

By treating this deposit with dilute acid, casts of the Foraminifera shells are obtained, the majority of which are of a brick red colour, although a few are of a yellowish, or even greenish, tinge. They are not so compact or well-marked in outline as the white and pale straw-coloured casts usually met with in glauconitic muds, and have very frequently a porous aspect, from the solution of the carbonate of lime being, in many instances, associated with the red material forming the casts. If some of the Foraminifera be treated with dilute acid, and the action stopped after it has continued for some time, and the substance dried and examined by reflected light, a number of casts of the organisms are seen in carbonate of lime looking quite like milky quartz. If, however, the action be continued, it is seen that they are composed of lime as they quite disappear, leaving a small residue of a reddish colour, or very areolar casts of the shells in the same red substance. Examined in thin sections, it is observed that the shells are filled with a red, yellowish, or greenish matter, frequently extending into the foramina. The shell is at once distinguished from the cast by its structure, transparency, and optical properties. It is sometimes observed that two or three shells or fragments are cemented by the same red substance forming the casts. This substance when sufficiently transparent appears of a yellowish red colour, and gives sometimes aggregate polarisation, but is never extinguished between crossed Nicols. Often the casts enclose small mineral particles. Seen by transmitted light, there is a great difference between the calcareous casts and the carbonate of lime constituting the shells themselves. These casts are but slightly transparent, greyish coloured, or almost opaque, the opacity being due to infinitesimal foreign particles which remain as a red residue after treatment with dilute hydrochloric acid. With very high powers it is seen that the structure of the grey calcareous casts is granular, and between crossed Nicols it is evident that the grains are crystalline.

An analysis of the red coloured casts above described, obtained by treating the deposit with very dilute acid, was made by Dr. Sipöcz; and, although the analysis shows that they are composed of a hydrated silicate containing all the constituents of typical glauconite (iron, alumina, magnesia, and alkalies), yet the various percentages, especially that of silica, differ so considerably from the mean numbers obtained for glauconite, that the substance cannot be grouped with that mineral species. Perhaps these casts are in the process of becoming true glauconite. The large percentage of ferric oxide (39 to 93), which is in the form of hydrate, gives the red-brown colour to the casts.

RAINE ISLAND TO CAPE YORK.

At 1.30 P.M. Raine Island beacon bore N. 52° E., and the extremities of the Great Detached Reef S. 81° E. and S. 63° E. From here the ship was steered S.W. $\frac{1}{4}$ W. (under sail) towards the Ashmore Banks, which were sighted at 3.30 P.M., Hardy Island being seen shortly afterwards. Crossing the edge of the barrier, the 5 and 6 fathom