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EUCALYPTUS TIMBER CULTURE

A Treatise on the best methods for Sowing the Seed, Growing the Young Plants, and Transplanting for Timber plantations; together with a full description of the best species to grow for commercial and other purposes.

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The illustration is from a photograph of a young plantation in California of Eucalyptus resinifera, "Red Mahogany."
EUCALYPTUS SEEDS

HEADQUARTERS FOR EUCALYPTUS SEEDS.

I am headquarters for eucalyptus seeds, having the most extensive trade in this line of any firm in the United States, and supplying the largest planters here as well as exporting to many foreign countries. The Eucalyptus Timber Corporation, the Pratt Eucalyptus Investment Company and many other large planters have contracted with me for their entire supply of eucalyptus seeds for a number of years. To this department of my business I have devoted much study and personal attention. My seeds are carefully collected by my own men, under my personal supervision, from selected specimen trees, and are both true to name and of the very best stock obtainable. So extensive has become my trade in this line that a trifle under 1000 lbs. was the total amount of seed thus collected in one season. For a few species of which the seed cannot yet be obtained in California I am in direct communication with the most reliable authorities in Australia, who collect the seeds for me in their native habitats.

THEODORE PAYNE, EUCALYPTUS SPECIALIST

EUCALYPTUS TIMBER CULTURE.

Requirements. The requirements for propagating the seedlings are:

A lath house or lath or cloth covered frames to shade the seed beds during the day. When growing on a large scale it will pay in every case to build a lath house. Shallow boxes or flats; a good light soil and water convenient for sprinkling.

Flats or Boxes. These should be 3 inches deep and any size desired, though the size most convenient and generally used is about 20 inches square and will hold 100 plants. Some are using 15 inches square, the latter being mostly made of shakes sawed in half, using inch pieces for ends and split shakes for the sides. This makes a box 16x18x3 inches inside measurement and does very well.

Soil. This should be a good light, sandy loam passed through a screen so as to take out any lumps or stones. If good leaf mold is procurable a small quantity of this may be mixed with the soil, as it helps to retain the moisture.

Seed. Procure the best seed possible from the most reliable source; it does not pay to use cheap seed, for by getting seed not true to name the loss cannot be calculated.

Quantity of Seed. The quantity of seed to produce a given number of trees varies according to the species, as a fair average, however, 1 lb. should produce 20,000 seedlings, though as high as 30,000 has been known.

Time of Sowing. This varies somewhat according to the locality and the species to be sown. The usual, however, is in June, or early July, and seedlings from these sowings will be ready to set out in the field by the following February; later sowings are also made in August and early part of September and these seedlings will be ready to plant out in April.

Sowing the Seed. There are two methods of sowing the seed, viz., in seed beds and seed boxes. For raising limited quantities the latter method is preferable. Fill the boxes carefully with the prepared soil, smooth off the surface and press down lightly with a board, tamping it slightly in the corners. On this smooth surface, sow the seed broadcast using about 1/4 oz. of seed to a box, then cover the seed with the same kind of soil. This should be sifted over the surface through a fine-meshed sieve and not be more than 1/4 of an inch deep. The boxes should then be placed in the lath house or in some place where they can be covered with lath or cloth covered frames. The soil must be kept moist at all times, the watering should be done with a pot or a loose hose-nozzle so fine as to produce nothing but a spray.

As soon as the young seedlings show through the surface great care must be exercised in watering or the seedlings will "damp off." Always water in the morning and never at night. When raising the seedlings in commercial quantities, sowing in beds is often practiced. The soil for these should be prepared in the same way as already mentioned. The surface smoothed out evenly and the seed sown and covered as already mentioned, after this cover the beds with burlap stretched over a wooden frame work. This may be laid right on the ground and kept moist. As soon as the seedlings break through the crust of the ground this should be raised a little at first and gradually up until it is a foot above the ground. As the seedlings grow and get stronger this covering may be gradually removed so that they will harden to the full sun.

