A certain amount of care must be exercised in placing the stopper on the pycnometer. The latter having been filled to overflowing with water (or other suitable liquid) is grasped at the neck by the thumb and finger of the left hand, and with the other hand the stopper is pushed on firmly with a sliding motion. Unless the temperature rises (in which case no bottle of this general type is satisfactory), the stopper sticks to the bottle and is not easily dislodged. The weight of the pycnometer filled with liquid can be determined to within 0.1 mg., which implies an accuracy of about 0.0001 in the density of an ordinary mineral. The convenience as well as the accuracy of this pycnometer is likely to appeal to any one who is engaged in determining densities.

NEW MINERAL SPECIES DESCRIBED DURING 1916–1920. EDGAR T. WHERRY, *Washington, D. C.*—About sixty mineral species have been described as new during the period from 1916 to 1919 (and early 1920), inclusive, and published in this magazine, either in the original or in abstracts. It seems worth while to present a classification of these, more or less according to Dana's System of Mineralogy (Ed. 6), so that their relations to previously known minerals or groups will be brough' out.

The primary subdivisions, or "families," as they may perhaps be called, are as follows:

A. Native elements, including isomorphous mixtures of elements.
B. Sulfides, selenides, arsenides, etc., and sulfo-salts.
C. Halides, including oxyhalides and hydroxyhalides.
D. Oxides, including double oxides and hydroxides.
E. Carbonates, oxalates, organic compounds; also borates.
F. Sulfates, molybdates, etc.
G. Phosphates, arsenates, vanadates, etc.
H. Columbates, tantalates, titanates, etc.
I. Silicates of all kinds.

The first four of these families are essentially as in Dana; in E, however, types of compounds are introudced which Dana scatters in various places. It seems logical to place with the carbonates all other carbon compounds, just as all sorts of silicates are grouped together; and borates, which resemble carbonates far more than they do the uranates, with which Dana groups them, also fit in well here.

The order of the last four families is exactly reversed from that of Dana, the idea being that it is well to take up compounds in the order of increasing complexity, which brings sulfates early and silicates late. Titanates are placed with columbates because of the striking isomorphism these two types of compounds show.

A. NATIVE ELEMENTS. *a.* NEW SPECIES.

NAME	FORMULA	REMARKS	REFERENCE
———	———	None reported.	———
A. *b.* DOUBTFUL AND DISCREDITED SPECIES			
"3. Selensulphur"	S, Se	An isomorphous mixture, very low in selenium.	2, 12 and 116.
B. SULFIDES, ETC. *a.* NEW SPECIES			
Tungstenite	WS_2	Non-crystalline, related to jordisite and molybdenite.	3, 30.
Xanthochroite	$CdS + xH_2O$	Non-crystalline, related to greenockite.	3, 158.
Bismutoplagionite	$Pb_5Bi_8 : S_{17}$	A sulfo-salt, related to plagionite.	5, 105.
B. *b.* DOUBTFUL AND DISCREDITED SPECIES			
"Oruetite"	$Bi_{1\cdot6}$: (S, Te)	A variety of wehrlite	4, 152.
"Cocinerite"	Cu + Ag + little S.	Nature doubtful.	4, 146.
"39. Whitneyite"	Cu_4As + Cu.	A mixture.	4, 91.
"Villamaninite"	Cu + Fe + much S.	Nature doubtful.	5, 168.
(unnamed)	$Pb_3As_4 : S_9$	Near plagionite.	5, 136.
"Mullanite"	$Pb_5Sb_4 : S_{11}$	Identical with boulangerite	3, 39.
"Trechmannite-alpha"	———	Isomorphous with trechmannite.	5, 136.
C. HALIDES, ETC. *a.* NEW SPECIES.			
Lorettoite	$Pb_7 : Cl_2O_6$	Optically distinct.	2, 26.
C. *b.* DOUBTFUL AND DISCREDITED SPECIES			
"Chubutite"	Pb + Cl + O	Evidently identical with lorettoite.	4, 103.

