

COMMUNICATIONS FROM THE OXFORD MINERALOGICAL
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*Note on Mica (Fuchsite) as a decorative stone used
by the ancients.*

By PROFESSOR H. A. MIERS, F.R.S.

[Read March 25, 1902.]

THE specimen to which the following note refers was found in the Oxford Collection, and nothing is known of its origin.

It is a polished piece of translucent emerald-green stone, with patches of darker green and also patches of a dull brown colour.

The stone has taken a high polish, and brilliant internal reflections from immediately below the surface of the paler portions give it in those parts almost the appearance of a flawed emerald. But the fractured surface shows it to be merely a massive, pale green, micaceous mineral with brown patches, which appear at first sight to be only an iron-stained variety of the same substance.

The fragment is a portion of the right leg of a statuette of a nude figure, and of excellent workmanship; it is three inches in length, and extends from the hip to the knee; holes bored into the two ends indicate that the statuette was composed of small segments joined together, and suggest that the material could not be obtained in larger pieces.

I have never seen any decorative or sculptural work in which this material has been used, neither have the archaeologists to whom I have shown it. They unite, however, in attributing the work to a Roman artist and to the best period.

It is unfortunate that the rest of the statuette has disappeared, for it would have been interesting both on account of its material and its workmanship.

The mineral appears to be a pale green mica, consisting of small plates; cleavage flakes examined under the microscope yield an axial angle of about 70° , and a negative bisectrix not quite perpendicular to the cleavage. The specific gravity (in the mass) is 2.84.

Blowpipe tests show the presence of chromium, so that the mineral is to be referred to chrome-mica or fuchsite.

Examined under a high power, the brown patches are found to owe their colour to minute included crystals, some twinned, and some simple, which have the characteristic form of rutile or zircon. Since they exhibit also lamellar twinning and do not give an absorption-spectrum, they are probably rutile.

The chief interest of the specimen is really archaeological; and this note is published with the object of directing the attention of mineralogists to the ancient use of this material as an ornamental stone, in the hope that they may see and identify similar specimens elsewhere. A polished piece showing no fracture would scarcely be identified as mica except by one who had seen this specimen or read a description of it. The substance is so beautiful when polished, and takes such a good surface, that it was probably a highly valued material. It has occurred to me that it may very possibly be one of the stones which received the name of emerald among the ancients.

Pliny distinguishes no less than twelve varieties of smaragdus; and it is quite clear that the name was applied to a number of green minerals. One variety in particular he describes in the following words¹: 'Chalcedonii nescio an in totum exoleuerint, postquam metalla aeris ibi defecerunt; et semper tamen viles fuere, minimique. Iidem fragiles, sed colore incerti, et virentium in caudis paunum columbarumque collo plumis similes, ad inclinationem magis aut minus lucidi, venosi quidem squamosique. Peculiare erat in his vitium sarcion appellatum: hoc est, quaedam gemmae caro. Mons juxta Calchedonem, in quo legebantur, Smaragdites vocatus est.'

Here the flaky structure, the iridescence or internal reflections, and the brown stain may all very well relate to a mineral similar to the one described in this note. That it had been brought from the neighbourhood of copper mines would suggest that it may have been a mineral

¹ 'Historia Naturalis,' Liber XXXVII, 18.

which derived its green colour from copper; but this is by no means necessary.

King¹ identifies the chalcedonian smaragdus with 'crystals of transparent Chrysocolle,' an identification which will hardly recommend itself to mineralogists. Corsi² had supposed it to be the amazon-stone.

The use of fuchsite for decorative purposes in prehistoric times has been noted by Max Bauer³, who found pierced beads from Guatemala to consist of this material.

*Note on the Refractive Indices of Pyromorphite,
Mimetite, and Vanadinite.*

By H. L. BOWMAN, M.A.

[Read February 3, 1903.]

IT is somewhat remarkable that a group of minerals, of which such excellent transparent crystals are known as of pyromorphite, mimetite, and vanadinite, should not have hitherto been submitted to a detailed optical examination, except as regards the nature of the interference figures visible in a cross-section. The only reference to the refractive indices of these substances, which I have been able to find, is one by Schroeder van der Kolk⁴, who states that those of pyromorphite and vanadinite are above 1.93 (as found by immersion in highly refracting liquids), and that they have a birefringence of 0.02 and 0.01 respectively.

The object of the present note is to record the results of some determinations of the refractive indices of the three minerals, made with material in the Oxford Museum from various localities, by means of the prism method.

Unfortunately the angle (60°) between alternate natural faces of the

¹ 'Natural History of Precious Stones and Metals,' 1833, p. 288.

² 'Delle Pietre Antiche,' Roma, 1828, p. 170.

³ Centralblatt f. Mineralogie, 1900, p. 291.

⁴ Zeits. anal. Chem., 1899, Jahrg. xxxviii, p. 656.