NOTES AND NEWS

NOTES ON SOME CALIFORNIA MINERALS

NUEVITE=SAMARSKITE; TRONA AND HANKSITE; GAYLUSSITE

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Nuevite=Samarskite

In 1946 the writer reported a samarskite-like mineral from the Southern Pacific Silica Quarry near Nuevo, Riverside County, California, as a new species, giving it the name "nuevite" (1). This determination was made on the basis of a spectroscopic analysis showing no uranium and a small amount of tantalum, and rough crystals which gave an apparent axial ratio differing from samarskite. The general physical and optical properties put the mineral in the samarskite group but the apparent absence of U and Ta seemed to warrant a new species name. However, after considerable delay, it was possible to have a chemical analysis made, which at once showed the material to be samarskite, a finding confirmed by Dr. Herman Yagoda (private communication), who kindly made a polished surface and showed uranium comparable to a U-rich variety of samarskite. Accordingly, the name nuevite should be considered as invalidated, and the occurrence recorded as samarskite. The roughly formed crystals, in revised orientation, showed measurements in reasonable agreement with samarskite.

As is usually the case, it is metamict, and recently the writer had an opportunity to take an *x*-ray powder photograph of the ignited material, which showed a typical samarskite pattern, according to Dr. Clifford Frondel (private communication). It has seemed worthwhile to record the chemical analysis, and the information given by this powder photograph, since none has apparently been published up to the present time. The *x*-ray powder data represent figures corrected for camera radius and film shrinkage, in Å units.

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Trona and Hanksite

Recently a fragment of crystalline salines was collected from a dried pool on the east side of Mono Lake, California, and given to the writer

TABLE 1. *X*-RAY POWDER SPACING DATA FOR SAMARSKITE, NUEVO, CALIFORNIA
COPPER RADIATION, NICKEL FILTER, SPACINGS IN Å UNITS

I	*d/n*	*I*	*d/n*
2	10.97	1	1.65
½	5.61	1	1.59
3	3.68	2	1.537
1	3.53	½	1.519
½	3.40	4	1.502
1	3.25	1	1.436
½	3.13	1	1.390
10	3.07	½	1.355
10	2.92	½	1.301
2	2.80	½	1.279
½	2.71	½	1.229
4	2.59	½	1.218
2	2.47	½	1.193
2	2.44	½	1.177
½	2.23	½	1.127
1	2.17	½	1.117
½	2.12	½	1.091
1	2.08	½	1.081
3	1.90	½	1.047
4	1.84	½	1.008
1	1.76	½	.9823
1	1.75	½	.8995
1	1.73	½	.8633
1	1.71	½	.8202
½	1.67		

TABLE 2. ANALYSIS OF SAMARSKITE, NUEVO, CALIFORNIA

SiO_2	.28
Ta_2O_5	22.08
Cb_2O_5	32.46
TiO_2	2.75
Y_2O_3	11.98
Ce_2O_3	tr.
UO_2	13.66
UO_3	3.51
FeO	11.09
MnO	.57
ZrO_2	.02
PbO	.14
Loss on ignition in N	1.07
	99.61

Analysis by W. H. Herdsman

by his colleague, Professor W. C. Putnam. The specimen is roughly stratified, with one layer massive or spongy halite, and the other a faintly pinkish aggregate of flattened and elongated crystals, in part covered with a white finely crystalline and sometimes spherulitic coating. The larger crystals, ranging in length up to one centimeter, were found to be trona, which has not been previously reported from Mono Lake. The finely crystalline coating turned out to be hanksite, hitherto found only at Searles Lake. The sequence of deposition is halite, then trona, then hanksite.

The trona, even in perfectly fresh clear crystals, showed a strong potassium flame when the sodium flame was cut out with a Merwin screen. The crystals are elongated parallel to the *b* axis and usually somewhat irregularly flattened parallel to the base. They are invariably terminated by a single form, $\{\bar{1}11\}$, but show a great variety of faces in the orthodome zone. Of this series, $\{100\}$ is usually of good quality and fair size. The other faces are present often as narrow or line faces in a zone, or as curved surfaces, but sometimes well developed. A list of forms observed in good position and of reasonable quality is as follows: $\{\bar{1}11\}$, $\{100\}$, $\{001\}$, $\{\bar{7}01\}$, $\{\bar{1}02\}$, $\{\bar{1}03\}$, $\{\bar{1}04\}$, $\{\bar{5}01\}$, $\{302\}$, $\{401\}$. Other possible forms, as line faces only, or a little off position include $\{105\}$, $\{106\}$, $\{\bar{1}05\}$, $\{\bar{1}09\}$, $\{\bar{1}.0.10\}$, $\{1.0.12\}$, $\{\bar{1}.0.15\}$.

The hanksite in the specimen is not in recognizable crystals, but was identified by its uniaxial negative character, index of refraction, $\omega = 1.48\pm$, strong birefringence, and parallel extinction. Chemical tests showed effervescence with acid and precipitates of $BaSO_4$ with $BaCl_2$ and AgCl with $AgNO_3$. Flame coloration showed strong potassium reaction.