Transplanting. When the seedlings are 2 to 3 inches high they are ready for transplanting, but they must first be hardened off by exposing them to the sun; transplant to the same kind of boxes as already mentioned, 100 to a box. In perfect rows or checks using the same kind of soil as that in which the seed was sown though a trifle heavier or less sandy. Fill the boxes, press down the soil and smooth off the surface then
mark the soil off by lines into ten divisions each way and plant where lines cross, using a box. This method often used by commercial growers is to have a box just the size of the lining of the box placed 100 sections at the right distance apart for the trees; the heads of the sections are about 3½, or only seen from the box. This is laid in on the smooth surface of the soil and hammered slightly with a wooden mallet so as to give the box the exact depth for the plants. In planting make a hole for each section large enough to allow the roots to become spread out in the soil when set in place. The box may be taken off the soil easily without breaking the roots which must not be allowed to dry on any account during the process of transplanting. When growing the plants for sale it is advisable to grade seedlings into sizes at the time of transplanting so that large ones, when grown for sale will be of an even size in one box and the boxes containing the larger size plants can be sold first and the smaller ones later in the season. As soon as the seedlings are transplanted they must be watered thoroughly and set in complete shade for a few days until they thoroughly recuperate; after that they should be gradually hardened to the sun and cared for until they are ready to set out in the field.

Planting Out in the Field. The land should be plowed as deeply as possible and well harrowed. The time to plant various eucalyptus depends on the climatic conditions and localities where there is little or no frost, planting may be done in the winter time, thus getting the benefit of the warmth, and in sections where frosts prevail it should be deferred until spring. The size at which the young trees are best set is from 6 to 10 inches. The boxes may be taken to the field and left at convenient points. One side of the box should be taken off and out with a cut to the soil, and then placed in a trench or a hole made to a depth of 8 to 10 inches and then placed in the trench, taking care not to break this bed of earth and the plants should be set at one inch deeper than the leaves were on the keel or quart or of so water should be given to each tree as soon as set. In a light sandy soil a little water can be given about the roots of each plant at each plant at each plant at each plant. The distance at which to set the young trees varies according to the species, the soil and the purpose for which they are grown. On deep heavy soils where irrigation is not practiced they may be planted 6½ feet apart, where irrigating and cultivating is practiced 4½ feet is a suitable distance and leaves an 8-foot space for plowing and irrigating. In intermediate soil distance is a distance of 3½ feet apart in the alternate or triangle system, planting 7½ feet apart in the rows and 8 feet apart between the rows which makes the trees 8 feet apart every way. It is claimed for this system that they do not grow crooked and get a more even growth of sunlight, causing the trees to make a straighter and more even growth when young.

Care of the Young Trees. As the value of the grove depends in a great degree on the appearance of the trees, and as the trees are to be grown for profit, it will pay wherever practical to irrigate and cultivate the trees the first two seasons.

Thinning The Trees. To produce good timber it is necessary that the trees grow straight. Close planting induces a straight growth. It is therefore better to plant closely and at the end of the first season grub out all weak and inferior trees.

Species to Plant for Profit. Eucalyptus trees are gross feeders and to be grown profitably require a deep, rich soil with a fair amount of moisture, and only under these conditions, will they make good, straight timber of the same size and quality as that which they make stunted, crooked trees, which are worthless for timber purposes. The best species to plant for profit are the species or varieties which are well adapted to the locality where the trees are to be grown. For general timber purposes, taking into consideration the commercial value of E. teretocornis is considered the most profitable tree to plant. But in sections where E. globulus "Blue Gum" is well adapted it may pay to plant this species than any other. For the hot inland timber such as in Queensland, Victoria, and other parts of Australia are recognized as the leading commercial kinds, while E. viminalis might be grown very profitably under suitable conditions in this subject. E. corynocalyx may be planted. For those who have the right conditions and can afford to wait longer for results, E. obliqua will probably be the most profitable on account of its very valuable wood, which is used for furniture and interior finishing and is imported very largely by railway companies for the inside of cars under the trade name of Australian Mahogany.

Species for Fence Posts. This is an important item on large ranges. By setting aside a small portion of land a great quantity of fence posts could be produced in a few years. The best species for this purpose are E. teretocornis, E. robusta, E. rostrata and E. corynocalyx.

Species for Wind-breaks. This is also of great importance in many parts of the country where heavy winds prevail. Probably the best species for this purpose are E. globulus, E. botroides, E. robusta, E. cordata, E. dictyocarya, and E. polyantha, and for irrigated sections on the desert, E. rudis.

