William Botting Hemsley, Botany of the Challenger Expedition: Botany of Juan Fernandez, the South-Eastern Moluccas, and the Adn

To test still further the kinds of seeds which appeared sound in the first experiment, thirty-four of them were subjected to a trial of ninety-three days' duration. Only nine of them withstood this trial and germinated, when placed under the most favourable conditions, namely: *Cucurbita pepo*, *Acacia julibrissin*, *Xanthium macrocarpum*, *Beta vulgaris*, *Rumex aquaticus*, *Ricinus africanus*, *Ricinus communis*,[1] *Ephedra distachya*, and *Canna gigantea*. And of these the *Acacia* and *Canna* do not float,[2] so that out of a total of ninety-eight kinds, only seven[3] retained their germinative power after three months floating on the sea. This, as Martins observes, is a very small proportion, and then the chances of their germinating and establishing themselves if cast ashore are infinitesimally small; yet it does not follow, we think, that the sea has exercised a comparatively inappreciable influence in the diffusion of the vegetation of the world, though the number of species so transported be relatively insignificant.

A third series of experiments, with the same object, was undertaken by Mr Gustave Thuret, at the instigation of M. Alphonse De Candolle. The results[4] were much the same as those obtained by Martins; but as the seeds were subjected to a thirteen months' ordeal, it is interesting to note the species that survived and germinated afterwards. They were: *Silene atocion*, *Hibiscus speciosus*, *Medicago sativa*, *Mesembryanthemum crystallinum*, *Apium graveolens*, *Cichorium endivia*, *Campanula laciniata*, *Lycopersicum esculentum*, *Phytolacca* sp., and *Beta vulgaris*. From the prolonged period these seeds withstood the action of sea-water it would seem that certain seeds are practically imperishable therein; and, what is more remarkable, Mr Thuret states that several of them not only germinated, but actually grew more vigorously than corresponding samples of the same seed kept dry during the same period. It is noteworthy, too, that the ten plants which underwent this trial, belong to as many different natural orders; and they are not specially maritime plants. Doubtless the condition of the seed at the time of immersion has much to do with its capability of floating, and likewise of its power of enduring the action of sea-water. In a note at the end of Thuret's paper De Candolle reiterates his conviction that oceanic currents exercise extremely little influence in the diffusion of plants, and that it is limited to the littoral element. Thuret[5] himself is more dogmatic, for he says, with the exception of plants that grow naturally on sandy or muddy sea-shores, one could not seriously admit that seeds stranded on the sea-shore would ever find the conditions necessary for their development and the propagation of their species.

Without actual proof of the contrary, this might be treated as a false inference, because we know that many plants, not specially littoral, grow equally well just above the ordinary high-water line as farther inland; and in stormy weather, the only times at

[1] Varieties of one species.
[2] The pods of the former probably would.
[3] Only six, counting the varieties of *Ricinus* as one.
[4] Archives des Sciences de la Bibliothèque Universelle, July 1873, p. 177.
[5] *Loc. cit.*, p. 182.

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