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SATURDAY, DECEMBER 29, 1877.

GROWTH UNDER DIFFICULTIES.

PLANTS often set us moralists an example we should do well to follow. While adversity comes they are not, as some of us are, overwhelmed and reduced to the inaction of despair; they seem to act on the principle that a difficulty is a thing to be overcome, and if they cannot effect it in one way they will in another. This great pliability of plant-life—this adaptation to varied conditions and circumstances, strikes us every day, and never more forcibly perhaps than in reference to the various methods of treatment applied to the Grape Vine. It might have been thought that the main lines of practice were sufficiently laid down by this time, but experience shows how great is the conflict of opinion upon a point of everyday practice. Experience also shows, that disregarding extreme and exceptional cases, the general results are much the same. Skill and care go for much—very much—for all the skill and all the care the would avail nothing if the plant did not lend itself to the practitioner, and meet his advances much more than half way.

The following communication, with which we have been favoured by Mr. Darwin, affords us another illustration of similar character:

"The enclosed branch of Cotyledon (Echeveria stolonifera) was cut from a plant growing in my greenhouse, and was suspended on August 25th in my study, which is a dry room, and in which a fire burns most of the year. It has sent out the two fine flowering stems which, from the position in which the branch was hung, hung stereotomously in a line upwards [as may be seen in the figure]. They have now (December 6) begun to flower. You will see that the plant has sent out a number of small roots. I may add that the specimens weighed on September 1 45.46 grammes, on December 6 46.45 grammes, so that its growth has continued in spite of a considerable loss from evaporation. Charles Darwin, Down, Beckenham."

Mr. Darwin was kind enough to furnish us with the specimen from which the accompanying figure, was taken (fig. 150). It is of interest for several reasons—first, as showing how long life may be manifested with only a scanty supply of food from the air and the water therein. Growth in the form of the addition of new matter can hardly be expected to any extent, so that it is not surprising that a loss of weight of about 10 grammes (a gramme = 15 grains, 1 pound) took place between September 1 and December 6—a loss which would probably have been greater but for the leafy rind of the leaves.

But while actual growth, in the sense of increased bulk, has been checked, the course of progressive development has advanced to such a degree that two flowering shoots with their appropriate form of leaf, and with their still more widely different floral leaves, have been formed. The mysterious tendency for the stem to ascend is manifested here as markedly as it usually is. Bromeliads manage to exist in a rootless state when hanging up in our stoves, but they are more literally treated in this manner than Mr. Darwin's Echeveria was. M. Duchartre submitted some plants of this character to experiment with a view to determine what part of the rootless plant absorbed the water, and he ascertained that it was the butt end of the stem which fulfilled the function in question under those peculiar circumstances, and he, moreover, showed that watery vapour was not absorbed by the plant but water itself in a liquid state. Many years before
THE GENUS AGAVE.

Notes, p. 53; Fens in Gard. Chron., 1879, p. 1194, t. 273.—Acanthium. Leaves 12—20 in a rosette, lanceolate, spreading, ½—1 foot long, ½—1 inch broad below the middle, narrowed slightly downwards, glaucous green, deeply channelled, mottled on both sides with irregular brownish blotches, the edges distinctly serrulate. Spike 2—3 feet long below the inflorescence, furnished with a few lanceolate bract-leaves. Flowers in a lax subsessile raceme ½—1 foot long; pedicels very short; bracts small, lanceolate, acuminate. Perianth purplish-green, ½—2 inches long; ovary oblong, under gathered by Mr. C. Wright (var. breviflora, Engelmann, 1879, p. 121), but in our specimens of the same gathering, whilst the upper flowers of the spike have the tube nearly obliterated, the lower ones have it as long as in the ordinary form. Jacoby, in his first description (p. 43), describes a variety of Agave Americana in which the leaves reach only 3 or 4 inches in length, and a third of an inch in breadth. This species may be readily distinguished from all the other Manfredas by its short stems and distinctly toothed leaves.

**Filaments much longer than the perianth segments.**

† Perianth segments shorter than the tube.