Eucalyptus amygdalina. "Peppermint Gum." An exceedingly tall growing tree; in fact, to this species belong probably the tallest trees in the world. Baron Von Mueller having recorded trees over 400 feet high and what he looked at 428 feet and probably not exceeding it in growth, however, the great heights mentioned being attributed in moist ravines; under less favorable conditions it forms a much smaller tree, and in some cases is comparatively dwarf. The timber is useful for shingles, floorings, etc., but does not usually last well under ground. One of the most valuable for oil, producing more volatile oil than any other species yet tested. Used in the manufacture of various kinds of essences, being astringent for yellow fever, etc. Pkt. 15c, oz. 75c, lb. $7.50.

Eucalyptus seed vessels, spread out on canvas to dry

PHOTOGRAPH BY T. L. CLEMENS

E. amygdalina, var. angustifolia. See E. linearis.

E. ampilfolia. Much resembling E. teretocornis, but having larger, almost round leaves when in the young state; generally known in California as the "Cooper" or "Round-leaf" teeretocornis. In correspondence I received from Professor J. H. Maiden in regard to this tree he states that it is known botanically under the above name, under which it was described by Naudin. Professor Maiden states, however, that it is possible that this tree should, properly speaking, be treated as a variety of E. teretocornis, and he is not prepared to say further until he deals with E. teretocornis and its varieties in his "Critical Revising of the Genus Eucalyptus of New South Wales." The wood is similar to that of E. teretocornis, and this tree has been planted quite extensively in California for commercial purposes. It forms a handsome tree, and is valuable in its set of purposes. Pkt. 15c, oz. 75c, lb. $10.00.

E. bosistoana. "Fairnadele Grey Box." A tree of medium size, most suited to the coast sections, but has not yet been thoroughly tested in California. Mr. J. B. Backman's Forest Inspector of Maryborough, Victoria, Australia, speaks of this tree as follows: "It produces a clean, sound wood, much esteemed for the construction of wharves, jetties and bridges. It grows on larger dimensions. Trees are to be found in South Victoria containing 20,000 feet in super of timber. It furnishes also good railway sleepers and street paving blocks. This Eucalypt grows naturally near the coast and is never commonly found far inland."

E. botroides. "Bastard Mahogany, or Bangalay." Grows to a fairly large size, reaching 75 to 150 feet when fully grown. Of statly appearance with large, feathery green foliage; succeeds well near the coast and is of very rapid growth; one of the best for shade purposes and wind-breaks. The wood is very durable, adapted for wagon building, knees of boats, etc. Pkt. 15c, oz. 75c, lb. $7.50.

Eucalyptus, Eucalyptus Specialist.
E. calophylla. A medium sized tree, thriving in warm, moist situations near the coast, but not enduring much cold. It is one of the most ornamental of the genus, having smooth, glossy leaves and large clusters of white flowers which are valuable for bees. The wood is useful for rafters, splicing, fence rails, handles of agricultural implements, etc. Pkt. 15c, oz. $1.00.

E. capellata. "Mountain Stringy-bark." A large tree with rough, stringy bark, and thick, leathery leaves. It is best adapted to cool, moist land near the coast. It is very hard, and valuable lumber, but in California, it has only been grown as an ornamental species. Pkt. 15c, oz. $1.00.

E. citridora, "Lemon-scented Gum." A fast-growing species, with bright yellow flowers in the spring. It becomes a dwarf tree or shrub. The wood is hard and durable, used for furniture and interior finishing. Pkt. 15c, oz. $1.00.

E. cornuta, "Yate Tree." A medium size tree of fairly rapid growth. It endures high temperatures, but not heavy frosts; thrives well near the coast and will endure the hot summers of the interior valleys. Grows remarkably well in all soil. One of the best for shade trees. The wood is very hard and heavy and according to tests of the Australian Government is the strongest wood in the world. It is used for various artisans' work and is preferred for the strongest parts of carts, wagons and other work requiring hardness, toughness and elasticity. Pkt. 15c, oz. $1.00.

E. cornuta, var. lehmannii. A rather small tree with thick spreading branches and of great value for ornamental purposes. Pkt. 15c, oz. $1.00.

