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MISSOURI BOTANICAL  
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boundary of a region of depression is very irregular; moreover the continuation of the cross-fracture not unfrequently coincides with the longitudinal fractures, and *vice versa*. (5) The connection of the seismic lines of different dynamical value is most readily explained by the assumption that a portion of the earth's crust gives its motion to another, and this makes itself felt by the shakings along the course of a fracture.—*Jahrb. k. k. geol. Reichsanstalt*, xxviii, p. 387, 1878. E. S. D.

12. *Examination of the North Carolina Uranium minerals*; by F. A. GENTH (*American Chemical Journal*, vol. i, p. 87).—The uranium minerals of North Carolina were first described by Professor W. C. Kerr (*this Journal*, III, xiv, 496, Dec., 1877). As stated by him, they occur as irregular nodules and rounded masses in the mica-bearing portion of a large granite vein; the locality is called the Flat Rock mine. Dr. Genth has subjected the minerals to a thorough chemical examination, and in the main confirmed the determination of the species made by Professor Kerr. The masses contain, in many cases, a nucleus of uraninite; surrounding this is an orange-colored mineral, gummite; and interpenetrating it and forming a crust over it, a light yellow mineral, identified by Dr. Genth as uranotil. The uraninite occurred in too small a quantity to allow of its being analyzed. The *gummite* has a compact, amorphous structure; reddish-yellow to deep orange-red color; and subconchoidal to uneven fracture; with hardness = 3; and specific gravity = 4.840. The mean of three analyses gave:—

UO <sub>3</sub>	AlO <sub>3</sub>	PbO	BaO	SrO	CaO	SiO <sub>2</sub>	P <sub>2</sub> O <sub>5</sub>	H <sub>2</sub> O	
75.20	0.53	5.57	1.08		2.05	4.63	0.12	10.54	= 99.72.

Dr. Genth regards the gummite as a mechanical mixture of:—

Uranium hydrate	= H <sub>2</sub> (UO <sub>2</sub> )O <sub>2</sub> + H <sub>2</sub> O	= 40.10 p. c.
Uranotil	= Ca <sub>3</sub> (UO <sub>2</sub> ) <sub>6</sub> Si <sub>6</sub> O <sub>21</sub> + 18H <sub>2</sub> O	= 33.38 p. c.
Lead uranate	= Pb(UO <sub>2</sub> ) <sub>2</sub> O <sub>3</sub> + 6H <sub>2</sub> O	= 22.66 p. c.
Barium uranate	= Ba(UO <sub>2</sub> ) <sub>2</sub> O <sub>3</sub> + 6H <sub>2</sub> O	= 4.26 p. c.
	<hr style="width: 50%; margin: 0 auto;"/>	<hr style="width: 50%; margin: 0 auto;"/>
		100.40.

The pale yellow coating surrounding the gummite has been identified by Dr. Genth as *uranotil*, a mineral originally described by Boricky from Wölsendorf, Bavaria. As occurring in North Carolina it is amorphous, compact; hardness = 2.5; specific gravity 3.834; color pale straw-yellow to lemon-yellow; luster waxy to dull. The mean of two analyses gave:—

SiO <sub>2</sub>	AlO <sub>3</sub> (FIO <sub>3</sub> )	UO <sub>3</sub>	PbO	BaO	SrO	CaO	P <sub>2</sub> O <sub>5</sub>	H <sub>2</sub> O	
13.75	tr.	66.67	0.60	0.28	0.13	6.67	0.29	12.02	= 99.43

For this the formula Ca<sub>3</sub>(UO<sub>2</sub>)<sub>6</sub>Si<sub>6</sub>O<sub>21</sub> + 18H<sub>2</sub>O is suggested, which requires: SiO<sub>2</sub> 13.95, UO<sub>3</sub> 66.98, CaO 6.51, H<sub>2</sub>O 12.56 = 100.00.

In addition to the above, autunite has been found at the locality and, associated closely with it, a new species called by the describer *phosphuranylite*. It occurs as a pulverulent incrustation on quartz, feldspar and mica. Under the microscope very minute rectangular scales with pearly luster were distinguished.

Color deep lemon-yellow. An analysis gave:  $P_2O_5$  11.30,  $UO_3$  71.73,  $PbO$  4.40,  $H_2O$  10.48 = 97.91. The lead is regarded as being present as cerussite; if this is deducted the result becomes:  $P_2O_5$  12.08,  $UO_3$  76.71,  $H_2O$  11.21 = 100. The formula obtained is  $(UO_2)_3 P_2O_8 + 6H_2O$ , which requires:  $P_2O_5$  12.75,  $UO_3$  77.56,  $H_2O$  9.69 = 100. E. S. D.

### III. BOTANY AND ZOOLOGY.

1. *Report upon U. S. Geographical Surveys west of the 100th Meridian, in charge of First Lieut. GEO. M. WHEELER, Corps of Engineers, U. S. A., etc. Vol. VI, Botany; by J. T. ROTHROCK, etc. 1878.*—We have been prevented from giving an earlier notice of this fine volume, and want of space now imperatively restricts us to narrow limits. We have not neglected it, however, in the manner that the date on the title page would seem to indicate. The title gives the year 1878, but the volume, passing slowly through the press, was completed and issued in May, 1879, and it should bear that date. The collections reported on were made during the years 1871 and 1875 inclusive, in Nevada, Utah, Colorado, New Mexico and Arizona; also in the southern part of California. But the Californian portion of this report is reduced to a catalogue in an appendix. It furnishes, however, one of the most interesting of the figures, that of the curious Lobeliaceous genus *Palmarella*. As no reference is made to the fact in the letter-press, which is restricted to a mere explanation of the plate, it is due to Professor Rothrock to state that he was, we believe, the original discoverer of the plant, having collected it sometime before Dr. Palmer found it on the borders of Lower California. But the specimens were not communicated to us, nor in any way made known, until after those of Dr. Palmer had been received and described.

This volume contains 414 pages, 4to, and 30 plates, besides a striking frontispiece-plate in color, giving a view of a "grove" (if it may be so called) of the giant Cactus, *Cereus giganteus*. This, again, finds no mention in the Catalogue, but is referred to in the general report. This general report, of fifty pages, is a most interesting and important portion of the volume. From it, if space and time allowed, we should make ample extracts; for it deals with attractive and practical questions in a graphic and taking way. There is first, a sketch of the Colorado District, its character, climate and phytological features, also its agricultural resources and its timber. Then, of New Mexico and the Arizona District, which is scientifically treated in a similar practical way; and a third chapter consists of notes on the economic botany of the region, in which particular attention is paid to the medicinal and supposed medicinal plants.

Chapter IV, or the remainder of the volume, entitled Catalogue of the Plants collected, is the systematic portion of the report; and for this Sereno Watson's Botany of Clarence King's Survey of the 40th parallel is the worthy model. Particular orders are