PERSONAL DANGER CONNECTED WITH ELECTRIC LIGHTING.

In a recent paper Mr. Swan, of Newcastle, says:

"While on the subject of alternating currents, I take occasion to remark on a letter of Mr. Preece in the *Times*, referring to the death of two persons, said to have occurred through their taking hold of the wires in connection with an apparatus supplying the current to Jablochkoff's candle. One of these cases occurred some time ago; the other was more recent. Now, admitting for the moment that these deaths occurred directly from the shock (which I consider by no means proved), I do not think that the extreme views put forth by Mr. Preece as to the dangers consequent on electric lighting in general can be supported, and for this reason:—The machine which supplies a Jablochkoff s candle gives alternating currents; the machines which supply the ordinary electric arc, which supply my lamps, and which are more *generally* used for lighting, give a current constant in one direction. Now, although the physiological effect of the alternating currents is undoubtedly severe, yet the effect of touching the wires from a direct-current machine is merely that you feel at the moments of making and breaking contact a slight shock, but while you have hold you feel almost nothing. [Mr. Swan afterwards demonstrated practically the harmlessness of the current by taking hold of the wires from the dynamo-electric machine for some minutes.] I think Mr. Preece, knowing how many real difficulties are connected with electric lighting, should hardly have added to these by magnifying to so great an extent the dangers which in some cases *may* accompany it."

REPORT OF THE DREDGING CRUISE OF THE U. S. STEAMER *BLAKE*, COMMANDER BARTLETT, DURING THE SUMMER OF 1880.*

By Alexander Agassiz.

The cruise was undertaken with the object of determining the exact relation of the fauna of the Atlantic Ocean to that met with in the Gulf of Mexico, and in the Caribbean Sea. In the Atlantic and Pacific oceans, deep-sea soundings have generally been made to a depth of 1500 fathoms; in the Gulf of Mexico, to a depth of 450 fathoms. Work was begun in June last, south of Cape Hatteras, on a line parallel to the coast, and at an average distance of about 120 miles from it.

Instead of finding a gently sloping sea-bed, as has heretofore been supposed to exist in these latitudes, the dredgers discovered, what proved to be, a continuation of the plateau, of which the northern portion is known to extend as far as Cape St. George, and of which the southeasterly limit is supposed to rest on the Bahama Banks. The western ledge on this plateau, was examined during last summer's cruise, and proved very interesting from a geological point of view. The eastern slope has not been traced as yet. Its exact limits is a matter of conjecture, but are to be determined in next year's cruise. The sides of this plateau are steep. Three ship's lengths from a point where a depth of 100 fathoms was reached, the sounding apparatus did not strike bottom until 450 fathoms of the line had been paid out. More animal life is found on the edge of the plateau than elsewhere. The character of the animals is, on the whole, the same as that of the species found in the Gulf of Mexico and the Caribbean Sea. The edges are composed of rich deposits of alluvia and mud, washed from the top of the plateau by the action of the Gulf stream, the course of which extends over the entire length of this Atlantic plateau. The deposits of numerous rivers flowing into the Atlantic Ocean serve to enrich the western slope. These conditions are all favorable to the preservation of animal life on the edges of this submarine highland, while on its top no animal life is to be met with, a certain species of coral formation excepted. Altogether the success, obtained by this expedition, was great. The same set of officers has served for three consecutive seasons. The same amount of work, which, in the course of the first year's cruise, required three months' time, during the past season has been accomplished in seven weeks. Work was continued day and night. The rapidity with which the soundings were made enabled eight dredges, each of them to the depth of 800 fathoms, to be made every twenty-four hours. Formerly, one deep-sea sounding was considered a good day's work.

* Read before the National Academy of Sciences, N. Y., 1880.

THE DURATION OF THE ARCTIC WINTER.*

By Leutenant F. Schwatka, U. S. N.

The generally received opinion, that the Arctic winter, especially in the higher latitudes, is a long dreary one of perfectly opaque darkness, is not strictly correct. In latitude 83° 20′ 20″ N., the highest point ever reached by man, there are four hours and forty-two minutes of twilight on December 22, the shortest day in the year, in the Northern Hemisphere. In latitude 82° 27′ N., the highest point where white men have wintered, there are six hours and two minutes in the shortest day, and it is in latitude 84° 32′ N., 172 geographical miles nearer the North Pole than Markham reached, and 328 geographical miles from that point, that the true Plutonic zone, or that one in which there is no twilight whatsoever, even upon the shortest day of the year, must be found. Of course, about the beginning and ending of this twilight. it is very feeble and easily extinguished by even the slighest mists, but nevertheless it exists, and is quite appreciable, on clear cold days, or nights, properly speaking. The North Pole itself is only shrouded in perfect blackness from November 13 to January 29, a period of seventy-seven days. Supposing that the sun has set (granted, the existence of a circum-polar sea, or body of water, unlimited to vision) on September 24, not to rise until March 18, for that particular point, giving a period of about fifty days of uniformily varying twilight, the Pole has about 188 days of continuous daylight, 100 days of varying twilight, and 77 of perfect inky darkness (save when the moon has a Northern declination) in the period of a typical year. During the period of a little over four days, the sun shines continuously on both the North and South Poles at the same time, owing to refraction parallax, semi-diameter and dip of the horizon.

SIGSBEE'S GRAVITATING TRAP*

By Alexander Agassiz.

Lieutenant-Commander Sigsbee devised this trap to ascertain the depth to which the animal fauna of the ocean descends. The extisence of animal life at great depths is extremely doubtful and this belief is confirmed by the fact that, whether dredging in 50 or 2000 fathoms of water, there is always brought to the surface the same species of animals. To secure water from different depths, Lieutenant-Commander Sigsbee constructed cylinders with traps, which could be opened from on board the vessel by lines, and which closed with the pressure of the surrounding water as soon as filled. They were found to sink 50 fathoms in 45 seconds. At the depth of 50 fathoms the trap brought to the surface the animals that usually float on the surface. At the depth of from 50 to 100 fathoms the number of animals decreased and only five species of pelagic forms were found, while seventeen species had been discovered at the former depth. Using every possible precaution the apparatus was next sunk in from 100 to 150 fathoms of water, but no animal life was found. The water was perfectly clear. The dead bodies of pelagi require from three to four days to sink in 1000 fathoms of water.

* Read before the National Academy of Sciences, N. Y., 1880.