E. corynocalyx. "Sugar Gum." 120 feet. This tree succeeds in a great variety of climates; thrives near the coast and does equally well in the interior and in the hot valleys of Arizona, but will not stand much frost. It is considered the most drought-resistant of all and is one of the best for planting on dry hillsides. The wood is one of the strongest and is very durable, useful for railway ties and underground work. Pkt. 15c, oz. $1.00, lb. $9.00.

E. crenulata. "Narrow-leaved Ironbark." 100 feet. It succeeds under a great variety of climatic conditions, withstanding great extremes of heat and cold. The wood is hard, strong and useful for masts of ships, wagon building, etc. Pkt. 15c, oz. $2.00.

E. eucalyptus. "Scarlet-flowering Gum," 30 feet. A very ornamental species with large, leathery leaves and immense clusters of large, brilliant crimson flowers. 25 seeds, 100 seeds $2.00.

E. globulus. "Blue Gum." The best known species and one of the most important of the genus, also the fastest growing of all. The height in Australia is 150 to 200 feet. In California trees 30 years old have attained the height of 150 feet and a diameter of 3 to 5 feet. It is usually on the coast near the coast and on account of its rapid growth is probably the most profitable species to cut for pulp. It is valuable above ground; large quantities of it have been sawed at San Jose, Cal., for adze-eyes, poles, and other large trees of wagons. Sometimes it is cut for anything requiring strength. It takes a fine polish and is valuable for furniture and interior finishing. Pkt. 15c, oz. $0.50.

E. gomphocephala. "Toart." A medium sized tree attaining a height of 120 feet. It succeeds well in California near the coast, but has not been thoroughly tested in the interior. The wood is one of the strongest in the world and is principally used for shipbuilding and bridges. Pkt. 15c, oz. $1.00, lb. $10.00.

E. goniocalyx. "New South Wales Blue Gum." A large tree, reaching a height in Australia in favorable situations of 200 feet. It succeeds well in California near the coast, but has not been thoroughly tested in the interior. The timber is hard and tough, used for wheelwrights work and shipbuilding. Pkt. 15c, oz. $1.00.

E. guitti. "Tasmanian Cedar Tree." This is one of the hardiest of the genus. In its native habitat it grows in swamps where it forms a small sized tree and sometimes reaches 150 feet or more. It also ascends the mountains to an elevation of 5,000 feet in the interior of the state. It forms a dwarf tree or shrub. It is extremely hardy, growing where there is snow for several months in the winter. Should prove one of the best of plants for planting in our mountains for forest cover. The wood is useful for various artisans' work. Pkt. 15c, oz. $1.00, lb. $10.00.

E. hemiphloia. "Common Box." 100 to 150 feet. It thrives in California near the coast and also in the hot interior valleys, standing extremes of heat and cold. One of the best for shade purposes. The timber is soft, close grained and useful for boxes, crates, piles, railway ties, posts, etc. Pkt. 15c, oz. 75c, lb. $1.50.

E. leucophylla, var. rosea. A variety of the preceding, having beautiful, pink blossoms and pink bark. A very hardy, useful ornamental tree, and can be grown in localities where E. nilothia will not thrive. Pkt. 15c, oz. $1.00.

E. linearis. An ornamental species of somewhat weeping habit, with small, very narrow leaves. It has been known in California, though wrongly, under the name of E. amygdalina. var. angustifolia. Pkt. 15c, oz. $2.00.

E. longifolia. "Woolly Butt." A moderate sized tree, but in Australia under favorable conditions has sometimes reached a height of 200 feet. In California it thrives best near the coast. The timber is useful for posts, ties, street paving, etc. Pkt. 15c, oz. 75c.

E. maculata. "Spotted Gum." Attains a height of 150 feet, growing remarkably straight. The wood is used for shipbuilding and construction. It is closely allied to E. citridora, and succeeds under the same conditions. Pkt. 15c, oz. $1.00.

E. melliodora. "Yellow Box." A fair sized tree, reaching a height of 120 to 150 feet. In California it thrives near the coast, on the sides of low mountains and in warm dry interior valleys. The wood is hard and durable, used for wheelwrights' work, shipbuilding and is one of the hardest woods grown. It has been used for telephone poles. On account of its profuse fragrant blossoms it is one of the best as a source of honey for bees. Pkt. 15c, oz. $1.00.

