

the regular geodetic and hydrographic survey. Here, also, would geological knowledge be of great advantage to the explorer. In confirmation of my recommendation I need only remind you of a striking fact in the history of our science. More than thirty years ago, before Dana and Darwin had published their beautiful investigations upon the coral reefs, a pupil of mine, the late Armand Gressly, had traced the structure and mode of growth of coral reefs and atolls in the Jura mountains, thus anticipating, by a geological investigation, results afterward obtained by dredging in the ocean. The structure of the reefs of our shores is, therefore, more likely to be fully understood by one who is entirely familiar with zoölogy and geology than by a surveyor who has no familiarity with either of these sciences.

There is another reason why I would urge upon you the application of natural sciences to the work of the survey. The depth of the ocean is a great obstacle to a satisfactory exploration of its bottom. But we know now that nearly all dry land has been sea bottom before it was raised above the level of the water. This is at least the case with all the stratified rocks and aqueous deposits form-