. It was described by P. ČERNÝ (1960), who supposed previously that the mineral was phillipsite.

## ALPHABETICAL LIST OF NEW FINDS AND NEW KIND OF MINERALS FROM CZECHOSLOVAKIA DURING 1950—1969

Alluaudite
Arsenolamprite
Augelite

Berzelianite
Betpakdalite
Bismutoferrite
Blomstrandine
Brochantite
**Bukovskýite** *

Cancrinite
Clausthalite
Clinostrengite
Coloradoite
Cosalite
Crandallite
Crookesite
Cryptomelane
Cyanotrichite

Enargite
Epididymite
Eskebornite
Eucairite

Fairfieldite
Ferrisicklerite

Gahnite
Gahnospinel
Geocronite
Gorceixite
Graftonite
Griphite
Gudmundite

Hambergite
Hawleyite
Helvite
Heterosite
Hühnerkobelite
Huntite
Huréaulite
Hurlbutite
Hyalophane

Chapmanite

Ilvaite
Isokite

**Kettnerite** *
Kobellite
**Koutekite** *

Laueite
Linarite
**Lipscombite** *

Melanophlogite
Meneghinite
Messelite
Microlite
Milarite
Mithridatite
Moissanite
**Molybdite** *
Montroseite
Mordenite

**Novákite** *

Oyamalite

**Paxite** *
Planerite
Polydymite
Pumpellyite
Pyrophanite

Ramsdellite
Rezbanyite
Rockbridgeite
Rosasite

Sarcopside
Scorzalite
**Sekaninaite** *
Scholzite
Skutterudite
Stevensite
Stibiconite
Stichtite
Stokesite
Strunzite

Tephroite
Tiemannite
Tyrellite

Umangite

Vernadite
Vésigniéite

Wagnerite
Wehrlite
Wellsite
Willemite
Wodginite
Wolfeite

Zwieselite

**Total:** 8 new kinds of minerals and 85 new finds of minerals.

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(* new kind of minerals)

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