The Occurrence of Opal in Granite near New Ross, Lunenburg County, N. S.—By Harry Piers, Curator of the Provincial Museum, Halifax, N. S.

Read 23rd May, 1910.

On 15th March, 1910, the Provincial Museum received from Charles Keddy of Lake Ramsay, near New Ross, Lunenburg County, N. S., a prospector whose name is connected with the discovery in 1906 of tin ore and other minerals in that interesting district, a small mineral specimen which he desired to have identified (museum accession no. 3538).

He stated that he had found it in a vein of quartz, about two or three inches wide, cutting mixed red and white granite, on land owned by Amos Gates, between New Ross and Lake Ramsay, Lunenburg County, N. S. The location is 1⅝ mile west of the cross-roads at New Ross, and 1½ mile southeast of the south end of Lake Ramsay, while it is about ¼ of a mile south of the Dalhousie Road and about ⅜th of a mile east of Larder River. From the cassiterite deposit at John Reeves's, it is 1½ mile east, and about ¾ of a mile northeast of the molybdenite occurrence on Larder River. (Vide map of the district marked by Mr. Keddy).

It is presumed that this quartz-vein, is related to the pegmatite dikes and schlierens which are met with in that district, and in one of which occurs the cassiterite which has been reported on.* It is probable that the vein is the ultimate penetration of pegmatitic matter into the granite, as granitic dikes are frequently found to pass at length into quartz alone, the mica and orthoclase constituents having been earlier deposited, thus leaving the acidic remainder to intrude furthest into the enclosing mass.

*Piers.—Occurrence of Tin in Nova Scotia: Trans. N. S. Inst. Science, xii, pt. 3, p. 239.

The specimen is the Girasol variety of Opal, which is defined by Dana as "bluish-white, translucent, with reddish reflections in a bright light." More play of colours or fire-like reflections would make it a Precious or a Fire-opal; and a lack of such colour, a Common Opal.

The specimen furnishes the following description: Its greatest length is .35 of an inch; and its thickness about .22 of an inch. The original weight was 40.9 centigrammes. Hardness about 6. Specific gravity, 2.12 (Opal has a specific gravity varying from 1.9 to 2.3; but when pure, from 2.1 to 2.2; being thus less than quartz, which is from 2.5 to 2.8). The lustre is vitreous or subvitreous. Colour milk-white, with rather feeble internal reflections or glows of a delicate vinaceous-pink (pale yellowish pink) colour, when turned about in a strong light. Streak white. In diaphaneity it is subtransparent.

It is soluble, when powdered, in strong, hot potassium hydroxide; gives off water when heated in the closed tube; is infusible before the blowpipe; and is readily scratched by quartz (7) and scratches apatite (5). These characteristics and its low specific gravity plainly show that it is not any of the varieties of ordinary quartz.

Mr. Keddy writes me (18th May, 1910) that he has a smaller specimen which is much handsomer, having more play of colours, red, yellow and blue; and if this is so, it must more nearly approach the Precious Opal.

With these handsomer specimens, he says, there were found others, reddish-brown and yellow, and opaque; all occurring in the same quartz vein. The Museum received from him on 19th November, 1910, two of these latter duller specimens (accession no. 3661). They consist of Common Opal (milky white) in what is doubtless Jasp-opal (brownish yellow). One of these two specimens weighs 21.1 centigrammes and is of a cinnamon (brownish yellow) colour and opaque; with milk-

white, opaque, to greyish translucent patches and minute mottlings and spots; and it has a specific gravity in the whole of 2.24. The other one, which weighs 24.7 centigrammes, is mostly of a cinnamon colour, dull and opaque; with minute circular spots of milk-white, opaque mineral; and has a specific gravity of 2.34. The higher specific gravity of these two specimens as compared with the Girasol, is doubtless owing to the impure brownish yellow mineral in the former, whose colour is owing to the presence of impurity in the form of iron oxide.*

The occurrence of Opal near New Ross is a very interesting addition to the long list of rare or otherwise noteworthy minerals found in that locality.† The Opals here described are not brilliant enough to make them of commercial value as precious stones, but it is not unlikely that others of finer fire may yet be found there.

Regarding the finding of Opal in Nova Scotia in the past, it may be noted that Dr. Abraham Gesner ("Geology and Mineralogy of N. S.," 1836, p. 248) speaks of the occurrence of Opal and Semiopal in the triassic trap of Partridge Island, Cumberland County, N. S., and says he had obtained two small nodules of the former, both resembling pieces of wax. Prof. Henry How ("Mineralogy of N. S.," 1869, p. 185) refers to Gesner's statement just mentioned, and says that Semiopal or Common Opal is found at a few localities in the

*Another specimen received on 18th April, 1913, from Mr. Keddy is about an inch in diameter, and was thought by him to be Common Opal, but on examination proves to be Chalcedony. It is cryptocrystalline, has a concoidal fracture, scratches glass readily (hardness 7), is subtranslucent, has a dull waxy lustre, and is white in color. It has a specific gravity of 2.56 (which is greater than that of Opal), and is not soluble in hot potassium hydroxide. Small tongues of greyish translucent mineral penetrate a short distance from the sides, and may possibly be opal-silica, which would account for the specific gravity being slightly below the normal for Chalcedony (2.60-2.64). The lack of sharp edges to this specimen, at first suggested that it might have been found loose in the soil, but Mr. Keddy assures me that he got it out of the Opal-bearing vein when he was taking off its surface.

†See Trans. N. S. Inst. Science, xii, p. 3, p. 246. Also Faribault (E. R.), Summary Report Geol. Survey Canada, 1907, p. 80; and Young (G. A.), ib. p. 77.

province, that it is generally white or nearly so in colour, and that some of the mineral so called may be Cacholong. A specimen which he considered to be Opal-agate was found as a loose pebble at Beech Hill, to the southward of Kentville, Kings County, and a portion of it was sent to Mr. Julius Cornelius, jeweller, of Halifax, who had it cut and polished, and so produced handsome seal or ring-stones composed of white and bluish-white stripes about the sixteenth of an inch thick. The only occurrences mentioned in How's list of mineral localities are at "Partridge Island (opal, semiopal)," and "Beech Hill (opal-agate, loose)." Diatomaceous Earth, which chemically is a variety of Opal, is found in a large number of lakes of Nova Scotia; and Cacholong is also a variety of the same mineral. These, however, are of no interest to the lapidary.

Precious and Common Opal usually occur as hydration products filling cavities and fissures or seams in igneous rocks, such as trachyte, porphyry, etc.; also in mineral veins and elsewhere.

In closing, it may be mentioned that a beautiful blue, transparent mineral is reported to have been found by John Reeves in in the pegmatite debris at the tin prospect on his land about 7/8 of a mile south-southwest of the south extremity of Lake Ramsay, to the west of New Ross. It was shown to me, and is undoubtedly very beautiful, but I had no opportunity of making an examination whereby its character might be ascertained. It has been suggested that it may be a blue Beryl, which is not improbable. Beryls have been found there, although I presume that they were of the common green variety.