

continental rocks over the ocean to considerable distances from their embouchures, but icebergs effect this distribution to a much wider extent than any other agent with which we are acquainted.

In the examination of the deposits collected by the Challenger and other expeditions, fragments of continental rocks and minerals were rarely if ever found in any of the regions of the great ocean basins far from land, except in, or in the immediate neighbourhood of, those regions affected by floating ice and icebergs in the northern and southern hemispheres. It is true that these fragments of rocks have been found some distance beyond the known limits of floating icebergs, but it is evident that floating ice must have had a wider extension formerly than at the present time. In the Quaternary Period, for example, the great extension of glaciers indicates that the icebergs derived from them must have been more numerous, while the climatic conditions must have contributed to their wider distribution in low latitudes.

During the voyage of the Challenger, the fragments of ancient rocks and minerals were met with in more or less abundance in the following regions:—

Between Bermuda and Halifax:¹ large block of syenite, diabase, quartziferous diabase, basalts; fragments of gneiss and of mica-schists; quartzite containing tourmaline, zircon, kaolin, chloritic substance; dolomitic limestone.

Between Bermuda and Azores:² sandstone containing mica; mica-schist.³

Between Tristan da Cunha and Cape of Good Hope:⁴ the presence of large fragments of quartz, orthoclase, hornblende, tourmaline, and augite, indicates that the Challenger here passed over a region occasionally affected with floating ice.

Between Heard Island and Melbourne.⁵ During this trip towards the Antarctic regions, blocks, pebbles, and fragments of ancient rocks were found to make up a considerable proportion of the whole of the deposits, the following having been observed:—Granite containing orthoclase, plagioclase, quartz, black mica; granitite containing orthoclase, plagioclase, quartz, black mica, and hornblende; gneiss containing quartz, black and white mica, garnet; amphibolite with large crystals of green hornblende and quartz; metamorphic quartzite speckled with black mica; fine grained micaceous sandstone, with white mica; fine grained chloritic sandstone; red sandstone; slates containing sericite, rutile, and quartz.

Between Tahiti and Valparaiso.⁶ Although the Challenger was considerably to the

¹ See pp. 151, 152.

² See p. 152.

³ The French ship "Talisman" dredged fragments of continental rocks even further to the south and east (see Fouqué and Lévy, *Comptes Rendus*, tom. cii. pp. 793-795, 1886).

⁴ See p. 157.

⁵ See pp. 163, 164.

⁶ See p. 180.