SATURDAY, DECEMBER 29, 1877.

GROWTH UNDER DIFFICULTIES.

PLANTS often set us mortals an example we should do well to follow. When 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—for very much ; but all the skill and all the care would avail nought 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 10 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, have bent 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 specimen weighed on September 1 45.46 grammes, on December 6 36.94 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. 159) 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, about) took place between September 1 and December 6—a loss which would probably have been greater but for the leathery 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 hung up in our stoves, but they are more liberally treated in the way of moisture 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.

(*Concluded from p.* 781.)

SERIES IV. — CARNOSO-HERBACEÆ. — Leaves almost herbaceous in texture, dying down annually, often spotted with brown, the tip not at all pungent, the margin entire, or at most minutely serrulate. Flowers few, solitary, laxly spicato-racemose = *Manfreda*, Salisb.

These form a most distinct group, worthy, I think, of separation from Agave as a sub-genus, in which habit and leaf-character and short life-duration run parallel with a well-marked distinctive type of inflorescence. The best characters by which to discriminate the species appear to be found in the relative length of the genitalia, perianth-segments and perianth-tube, and in the shape of the latter.

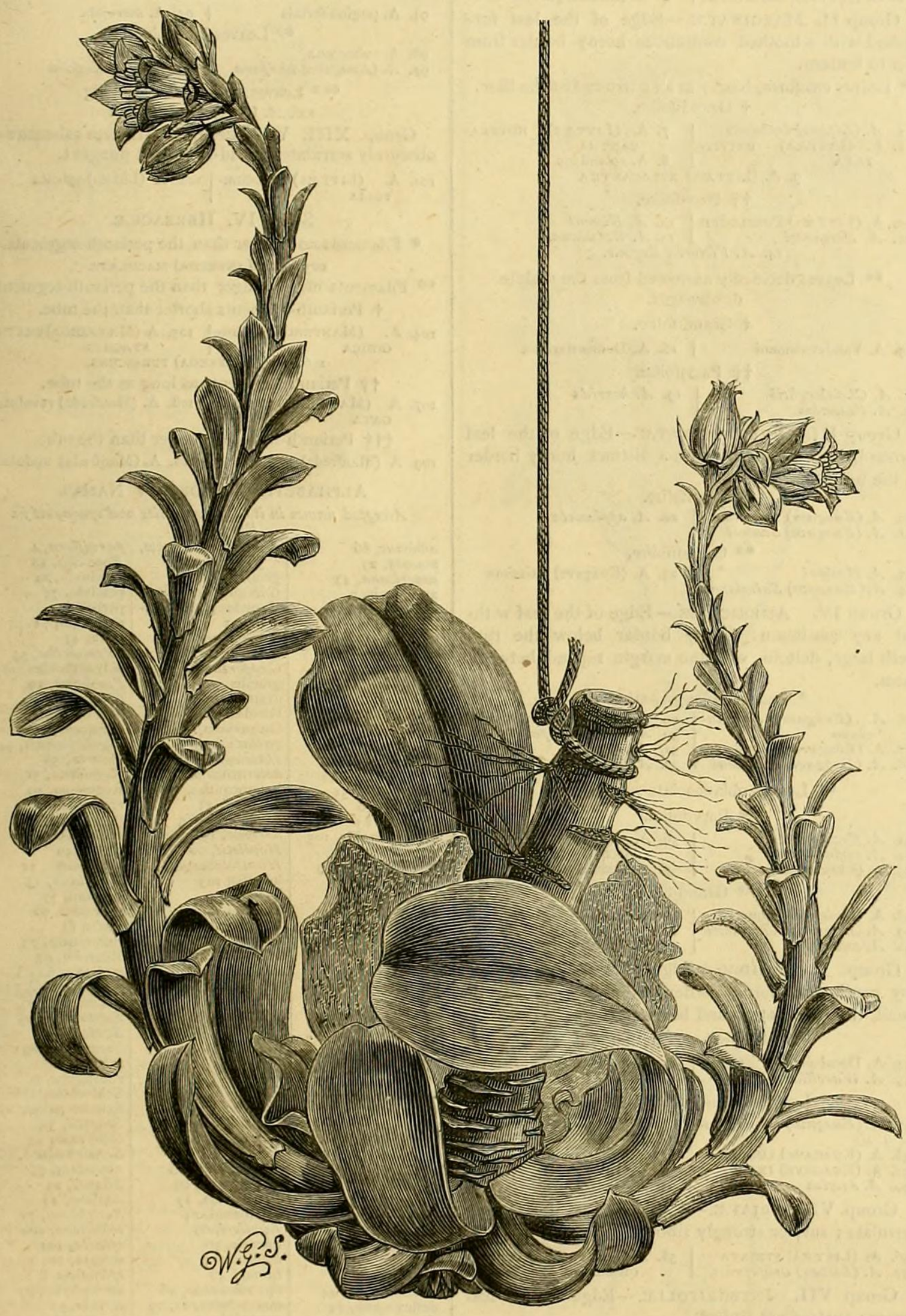

FIG. 159.—COTYLEDON (ECHEVERIA) STOLONIFERA. (SEE P. 805).

* Filaments not longer than the perianth-segments.

