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direct bearing upon the presence of thorium in monazite, and we believe that the idea that thorium is included in monazite as thorite—mechanically intermixed—should be modified in so much that the thoria should be considered as partially present as a phosphate and the cerium earths partially present as silicates.

This mineral is readily soluble in hydrochloric acid, leaving a residue of gelatinous silica; after ignition it becomes insoluble. Thorium phosphate is generally regarded as a very insoluble compound, but the ready solubility of this mineral seems to disprove that opinion.

It is infusible and upon strong ignition becomes dull-brown and on cooling, orange again.

Thorite crystals having the form of zircon have been described by Zschau;* and Nordenskiöld,† and later Brögger,‡ have expressed the opinion that the mineral known as thorite is a pseudomorph after an original thorium silicate analogous to zircon in composition. This view is confirmed by the fact that this new mineral occurs intimately associated with and implanted upon perfectly unaltered zircon.

As this mineral was found while mining the very large quantity of zircons necessary to supply the demand caused by the invention of the system of incandescent gas-lighting of Dr. Carl Auer von Welsbach, we propose to name it *Auerlite* in his honor.

ART. XLIX.—*On a new Sodium sulphato-chloride, Sulphohalite;* by W. E. HIDDEN and J. B. MACKINTOSH.

IT was in the mineral collection of Mr. Clarence S. Bement, of Philadelphia, and along with a series of remarkable crystals of hanksite that one of us first noticed the mineral here described; it was recognized by a few simple tests to be a new species. It had been considered, at the locality, to be "a rhombohedral type of hanksite" and the misinterpreted form of its crystals —implanted as they were upon hanksite—was the reason for that opinion A few measurements with a hand goniometer soon showed them to belong to the isometric system and the form to be the simple rhombic dodecahedron. The mineral occurs only as crystals, which are in form and sharpness of angle, all that could be desired. It is transparent with a faint greenish-yellow color. The crystal faces are smooth and well polished and vary in size from $\frac{1}{2}$ to $2\frac{1}{2}^{cm}$ diameter. The spe-

* This Journal, II, xxvi, 359; see also Dana's Syst. Min., Ed. 1868, p. 413.
† Geol. För. Förh., iii, 226, 1876; see also App. III, Dana's Min., p. 121.
‡ Ibid, ix, 258, 1887.

cific gravity, as taken in naphtha, is 2·489. Their hardness is about 3·5. The mineral is very slowly soluble in water and remains unaltered in a moderately dry atmosphere. A careful analysis by one of us on amounts of 100 and 120 milligrams yielded the following results:—

Cl	13·12 per cent.
SO_3	42·484 "
Na_2CO_3	1·77 "

Calculating the chlorine and sulphur as combined with sodium only, we get

$NaCl$	21·624
Na_2SO_4	75·411
Na_2CO_3	1·77
	98 805

The formula figures out exactly, if the loss and the Na_2CO_3 are estimated with and as Na_2SO_4; i. e., if the loss is Na_2SO_4 and we consider the Na_2CO_3 as replacing a little Na_2SO_4.

The formula can then be expressed thus: $Na_3(\frac{3}{4}SO_4 \cdot \frac{1}{4}Cl)$ or $3Na_2SO_4$, $2NaCl$. Excepting the very rare mineral connellite, from Cornwall, England, which is believed to be a cupreous sulphato-chloride (crystallizing in the hexagonal system), we know of no other species related in composition.

We learn from Dr. A. E. Foote, in whose stock of Borax Lake minerals we were fortunate enough to find the single specimen of the mineral used in this examination—that he had visited the locality this past summer and that about one month before his arrival a company had been testing the immense alkaline deposit of Borax Lake (San Bernardino County, California), and had drilled an eight inch hole to a depth of over 100 feet. At a depth of 35 feet a small cavity was discovered from which there were pumped out through the drill hole the mineral here announced, with some very remarkable crystals of hanksite.

But three examples are at present known to us, and two of these of remarkable beauty, are in the Bement collection, the other specimen (a crystal about one inch thick, having long prismatic hanksites implanted upon it), is the one, upon a part of which, this analysis was made.

It is a matter of interest to note that this mineral, with its anomalous formula, should occur with and be associated upon another mineral, hanksite, having a like strange composition.

We propose for this new mineral the name *sulphohalite* as suggesting its remarkable composition.