E. muelleriana. "Yellow Stringy-bark." A tree of medium size, best suited to the coast region, but it has not been thoroughly tested in California. The wood is remarkably durable. Mr. Blackbum has a specimen of this timber of this tree as follows: "A fence erected of this timber at Greenport, Long Island, New York, 25 years ago is at the present time sound and in use. The posts of another one on the old Cascade run (Gippsland) are still in good order after being in the ground for seventy years." Pkt. 15c, oz. $1.50.
E. obliqua. "Stringy-bark." A tall, straight-growing tree, sometimes attaining a height of 300 feet in Australia. It grows near the coast but does better some distance inland; will not succeed, however, in the hot, dry interior valleys. The timber is straight-grained, fine and strong, used for rough building purposes, shingles, etc. Pkt. 15c, oz. 75c.

E. pilularis. "Black Butt." In Australia under favorable conditions it will grow to a height of 200 feet but the average height is 100 to 150 feet. In California it will grow to a height of 150 feet but will not do well in the hot, interior valleys. The timber is strong and durable, useful for house building, shipbuilding, bridges, telegraph poles and railway ties. Pkt. 15c, oz. 1.00, lb. 10.00.

E. pipitza. "White Stringy-bark." A fair sized tree. In California and the cool, inland sections the timber is easily split and used for general building purposes. Pkt. 1ac, oz. 1.00.

E. polyanthema. "Red Box." In Australia this tree attains a height of 120 feet or more. In California it thrives under a great variety of climatic conditions, it grows near the coast and in the hot, dry valleys of the interior. It is one of the most ornamental species; the leaves are bright red, round and with a silvery lustre; the flowers are small, white, in large clusters and are a great source of honey. The wood is strong, hard and useful for railway ties, mining purposes and wheelwright's work. It is used for furniture and takes a good polish. Pkt. 15c, oz. 75c, lb. 8.00.

E. punctata. "Leather-jacket." A medium sized tree attaining a height of 150 to 200 feet. In Australia this species has been grown with great success. It grows both in the coastal and the interior valleys. It has been said that this tree is of slow growth, but trees on the Pacific Coast near Santa Monica have grown at a rapid rate and grown remarkably straight. The wood is very strong, of a light brown color, very hard and durable, useful for railway ties, wagon box and other purposes. This species promises to be one of the best for planting commercially in situations near the coast. Pkt. 15c, oz. 1.00, lb. 10.00.

E. resinera. "Red Mahogany." 100 feet or more. This species occurs in the coast regions and is suited to moist semi-tropical climates, but will not thrive in the hot interior valleys and will not resist severe frost. The timber is remarkable for straight growth. It has been said that this tree is of slow growth, but trees on the Pacific Coast near Santa Monica have grown at a rate of rapid growth and grown remarkably straight. The wood is of a rich, red color, resembling true Mahogany. It takes a fine polish and makes the most beautiful furniture. The offices of the Southern Pacific Railway on Grand Street of the Grand Building are finished with this wood. The timber is very strong, hard and durable and is used in Australia for piles, poles, general building purposes. Pkt. 15c, oz. 1.00, lb. 10.00.

E. robusta. "Swamp Mahogany." 100 feet. This tree has been grown in the interior of Australia but has been grown under many varying conditions. It is symmetrical in growth when young and has been largely planted as a street and park tree. It has large, shining leaves, large flowers and white flowers which are valuable for bees. The wood is strong, hard and durable, but is durable under ground. Pkt. 15c, oz. 60c, lb. 6.00.

E. rostrata. "Red Gum." In Australia it is said to attain a height of 100 feet and is suited to favorable conditions. It succeeds under a great variety of conditions and soils than probably any other species, growing well on moist land near the coast and in the hot interior valleys, standing extremes of heat and cold. It has done remarkably well at Imperial and all other irrigated sections on the desert. When grown near the coast it is not of rapid growth, but in the hot interior sections it grows quickly, making about the same growth west coast in the "Blue Gum" will in the cooler regions. This tree has been planted very extensively and is recognized as one of the best commercial species for hard and long-lasting purposes. The wood is strong and durable, useful for railway ties, mining purposes, etc. It is a very valuable, but is durable under ground. Pkt. 15c, oz. 60c, lb. 6.00.