103. *A.* (*Manfreda*) *maculata*, Regel, Ind. Sem. Hort. Petrop., 1856, p. 16; Gartenflora, 1857, p. 158; 1858, p. 314; Engelm. in Torrey, Bot. Mex. Bound., p. 214; Jacobi, Monogr., p. 171; *A. maculosa*, Hook. in Bot. Mag., t. 5122 (1859); Jacobi, Monogr., p. 170; Engelm., Notes, p. 13; Fenzi in Gard. Chron., 1872, p. 1194, t. 273.—Acaulescent. Leaves 12—20 in a rosette, lanceolate, spreading, ½—1 foot long, ¾—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. Scape 1½—3 feet long below the inflorescence, furnished with a few lanceolate bract-leaves. Flowers in a lax subspicate raceme ½—1 foo tlong; pedicels very short; bracts small, lanceolate, acuminate. Perianth purplish-green, 1½—2 inches long; ovary oblong, under ½ inch long; tube usually ¾—1 inch long, cylindrical in the lower half; segments linear-oblong, ½—⅝ inch long. Filaments inserted at the throat of the tube, not longer than the segments. Anthers about ½ inch long. Style just exserted from the perianth-segments. Stigma deeply 3-lobed. Capsule globose or oblong, ½—¾ inch long in our specimens (reaching 1½ inch according to Dr. Engelmann), cuspidate. Seeds black, shining, discoid, semicircular, ⅛—⅙ inch broad.

A native of Texas and the North of Mexico. A full account of the plant with a coloured figure will be found in the *Botanical Magazine*, from a specimen that flowered at Kew in 1859. Dr. Engelmann draws attention to a form with a very short tube gathered by Mr. C. Wright (var. *brevituba*, Engelm., *Notes*, p. 13); 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. Jacobi, in his first *Nachtrage*, p. 48, describes a variety *minor*, 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 stamens and distinctly-toothed leaves.

** Filaments much longer than the perianth segments.

† Perianth segments shorter than the tube.

104. *A.* (*Manfreda*) *virginica*, Linn. Sp. Plant., edit. ii., p. 416; Jacq., Ic., t. 378; Bot. Mag., t. 1157; Kunth, Enum., vol. v., p. 833; Jacobi, Monogr., p. 174; Engelm., Notes, p. 13, but not of Miller, which is a variety of A. americana.—Acaulescent. Leaves 10—15 in a rosette, spreading, lanceolate, 6—12 inches long, 1—1½ 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 cartilaginous margin very obscurely serrulate. Scape 2—3 feet high, exclusive of the spike, with only a few distant small bract-leaves. Spike very lax, 1—1½ foot long; lower flowers with very short pedicels; bracts lanceolate, those of the lower flowers ¼—⅓ inch long. Perianth greenish-yellow, 1—1¼ inch long, including the ovary; ovary oblong, ¼—⅜ inch long; tube ½—¾ inch long in the lower flowers, little dilated from the base to the throat; segments linear-oblong, ⅓—½ inch long. Filaments inserted below the throat of the tube, exserted ½—1 inch; anthers ½ inch long. Style reaching to the top of the filaments. Capsule nearly globose, ½—¾ inch long, cuspidate and subpedicellate; seeds black, discoid, semi-circular, ⅛—¼ 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, 2½—3 inches broad, gathered by Dr. Mellichamp, near salt marshes, on the coast of South Carolina. *A. conduplicata*, Jacobi and Bouche, Monogr., p. 192, sent from Mexico by Ehrhenberg, unknown in flower, is said to be closely allied to A. virginica.

105. *A.* (*Manfreda*) *brachystachys*, Cavan. Descr. (1802), p. 453; Kunth, Enum., vol. v., p. 829; Jacobi, Monogr., p. 184; *A. spicata*, D. C., in Red. Lil., t. 485, non Cavan.; *A. polyanthoides*, Cham. and Schlecht. in Linnæa, vol. vi., p. 55; *A. saponaria*, Lindl. in Bot. Reg., vol. xxiv., Misc., p. 76; vol. xxv., tab. 55; Jacobi, Monogr., p. 179; *A. humilis*, Roem. Amaryll., p. 15.—Acaulescent. Leaves 10—12 or more in a rosette, spreading, lanceolate, 1—1½ foot long, 1—1½ inch broad below the middle, narrowed gradually to the point and a little downwards, channelled down the face, plain green, glabrous, the narrow cartilaginous edge very obscurely serrulate. Scape 3—4 feet long exclusive of the spike, with a few distant lanceolate bract-leaves. Spike lax, 1 foot or more long; flowers 20—40. Bracts lanceolate acuminate, those of the lower flowers 1 inch ong. Perianth 2—2¼ inches long, inclusive of the ½ inch oblong-cylindrical ovary; tube ¾—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, exserted ½—¾ inch beyond the tip of the segments; anthers ½ inch long. Style overtopping the filaments; stigma deeply 3-lobed. Capsule seen immature only, oblong, ¾ 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 excellent unpublished drawing in the Kew collection, made from a plant that flowered, in the garden about 1830, from seeds sent by Deppe. We have a living plant at Kew at the present time, contributed by the Rev. H. N. Ellacombe, and dried specimens have been distributed by Dr. Harvey from Zimapan as No. 1555 of Dr. Coulter's gatherings.

106. *A.* (*Manfreda*) *pubescens*, Regel and Ortgies, in Gartenflora, 1874, p. 227, tab. 804.—Acaulescent. Leaves 12—15 in a rosette, spreading, lanceolate, 1 foot long, 1½ inch broad below the middle, subentire, both sides opaque green mottled with brown, and densely pubescent. Scape 3 feet long, distantly bracteate. Spike ½ a foot long, laxly 12—15-flowered; bracts small, lanceolate. Perianth greenish, 1¼ inch long; ovary oblong, ¼ inch; tube twice as long as the segments, cylindrical in the lower half; segments linear-oblong, ¼—⅓ inch long. Filaments and style much protruded beyond the tip of the segments.

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