D. OXIDES, ETC. *a.* NEW SPECIES

NAME	FORMULA	REMARKS	REFERENCE
Lithargite	PbO	Optically distinct.	2, 18, 19.
Lambertite	UO_3	Not fully characterized, but probably definite.	5, 17.
Hoegbomite	$Mg(Al, Fe_3, Ti)_4 : O_7$	Composition rather doubtful, but optically distinct.	4, 76.
Baeckstroemite	$Mn(OH)_2$	Orthorhombic modification.	5, 88.

D. *b.* DOUBTFUL AND DISCREDITED SPECIES

"Eldoradoite"	SiO_2	Variety of quartz.	2, 26.
"Brostenite"	$MnO_2 + X.$	Mixture.	5, 136.
"Paredrite"	$TiO_2 + X.$	Mixture.	1, 53.
"Sphenomanganite"	Mn : O(OH)	Sphenoidal; but all manganite may well be the same.	5, 86.
"Cesarolite"	$PbO + xMnO_2 + yH_2O$	Colloidal adsorption product.	5, 211.

E. CARBONATES, BORATES, ETC. *a.* NEW SPECIES

Basobismutite	$Bi_4 : O_4(OH)_2(CO_3)$	Not fully characterized.	5, 17.
Flagstaffite	$C_{12}H_{24}O_3$	———	5, 169.
Magnesioludwigite	$Mg_2Fe''' : BO_5$	———	2, 68.
Vonsenite	$MgFe''Fe''' : BO_5$	———	5, 141.
Priceite	$Ca_5 : B_{12}O_{23} : 5H_2O$	Optically distinct, so given species rank.	2, 1.

E. *b.* DOUBTFUL AND DISCREDITED SPECIES

"301. Hydrogiobertite"	$MgO + CO_2 + H_2O$	Mixture.	2, 3.

F. SULFATES, ETC. *a.* NEW SPECIES

Gilpinite	$(Cu, Fe)(UO_2) : (SO_5) : 4H_2O$	Optically distinct.	2, 75.
Creedite	$H_2Ca_3Al_2 : (OH)_4F_8(SO_4)$.	A hydroxy-fluo-sulfate.	1, 87.

F. *b*. DOUBTFUL AND DISCREDITED SPECIES

NAME	FORMULA	REMARKS	REFERENCE
"307. Uranothallite"	$CuO + UO_3 + SO_3 + H_2O$	Impure liebigite.	2, 87
	G. PHOSPHATES, ETC. *a*. NEW SPECIES		
Merrillite	$xCaO.yP_2O_5$	Optically distinct.	2, 119.
Sarcopside	$(Fe, Mn)_7 : F_2(PO_4)_4$	Optically distinct, so raised to species rank.	5, 99.
Cornetite	$CoCu : (OH)(PO_4)$	Compn. uncertain.	5, 17.
Higginsite	$CaCu : (OH)(AsO_4)$	———	5, 155.
Pyrobelonite	$(Mn, Pb)_{11} : O_2(OH)_5(VO_4)_4$	Compn. uncertain.	5, 87.
Crandallite	$HCaAl_4 : (OH)_9(PO_4)_2$	———	2, 42.
Arsenobismite	$Bi_2 : (OH)_3(AsO_4)$	Compn. uncertain.	1, 13.
Spencerite	$Zn_4 : (OH)_2(PO_4)_2 : 3H_2O$	———	2, 41.
	G. *b*. DOUBTFUL AND DISCREDITED SPECIES		
"548. Hamlinite"		Same as goyazite.	2, 70.
"640. Fischerite"		Same as wavellite.	2, 32.
"651. Mazapilite"		Same as arseniosiderite.	3, 12.
"Ferrazite"	$BaO + PbO + P_2O_5$	Character uncertain.	5, 39.
"Hibbenite"	$ZnO + P_2O_5 + H_2O$	Very close to hopeite.	2, 11.
	H. TITANATES, ETC. *a*. NEW SPECIES		
Brannerite	$Ca(UO_2) : (TiO_3)_2 + X.$	Actually very complex in compn.	5, 105.
Oliveiraite	$H_4Zr_3Ti_2 : O_{12}$	Compn. uncertain.	4, 41.
	H. *b*. DOUBTFUL AND DISCREDITED SPECIES		
———	———	None reported.	———

