DIAMOND-BEARING GRAVEL FROM BELGIAN CONGO

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In the spring of 1916, Mr. F. M. Rapp, mining engineer, now at Tonopah, Nevada, returned from the Belgian Congo, Central Africa, where he has been engaged for two years in geological work along the Kasai River and its tributaries. He brought back with him a carefully collected sample of fine gravels from the present stream beds in which the Kasai diamonds occur. Mr. Rapp turned this sample over to the writer with the request that he determine its mineral composition. The results, while of no far-reaching significance, may be of some interest as a matter of record and as affording a means of comparison with the mineral composition of the diamond concentrates from similar deposits in other parts of the world.

Mr. Rapp's exploration covered a distance of 250 miles along the Tshikapa, Longatchimo and Tshipumbu rivers, all tributaries flowing northward into the Kasai River which ultimately joins the Congo River. This area includes the Kasai diamond region, one of the three districts within the boundaries of the Belgian Congo where diamonds are known to occur. The district is of fairly large extent and promises to be, according to Ball, of greater commercial importance than either the Katanga or the northeastern districts. Mr. Rapp believes that the approximate abundance of the various mineral constituents in the gravel is represented by their relative abundance in the sample as indicated in the following list:

Amethyst, rare
Beryl, fairly common
Chalcedony, rare
Chromite, common
Chrysoberyl, fairly common
  Variety cymophane present
Corundum, rare
  Sapphire of poor quality present
Cyanite, abundant
Diamond, rare
  Colorless and dark crystals present
Epidote, abundant
Feldspar, common
  Orthoclase
  Plagioclase
Garnet, common
  Black variety
  Red variety, in part pyrope
Ilmenite, fairly common
Limonite, pseudormoph after pyrite, rare
Magnetite, common
Mica, in schist pebbles
Opal, rare
Pyrite, rare
Quartz, fairly common
Rutile, common
Specular hematite, common
Staurolite, common
Tourmaline, abundant
Zircon, common

The mineral aggregate has the texture of coarse sand, the individual grains varying from the size of the head of a pin to that of a pea. The prevailing color is black, on account of the abundance and greater size of the ferro-magnesian minerals.

The grains are predominantly well rounded but show in some instances a tendency toward elongation in certain crystallographic directions. Minerals which retain sufficient crystal form

to aid in their identification are: quartz, epidote, zircon, staurolite and diamond.

Striations due either to twinning or to oscillatory combination are preserved on quartz, epidote, plagioclase, specular hematite, rutile and diamond. Cleavage and parting, induced by the grinding action of the gravels, are conspicuous on cyanite, epidote, orthoclase, plagioclase, specular hematite, rutile and diamond.

Some of the red garnets are pyrope resembling the "Cape ruby" of the diamond diggings of South Africa. Topaz, which has been reported in the diamond-bearing gravels of Rhodesia and Brazil, and xenotime and monazite, reported from Brazil, were not observed.

An article published a few years ago by Ball and Shaler[1] on the economic geology of the Belgian Congo describes the Kasai diamond fields. In this interesting paper, which represents a pioneer summary of the knowledge of the mineral resources of the Belgian Congo, some of the minerals enumerated above are mentioned. To this paper and to an earlier one by Ball[2] the reader is referred for a description of the underlying geology and the occurrence of the diamond bearing gravels.

[1] Ball, S. H. and Shaler, M. K., *Econ. Geol.* **9**, 605, 1914.
[2] Ball, S. H., *Eng. Min. J.*, Feb. 3, 1912, p. 268.

TERMINATED CRYSTALS OF THAUMASITE.[1]

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The U. S. National Museum recently received from Mr. James G. Manchester a lot of minute thaumasite crystals, found loose in a cavity in the trap rock at West Paterson, N. J. Five of them have been found to be terminated by good pyramidal faces, so that a redetermination of the axial ratio of the mineral has been possible. Dr. W. T. Schaller had previously reported this to be $c = 1.09$, on the basis of a very rough measurement on a single crystal from the same locality.[2] Full details of the new results will be published in the Proceedings of the National Museum in a few months, but the following preliminary data seem worth placing on record at this time:

THAUMASITE

Hexagonal (hemimorphic?). $\rho_p = 47°05'$. $c = 0.931$

Forms:

base	c	0001
second order prism	a (new)	$11\bar{2}0$
first order prism	m	$10\bar{1}0$
first order pyramids:	e (new)	$10\bar{1}2$
	f (new)	$20\bar{2}3$
	p	$10\bar{1}1$
	q (new)	$30\bar{3}2$

[1] Published with permission of the Secretary of the Smithsonian Institution.
[2] *Bull. U. S. Geol. Survey*, **610**, 130, 1916.