Note on Colorado Hydrophane.

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SOME experiments on the hydrophane recently found in Colorado led Mr. G. F. Kunz (*Am. J. Sc.* XXXIV. pp. 479-480, Dec. 1887) to the extraordinary conclusion that this mineral absorbed more than its own bulk of water. Mr. Kunz, with great kindness, furnished me with a supply of this variety of opal from the locality in question. I can confirm the accuracy of his experimental results, but not of his deductions therefrom.

A flat piece of this hydrophane weighing ·578 gram absorbed ·276 gram of water, becoming nearly transparent. This amount corresponds to an addition of 47·75 parts of water to 100 of opal, so that the saturated hydrophane contained 32·43 per cent. of water. I determined the volume of the mineral, both in the dry and wet state, by weighing the quantity of pure mercury which it displaced from a small glass cup (with a covering plate) full of that metal. In this way I proved that the volume of the wet hydrophane was identical with that of the dry. The mean weight of mercury displaced in several experiments was 7·415 grams. This, corrected for temperature and reduced to its equivalent volume and weight of water, corresponds to ·546 cub. cent. or grams, and gives 1·06 as the specific gravity of the dry hydrophane.

From the above data—namely, ·546 cub. cent. for the volume of the hydrophane, and ·276 cub. cent. for the volume of the water it absorbs—we reach the conclusion that 1,000 volumes of hydrophane absorb 505 volumes of water, that is, just over half the original volume of the mineral.

As there is room for the imbibition of ·276 cub. cent. of water in the piece of hydrophane with which my experiments were made, we may conclude that the actual opal-substance therein occupies the space of ·270 cub. cent. only, out of the total volume of ·546. For ·546 − ·276 = ·270. We deduce thence the figure 2·14 for the specific gravity of the opal-substance free from interstitial air. Mr. Kunz, by the ordinary method of weighing in air and then in water, obtained the figure 2·122 for the specimens with which he worked.