I. SILICATES. *a.* NEW SPECIES

NAME	FORMULA	REMARKS	REFERENCE
ANHYDROUS.			
1. PERSILICATES		None reported.	———
2. METASILICATES			
Margarosanite	$Ca_2Pb : (SiO_3)_3$	———	1, 87.
Sobralite	(Mn, Fe, Ca, Mg) : SiO_3	Optically distinct.	4, 76.
3. ORTHOSILICATES		None reported.	———
4. SUBSILICATES			
Viridine	$Al_2:SiO_6$	Optically distinct.	5, 126.
HYDROUS.			
1. PERSILICATES			
Ferrierite	$(Na_2, Mg)_2Al_2 : Si_2O_5 : 6H_2O$	———	4, 90.
Flokite	$H_8(Ca, Na_2)Al_2 : Si_9O_{25} : 2H_2O$	———	3, 30.
2. METASILICATES			
Eakleite	$5(Ca : SiO_3) : H_2O$	Optically distinct.	2, 111.
Riversideite	$2(Ca : SiO_3) : H_2O$	Optically distinct	3, 19.
Leverrierite	$Al_2 : (SiO_3)_3 + xSiO_2 + yH_2O$	Compn. variable, but optically distinct, so raised to species rank.	2, 112.
Racewinite	$Al_2 : (SiO_3)_3 + xH_2O$	Compn. uncertain, but optically distinct.	4, 28.
Cornuite	$Cu : SiO_3 + xH_2O$	Amorphous chrysocolla.	3, 158.
Stevensite	$H_2Mg_3 : (SiO_3)_4 + xH_2O$	Amorphous talc; raised to species rank.	1, 44.
3. ORTHOSILICATES			
Zebedassite	$H_8Mg_5Al_2 : (SiO_4)_6$	———	4, 120.
Crestmoreite	$H_2Ca : SiO_4$	———	3, 19.
Ectropite	$H_2Mn_3 : (SiO_4)_2 : H_2O$	———	2, 128.
Hydroclinohumite	$Mg_9 : (OH)_2 : (SiO_4)_4$	———	5, 136.
Griffithite	$H_6(Mg, Fe)_4(Al, Fe)_2 : (SiO_4)_5$	(+ additional H_2O)	2, 54.

I. SILICATES. *a.* NEW SPECIES

NAME	FORMULA	REMARKS	REFERENCE
4. SUBSILICATES			
Colerainite	$H_5Mg_2 : AlSiO_8$	————	3, 165.
Mackensite	$H_4Fe_2 : SiO_7$	————	4, 61.
Viridite	$H_6Fe_4 : Si_2O_{11}$	————	4, 61.
Plazolite	$H_4Ca_3Al_2 : Si_2O_{12}$	Contains some CO_2.	5, 183.
Orvillite	$H_{10}Zr_8 : Si_6O_{33}$	Compn. uncertain.	4, 41.
Echellite	$H_8(Ca, Na_2)Al_4 : Si_3O_{17}$	————	5, 1.
DOUBLE COMPDS.			
"Sulfatic cancrinite"	$x(H_2, Na_2, Ca) : yAl : z(Si, S)O_5$	Compn. uncertain.	2, 13.
Catoptrite	$Mn_{14}(Al, Fe)_4 : Sb_2Si_2O_{29}$	Compn. uncertain.	2, 129.

I. *b.* DOUBTFUL AND DISCREDITED SPECIES

"Amosite"	————	Compn. unknown.	5, 16.
"Collbranite"	————	Compn. unknown.	3, 177.
"Lucianite"	————	Same as stevensite, above.	5, 18.
"Manganfayalite"	$(Fe, Mn)_2 : SiO_4$	Variety of fayalite.	4, 76.

Note.—In preparing the above tabulation, it has not always been easy to decide whether a mineral was entitled to specific rank or not. For example, the anhydrous metasilicate sobralite, on the preceding page, is very close to certain varieties of rhodonite and to pyroxmangite. However, the describer of sobralite gave detailed optical data which appeared to distinguish it from these, and it was therefore included, because optical criteria are regarded by the compiler as the best for the establishment of a species.

The fact that one third of the minerals listed have had to be included in the "doubtful and discredited" class indicates the need for more thoro study of minerals before they are announced as new species.