† A. (Manfreda) virginica, Linn. Sp. Plant., ed. 3, p. 367; J. q. 11, t. 378; F. Mag., t. 1277; Kuntz, Enum., v. 9, p. 832; Jacoby, Monogr., p. 1274; Engelmann, Notes, p. 13, but not of Miller, which is a variety of A. americana. Acaulecent. Leaves 10—15 in a rosette, spreading, lanceolate, 6—12 inches long, ½—1 inch broad below the middle, narrowed gradually to the point and a little downwards, channelled down the face, undulated, plain green or mottled with brown spots—the narrow carinaligus margin very obscured. Spike 2—3 feet high, exclusive of the spike, with only a few distinct small bract-leaves. Spike very lax, 1—1½ foot long; lower flowers with very short pedicels; bracts lanceolate, those of the lower flowers ½—1 inch long. Perianth greenish-yellow, ½—1 inch long, including the ovary; ovary oblong, ½—1 inch long; tube ½—1 inch long in the lower flowers, little dilated from the base to the throat; segments linear-oblong, ½—1 inch long. Filaments inserted below the throat of the tube, exerted ½—1 inch; anthers ½ inch long. Style reaching to the top of the filaments. Capsule nearly globose, ½—1 inch long, cucipitate and subcapiticate; seeds black, discoid, semi-circular, ½—1 inch broad.

Widely spread through the Southern United States. Dr. Engelmann describes a variety tigrina, a robust form with beautifully mottled leaves 1—1½ foot long, ½—1 inch broad, gathered by Dr. Mellichamp, near salt marshes, on the coast of South Carolina. A. constricta, Jacoby and Bouche, Monogr., p. 192, sent from Mexico by Ehrenberg, unknown in flower, is said to be closely allied to A. virginica.

† A. (Manfreda) brachyloba, Cavan, Deser. (1820), p. 453; Kuntz, Enum., v. 9, p. 832; Jacoby, Monogr., p. 1274; L. angustifolia, D. C., in Rod. Lili., t. 495, non Cav.-A. Polyalthia, Cham. and Schl.: in Linnaea, v. 16, p. 25; A. sonneratii, Lindl., in Bot. Reg., v. 11, t. 378; Misc., p. 75; v. 12, p. 76; Jacoby, Monogr., p. 177; A. humilis, Roem. Ameryl., p. 15; Acaulecent. Leaves 10—12 or more in a rosette, spreading, lanceolate, 1—1½ foot long, ½—1 inch broad below the middle, narrowed gradually to the point and a little downwards, channelled down the face, plain green, glaucous, the narrow carinaligus edge very obscurely serrulate. Spike 3—4 feet long exclusive of the spike, with a few distinct lanceolate bract-leaves. Spike lax, ½—1 foot long; flowers ½—1 inch long, cylindrical in the lower half; segments greenish-yellow, spreading, linear-oblong, about ½ inch long. Filaments purple, inserted below the throat of the tube, exerted ½—1 inch beyond the tip of the segments; anthers ½ inch long. Style overtopping the filaments; stigma deeply 3-lobed. Capsule seen immature only, oblong, ½ inch long.

A native of Mexico, introduced to the Madrid garden at the beginning of the century. The best published figure is that of the Botanical Register, under the name of A. saponaria. We have an excellently unpublished drawing in the Kew collection, made from a plant that flowered in the garden about 1830, from seeds sent by Dupre. We have a living plant at Kew at the present time, contributed by the Rev. H. N. Ellacombe, and dried specimens have been described by Dr. Harvey from Zimapán as No. 1555 of Dr. Coulter's gatherings.

† A. (Manfreda) densa, Regel. and Ortig., in Gartenflora, 1874, p. 297, tab. 804.—Acaulecent. Leaves 12—15 in a rosette, spreading, lanceolate, 2 foot long, ½—1 inch broad below the middle, subulate at the base, one edge green mottled with brown and densely pubescent. Spike 3—4 feet long, distinctly bracteate. Spike ½—1 foot long, lanceolate, ½—1 inch long. Perianth greenish, ½ inch long; ovary oblong, ½ inch; tube twice as long as the segments, cylindrical in the lower half; segments linear-oblong, ½—1 inch long. Filaments style much protruded beyond the tip of the segments.

Discovered in Mexico by M. Roelof about 1870. I have not yet seen it in any of the English collections.