Gaylussite

Published data on the crystallography of gaylussite depend on the measurements of a single crystal from Venezuela, made by W. Phillips (2) in 1827. Crystals described from Searles Lake, California, by J. H. Pratt (3) in 1896, were not suitable for measurement on the reflecting goniometer, but the angles were checked on larger crystals with a contact goniometer. Through the courtesy of Mr. L. J. Bailey, chemist at the American Potash and Chemical Company, Trona, California, the writer has been enabled to study some excellent crystals of gaylussite from Searles Lake, and to offer some refinements in the values of the crystallographic elements.

The crystals were very suitable for measurement on the two-circle goniometer, and the results on five selected crystals furnished values quite close to those of Phillips, thus confirming the quality of his work.

There are, however, small but consistent variations from his values, and since the present figures represent the average of a number of good readings as compared with a single set it was considered worth while to recalculate the crystallographic elements, and present a new angle table.

The Searles Lake crystals show the characteristic habit for this occurrence, with {001} and $\{\bar{1}12\}$ dominant, {110}, {001}, and $\{\bar{1}01\}$ smaller, and {010} appearing as a poor face on only one crystal. The averages of best readings for each face are listed in Table 1, with Phillips' values for comparison. Calculated values are given in the revised angle table (Table 2).

Table 1. Measured Angles for Gaylussite

{001}

Quality of signal	ϕ	ρ
B	89°42′	12°08′
B	90 07	12 14
B	89 39	11 52
C	90 35	11 48
av. new		12 00½
old		11 33

$\{\bar{1}01\}$

Quality of signal	ϕ	ρ
C	−90°00′	37°58′
B	−90 09	38 14
B	−89 59	37 48
av. new		38 00
old		38 08

{110}

Quality of signal	ϕ	ρ
B	34°18′	90°00′
B	34 20	90 00
B	34 23	90 00
B	34 43	90 00
B	34 35	90 00
B	34 34	90 00
av. new	34 29	
old	34 25	

$\{\bar{1}12\}$

Quality of signal	ϕ	ρ
C	−21°29′	37°56′
B	−21 30	37 56
C	−21 35	37 50
D	−21 30	37 50
C	−21 08	37 51
D	−21 04	37 51
av. new	−21 22½	37 52
old	−21 55	37 53

{011}

Quality of signal	ϕ	ρ
B	8°11′	55°45′
C	8 25	55 38
C	8 12	55 32
C	8 25	55 19
C	8 17	55 30
C	8 32	55 34
C	8 11	55 31
av. new	8 19	55 33
old	8 03	55 34

TABLE 2. ANGLE TABLE FOR GAYLUSSITE

Monoclinic	$a:b:c=1.4878:1:1.4453$	$\beta=102°00\frac{1}{2}'$
	$p_0q_0:1=0.97413:1.4137:1$	$\mu=77°59\frac{1}{2}'$
	$r_2:p_2:1=0.70737:0.68716:1$	
	$p_0'=0.99316$, $q_0'=1.4453$	$x_0'=0.21725$

Form	ϕ	ρ	ϕ_2	$\rho_2=B$	C	A
c {001}	90°00′	12°00½′	77°59½′	90°00′	0°00′	77°59½′
b {010}	0 00	90 00	—	0 00	90 00	90 00
a {100}	90 00	90 00	0 00	90 00	77 59½	0 00
m {110}	34 30	90 00	0 00	34 30	83 14	55 30
e {011}	8 22½	55 36½	77 59½	35 16½	54 43½	84 06
s {$\bar{1}$01}	−90 00	38 01½	128 01½	90 00	50 02	128 01½
r {$\bar{1}$12}	−21 30	37 50	105 53½	55 12	43 28½	102 59½

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ON THE MINERALOGY OF ANTARCTICA

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Since 1895 ninety-six papers have been published relating to Antarctic mineralogy and petrography. Dr. Johannes Petersen (1895: 275–278) was the first to publish on Antarctic petrography. He described the basalt of Mount Christen Christensen (Christensen-Vulkan) of Robertson Island, West Antarctica.

The following is a list of the 167 mineral species, subspecies, and varieties, as well as those of questionable occurrence, that have been reported from Antarctica. A number of these have been determined only microscopically, and in the case of gold its presence has been determined only by chemical analysis.

Acmite	Andalusite	Aphrosiderite	Beryl
Actinolite	Andesine	Apophyllite	Biotite
Adularia	Andradite	Arfvedsonite	Bornite
Aegirine-augite	Anomite	Arsenopyrite	Bronzite
Allanite	Anorthite	Atacamite	Brookite
Almandite	Anorthoclase	Augite	Brucite
Analbite?	Anthophyllite	Azurite	Brushite?
Analcite	Antigorite	Barkevikite	Bytownite
Anatase	Apatite	Basaltic hornblende	Calcite