

cimetière se passèrent dans une sainte union avec Dieu ; déjà elle avait reçue les derniers sacrements.

20. Le Kremlin, cette citadelle où les empereurs de Russie se sont défendus contre les Tartares, est entourée d'une haute muraille crénelée et flanquée de tourelles qui, par leurs formes bizarres, rappellent plutôt un minaret de Turquie qu'une forteresse comme la plupart de celles de l'Occident.—J. O. G. in *Journal de L'Instruction Publique*.

(Corrections next month.)

NATURAL SCIENCE.

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THE PHYSICAL GEOGRAPHY OF THE SEA.

ON the 7th of December, 1872, Her Majesty's ship *Challenger* left the port of Sheerness, on a voyage of scientific discovery, and was absent almost four years. She was fitted out in the most complete manner, with a view to the particular errand upon which she was bent, and the scientific men in charge of the expedition were among the most eminent that England could afford. The whole distance traversed was some 70,000 nautical miles, and the mass of facts obtained in regard to the physical geography and zoology of the sea was such that they have not yet been completely worked up. Many interesting points, however, have already been settled, and an account of them has been published by Professor W. B. Carpenter. To one or two matters of more than ordinary interest, we propose to direct attention here.

It has commonly been supposed by geologists, and has been distinctly stated by the late Sir Charles Lyell, that during the past history of our globe the land and sea have not always preserved the same relation to each other which they have now, that lands which are now covered by deep sea must more than once have been above the surface of the water; and land which is now high and dry must have been more than once buried in the depths of the ocean; in other words, that a sort of see-saw process has

been going on during the ages that have gone by since the earth first began to cool, the land alternately rising and sinking. The observations taken during the *Challenger* expedition have established that this theory requires a good deal of modification before it can be accepted as truth. It will be remembered that the soundings which were taken in the North Atlantic in 1857, preparatory to the laying of the great cable, showed that, for one hundred miles or so from the west coast of Ireland, the water deepens very gradually until it attains a depth of about six hundred feet; that then the bottom suddenly sinks, and that, at no very great distance to the west of this point, depths of twelve thousand feet are found, after which the bottom is almost level until the American coast is approached. As Professor Huxley says:—"If the sea was drained off, you might drive a waggon all the way from Ireland to Newfoundland." But as the American coast is approached, a steep incline is encountered, exactly as on the British side, and at about the same distance from shore; and after this sudden ascent is passed, the water gradually lessens in depth until dry land is reached.

Now the surveyors of those days thought themselves extremely lucky in hitting upon so favourable a position in which to lay the projected cable. They thought that the circumstances just detailed were altogether exceptional in character, but if there is one fact more clearly established than another by the observations of this expedition, it is that these circumstances regarding the nature and conformation of the sea bottom are not at all exceptional, but, on the contrary, that *they are the rule*. It has been shown that around all the continents there is a fringe of submerged land, covered by comparatively shallow water; that this fringe is, as a rule, about one hundred miles in width; that the deep sea proper does not begin till this fringe is passed, and that the depth of the ocean is, with a few exceptions, nearly uniform. It will be readily understood, then, that these borders of land which are covered by shallow water, must be regarded as part of the continental areas of the globe; and that these continental areas are vast elevations of land,