ART. XI.—*The Phosphorescence of Zinc Sulphide through the Influence of Condensed Gases obtained by Heating Rare-Earth Minerals*; by CHARLES BASKERVILLE and L. B. LOCKHART.

HELIUM has been shown to be a product of the disintegration of radium emanations; it is also obtained from minerals which contain thorium and uranium. It has been shown by Afanassiew, Mme. Curie, Crookes, Strutt, Hoffman, Baskerville, and Boltwood that minerals containing these elements are radio-active.

It seemed to be of interest to ignite these minerals and condense the gases given off and note their effect upon phosphorescent zinc sulphide. The method of procedure was essentially that described in the preceding paper, except that the pulverized mineral was placed in the closed tube of hard glass instead of a radium preparation. Screens of Sidot's blende were prepared in strips for the purpose. The glowing of the screen was assumed to indicate the condensation of the emanation.

No final conclusion could be drawn from the experiments, which were distinctly qualitative. It appeared, however, that those minerals which offer the richest sources of helium gave the greatest amount of emanation. Most of the minerals were obtained by purchase, but we are indebted to Dr. Geo. F. Kunz for some of them, to Dr. H. S. Miner, of the Welsbach Lighting Co., for others, and to the Nernst Lamp Co., Pittsburgh, Pa., for still others.

In addition to the minerals we made some experiments with uranium compounds*, commercial thorium oxide, and the fractions of that element obtained in our laboratory.

The list of minerals, and observations follow:

Mineral.	Locality.	Result.
Aeschynite	Hitterö, Norway	Fair glow
Allanite (orthite)	Amherst Co., Virginia	No glow
Allanite	Amherst Co., Virginia	No glow
Annerödite	Norway	No glow
Auerlite	Henderson, N. C.	Fair glow
Bastnäsite	Manitou Springs, Col.	No glow
Brookite	Arkansas	No glow
Carnotite	La Salle Creek, Mont. Co., Colorado	Fine glow
Carnotite	Utah	No glow
Catapleiite	Brevig, Norway	No glow
Cerite	Bastnäs, Sweden	Fair glow
Cleveite	Moss, Norway	Fine glow
Columbite	Amelia Co., Virginia	No glow
Cryptolite	Bluffton, Texas	Faint glow
with Fergusonite	(Llano)	

* For which we are indebted to Dr. S. A. Tucker, Columbia University.

Mineral.	Locality.	Result.	
Cryptolite	S. Co., Texas	No glow	
Euxenite	Spangereid, Norway	Fair glow	
Euxenite	Arendal, Norway	Good glow	
Fergusonite	Ytterby, Sweden	Fine glow	
Gadolinite	Fahlun, Sweden	No glow	
Gummite	Mitchell Co., N. C.	No glow	
Hjelmite	Karapfvet	No glow	
Monazite sand	Brazil, S. A.	Fair glow	
Monazite	Norway	Medium	
Monazite sand	Mitchell Co., N. C.	Very faint glow	
Mixite	Joachimsthal, Bohemia	No glow	
Orangite	Norway	Medium	
Orthite	Arendal, Norway	No glow	
Pitchblende (Uraninite)		Medium glow (below fair)	
Pechurane	Bohemia	Strong glow	
Samarskite	Mitchell Co., N. C.	Fine glow	
Steenstrupine	Urals	No glow	
Thorite	Langesund, Norway	Fair glow	
Thorite (Orangite)	Brevig, Norway	Fair glow	
Thorogummite	Bluffton, Llano Co., Tex.	No glow	
Tritomite	Brevig, Norway	No glow	
Tyrite	Tromsø, Norway	No glow	
Uraninite	North Carolina	Fine glow	
Uraninite	Joachimsthal, Bohemia	Very faint glow	
Uranite	(rare)	No glow	
Uranophane	Spruce Pine, Mitchell Co., N. C.	Fair glow	
Xenotime	Hitterö, Norway	Faint	
Yttrio-tantalite	Ytterby, Sweden	No glow	
Zeunerite	S. B., Germany	No glow	
Substance.	Prepared by	Result.	Remarks.
Uranium carbide	Tucker	No glow	Not expected from our knowl- edge of the activ- ity of uranium.
Uranium oxide	Tucker	No glow	
Uranium nitrate	Purchased	No glow	
Thorium-X	Miner. From 100 gals. wash-water	Fair glow	
Thorium oxide	Same as for Welsbach burners	Fair glow	Slight glow with tiffanyites. No glow with solid willemite.
Berzelium* oxide	Irwin. Monazite sand	No glow	No glow with tiffanyites.
Thorium* oxide	Davis. Monazite sand	Fair glow	Slight glow with tiffanyites.
Carolinium* oxide	Skinner. Monazite sand	No glow	

*These preparations were made in our laboratory, University of North Carolina. All showed some but not the same radio-activity when tested by the electrical and photographic methods.