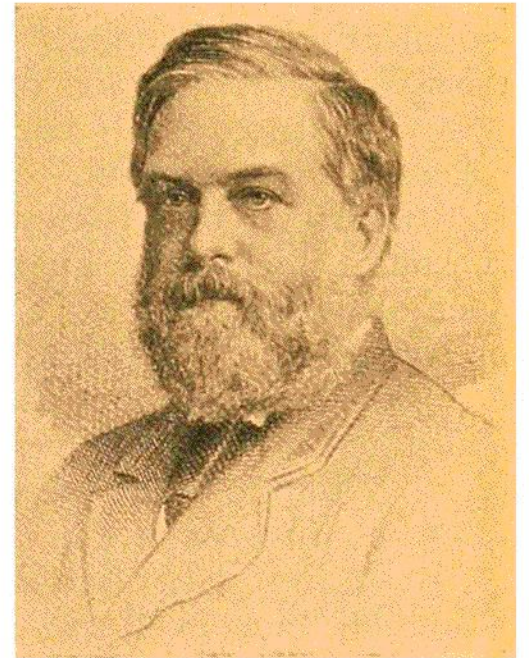


the fact that members of the higher groups of animals really lived at great depths in the sea.

Since 1861 Swedish and Norwegian expeditions to the Arctic regions and the North Atlantic have been numerous, and during one of these in 1864 many animals were dredged from depths of 1000 to 1400 fathoms by Otto Torell. In the same year Bocage published a paper on the occurrence of the glass-rope sponge (*Hyalonema*) at depths of 500 fathoms off the coast of Portugal, which was confirmed in 1868 by Perceval Wright, who went there for the purpose and dredged up specimens from 480 fathoms.

From the year 1867 dredgings as well as soundings were carried out under the auspices of the United States Coast Survey by Pourtalès and Louis Agassiz off the coast of Florida, and between Cuba and Florida. Pourtalès took up the examination of the deposit-samples after the death of Bailey, the number of samples collected up to 1870 being nine thousand. Louis Agassiz reported on the results of the dredgings, and compared some of the dredged forms with fossil types; he concluded by stating his conviction that the continental areas and the oceanic areas have occupied from the earliest times much the same positions as at the present day.



SIR C. WYVILLE THOMSON.

In 1868 were commenced a series of short cruises in the North Atlantic and Mediterranean, under the direction of British naturalists, which may be regarded as preliminary and leading up to the great "Challenger" Expedition. Thus in 1868 Wyville Thomson and W. B. Carpenter carried out oceanographical work on board H.M.S. "Lightning," taking dredgings in depths down to 650 fathoms, and showing beyond question that animal life is there varied and abundant, represented by all the invertebrate groups, a large proportion of the forms belonging to species hitherto unknown, others being specifically identical with tertiary fossils hitherto believed to be extinct, or illustrating extinct groups of the fauna of more remote periods. The temperature observations seemed to

Torell.

Bocage.

Perceval  
Wright.

Portalès.

Louis Agassiz.

Permanence  
of oceanic and  
continental  
areas.

H.M.S.  
"Lightning."  
Wyville  
Thomson  
and W. B.  
Carpenter.