E. sideroxylon. "Red Ironbark." 100 feet. This species occurs in the coast regions and is not suited to the dry, hot interior valleys. The wood is hard, heavy and useful for railway ties, bridges, wagon work, etc. Pkt. 15c, oz. 1.00, lb. 10.00.

E. sideroxylon, var. rosea. A variety of the preceding, with deep pink flowers, which contrast well with the wood. A very superior kind and is one of the most ornamental of all the eucalypts. Pkt. 15c, oz. 1.50.

E. stuartiana. "Apple-scented Gum." A medium sized tree that thrives in most any soil. It will stand from minimum temperatures of 10 degrees to 18 degrees F., and can be planted in all regions except those that have snow. The wood is mostly used for fence posts and for fuel; it is also useful for furniture manufacture, being of a dark color and taking a good polish. Pkt. 15c, oz. 1.00.

Eucalyptus sideroxylon, var. rosea

E. tereticornis. "Forest Red Gum." 150 feet. One of the very best for commercial use, closely allied to E. rostrata, but forming a straighter tree. For general timber purposes I believe this is the best of the whole genus, taking all conditions and uses into consideration. It stands considerable heat and cold, thrives in sections near the coast, further inland in the hot interior valleys and in irrigated sections of the desert. Under the latter conditions it makes a remarkably rapid growth. This tree has been planted on a very large scale in California and also in other countries. I have received very favorable reports of it from Arizona, Texas, Florida and also Brazil. The wood is of a pretty, reddish color, heavy, strong, and durable, valuable for railway ties, telegraph poles and for furniture and interior finishing of houses. In 1915 I cut a number of trees of this specie and had these cut up into lumber. The wood has a fine grain and is really the most beautiful eucalyptus I have ever seen. This wood has been greatly admired by everyone who has seen it, and many think it superior to mahogany. The seed I am offering is extra selected stock, from the very best specimen trees. Pkt. 15c, oz. 75c, lb. 7.50.


E. viminalis. "Manna Gum." In Australia this tree has attained a height of 300 feet with a diameter of 15 feet. It is an exceedingly handsome tree with long, pendulous branches, and is one of the most picturesque for avenue planting. This tree will thrive under a great variety of conditions, growing near the coast, also in irrigated sections of the deserts of California and Arizona. It stands considerable heat and cold and will thrive at a higher altitude than most of the other species. In the coastal regions it is of very rapid growth, being only surpassed in this respect in the interior valleys. In the hot interior sections it is unsurpassed by any other species. The wood is not lasting under ground, and is not so hard and has not the strength of some of the other eucalypts; for this reason it has been neglected by timber planters in California. The fact that the wood is softer than other kinds should really be regarded in its favor, as it is so much easier and less expensive to work than the "Blue Gum" and most of the other kinds. Still it is as hard as many of the so-called hardwoods that are now used. It takes a high polish, and its chief uses would be for furniture and all kinds of interior work. The fact that the tree will thrive over a wide range of country and also that it is of such rapid growth should make it one of the most valuable for timber plantations. Pkt. 15c, oz. 75c, lb. 7.50.
Eucalyptus tereticornis

"Forest Red Gum"

The eucalyptus tree par excellence to plant for its

Fine Wood

which is admirably adapted for furniture, interior finishing, telegraph poles, piling, railway ties, and wherever a strong and durable wood is demanded.

This tree will stand considerable heat and cold. It thrives near the coast, further inland, in the hot interior valleys, and in the irrigated sections of the desert. I have received most favorable reports of it from Arizona, Texas, Florida, Mexico, Brazil and other countries. In fact it appears to thrive under as great a variety of conditions as possible for any eucalypt. The tree is of remarkably straight growth. In the hot interior sections it grows very rapidly, while near the coast it is only surpassed in this respect by a few species. The wood is strong and durable, lasting both under ground and under water. It has a fine grain, is of a pretty red color, and takes a high polish.

The illustration is from a photograph of part of a row of E. tereticornis trees which I cut in the winter of 1910. In this row were 71 trees, six of which went to the National Forest Service to be used in a piling test in San Francisco Bay; the remainder I had cut into lumber, and have now a large quantity on hand. I had exceptionally good success in seasoning it, and will shortly have it manufactured into bureaus, library tables, writing desks, and other choice home and office furniture.

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