the fragment at first sight like a striated felspar, or even like the remains of certain microscopic organisms. In following under the microscope the contours of these vitreous splinters, it will be observed that they are generally terminated by curved lines, and present a riddled appearance, all the sinuosities being curvilinear.[1] They also present in most cases near the vesicles the optical phenomena of tension, analogous to those observed in "Rupert's drops." From the differences in the form of the vesicles, and the nature of the fracture, it is even possible in some cases to determine the variety of pumice from which the minute splinters have been derived.

It must be pointed out that the trituration of floating pumice, and the decomposition of pumice at the bottom, both tend to bring about a more or less complete isolation of the individual minerals which formed an integral part of the pumice rock at the time of its eruption; these volcanic minerals are thus spread over the bed of the sea in the same way as the vitreous splinters of the pumice. It may therefore be very difficult to recognise a difference between volcanic dusts projected as ashes from a crater, and the pulverulent debris derived from the wear and tear of floating pumice at the surface of the ocean and its disintegration in the deposits. In the case of showers of ashes some mechanical processes may, however, produce a sorting of the mineral particles from the areolar vitreous particles, as for instance when these are transported by winds or marine currents. On account of their lightness, the vitreous particles are carried to greater distances than the fragments of crystallised minerals coming from the same eruptions. It follows from this, that at any given point the pumiceous particles may quite well predominate in a marked manner over the minerals. This may explain why in some deposits the vitreous particles appear to mask, by their number, the volcanic minerals with which they are associated.

As examples of the aspect and of the characters which these minute particles of pumice affect in the sediments, we have represented on Pl. XXVI. fig. 4 the residue (mineral particles) of a Blue Mud from the South Pacific, Station 303, 1325 fathoms. Almost the whole field of the figure is here occupied by pumice particles. Two varieties can be distinguished: first, basaltic (designated in our Tables brown vesicular glass), the minute fragments of which are perfectly characterised by their slightly brownish tint, by their less lengthened structure, and by the relatively small number of vesicles. The little pumice fragments of the more acid variety are distinguished by their elongated fibres and pores, their very irregular borders, and their almost colourless tint, which may be said to be more or less greyish. This figure gives a good idea of the characteristic appearances just described; it also shows the predominant part taken by microscopic splinters of pumice among the mineral particles of this deposit. Pl. XXVII. fig. 3 shows the extremely fine mineral particles in a Red Clay from the North Pacific, Station 240, 2900 fathoms. The splinters of pumice figured here belong especially to the acid variety.

[1] A. Penck, "Studien über lockere vulkanische Auswürflinge," *Zeitschr. d. d. geol. Gesellsch.*, 1878, pp. 97–129; J. S. Diller, "Volcanic Sand which fell at Unahalashka, Alaska, Oct. 20, 1883," *Science*, vol. iii. p. 651.