Australian (Me)
Fever tree.

fire. It was about 600 or 700 yards from where we sat, and the sound of the thunder was more like that of the rocket than that which usually accompanies electrical discharges. In fact, the cloud probably passed *through* the village rather than *over* it; and the discharges were necessarily short, close, and without prolonged reverberations, such as may occur when the stroke is high, partly in dry air, and several miles in length, the sound from which must reach the ear at different intervals of time, thus producing a continuous rolling noise.

We are here reminded of another thunder-shower, of peculiar features, which occurred in Brattleboro in November, 1860. It was on the day of the first election of Mr. Lincoln to the presidency. A pine-tree was rent into fragments by it, and a passer-by, a voter, on seeing the extraordinary havoc that had been made, the white, shining splinters lying scattered over the ground, in all sizes, from the smallest sliver up to strips long enough for rails, exclaimed in great excitement: "The thing is all up now; for the old 'Rail-Splitter' is around at his work!" Even thunder-showers are wrested by some men into a political significance!

The circumstances of the case, however, would appear to have been these: A dense cloud, borne upon a low southwest surface-current of wind, was passing across the deep valley of the West River, half a mile or so from its mouth, when it was probably struck by a cool, dry mountain-breeze flowing down the valley. This breeze imparted new electricity to the cloud, which, being thus overcharged, gave out its surplus in a sudden shock, which took effect upon a group of pines. Every drop of water of which the cloud was composed we may regard as a small Leyden jar, as it were, the united force of which proved sufficient to rend in pieces one of the pines in an instant of time. The tree was some seventy feet in height, two feet in diameter, and stood, not on the heights immediately under the cloud, but low down, within a few paces of the river. It was broken square off twenty or thirty feet from the top; and this top fell straight down and stood leaning against the shattered stump, showing that the trunk had been rent asunder so suddenly as to occasion no obstruction to its fall! There were but two discharges of electricity from this cloud; and soon afterward the weather cleared up from the northwest.

THE AUSTRALIAN FEVER-TREE.[1]

DURING the present century, a great number of exotic plants and trees have been brought to Europe, or transplanted from their original habitat to other climes. In view of its usefulness, perhaps the blue-gum tree of Australia and Tasmania, belonging to the genus

[1] Translated from *Das Ausland.*

Eucalyptus, which includes upward of 150 species, holds the first place among these exotic plants. The *Eucalypti* belong to the natural order *Myrtaceæ*, and are indigenous almost exclusively to Australia and Tasmania. They are distinguished for a high development of the phenomenon known as heteromorphism—the same plant assuming a perfectly different habit at different stages of its growth. The species with which we are just now concerned, the *Eucalyptus globulus*, presents two very distinct forms: when the plant is young, the leathery leaves are opposite and sessile; this is a sort of larval state—the plant is not yet mature, and cannot produce flowers. But in the adult state the leaves are pedunculate and alternate, and then the plant flowers and bears fruit. This polymorphism, however, does not occur to the same extent in all species of the *Eucalyptus*, and it is almost altogether wanting in *E. cordata.*

The honor of having discovered the *Eucalyptus globulus* belongs to a French scientist, Labillardière, the botanist, who accompanied the Chevalier d'Entrecasteaux on his expedition in the year 1791, to search for the lost crew of La Pérouse. Labillardière's journal of May 12, 1792, at which date the expedition was in the Bay of Storms, Van Diemen's Land, indicates that even then this sagacious botanist anticipated the great value of this tree for ship-building purposes.

For a long time the *Eucalyptus globulus* was simply an object of curiosity, and many a botanic garden possessed it without any one knowing of the fact: thus M. Planchon assures us that he saw it in 1854 in the Paris Museum, under the name of *E. glauca.* In Tasmania the colonists well knew the value of their splendid blue-gum tree, and employed it for a thousand purposes. It became more generally diffused only after the colony of Victoria was founded, an event not yet forty years old. Two names are thenceforth specially connected with the history of the *Eucalyptus*, viz., those of Baron Ferdinand Müller, of Melbourne, the distinguished botanist, and of M. Ramel. From the Botanic Garden at Melbourne the *Eucalyptus* crossed the sea to Europe, Africa, and America, like many other plants from the same source which have been acclimated in foreign lands.

Justly, as we think, M. Planchon observes that the term acclimation is apt to suggest erroneous notions, and that it is based upon a profound misconception of the true nature of plants—their temperament, so to say. Plants are imported and become naturalized, if you please; but this adaptation in all cases takes place very slowly, gradually, by selection of individuals from successive generations, by the production of races or local varieties which experience shows to be the best fitted to adapt themselves to the special conditions of climate and environment in which they exist. Though there are many grades of naturalization, they can all be reduced to two categories, viz., that of plants which accompany man and domestic animals, and which never separate from them; and, secondly, those plants which, in order

to thrive in a foreign land, whether in the wild or the domesticated state, imperatively require care from the hand of man.

To the latter category belongs, as yet, the *Eucalyptus globulus*, at least in the extreme south of Europe and in Northern Africa. The tree has been introduced in those regions, cultivated there on a large scale, but not yet naturalized. But, further, we find it at the Cape of Good Hope, in the La Plata states, in California, Cuba, etc. It was brought to Algeria in 1854, but we date its introduction there more properly from the year 1861, when M. Ramel, whose name we have already mentioned, brought the seed thither from Melbourne. Soon a genuine *Eucalyptus furore* broke out: every one desired to own the beautiful tree, and they were planted in Algeria by the thousand. Like the agave and the opuntia, the *Eucalyptus* seems as though expressly intended for Algeria; it is not so much at home on the northern shores of the Mediterranean. In southern France, in Languedoc and Provence, after many years' experience, M. Planchon holds out no promise that the tree will ever increase so as to cover the land with forest, or dry up swamps. In Eastern Provence, the *Eucalyptus* has existed since 1858, and, between Cannes and Monaco, it thrives amid the gray-green olives and the Italian pines. Here the *Eucalyptus* is naturalized just as in Algeria. The well-known Princess Dora d'Istria is showing great zeal in promoting the naturalization of this useful tree on both shores of the Mediterranean. At Rome they are now making experiments with the *Eucalyptus globulus*. At the malaria-infested monastery, Tre Fontane, near Rome, one of the most insalubrious localities of the Campagna, the writer of these lines saw in April, 1874, young *Eucalyptus* plantations tended by French Trappists. On the other hand, the young trees planted in 1858, in the Botanic Garden of Pampelmousses, on the island of Mauritius, perished in 1868. The tree could not withstand the violent storms to which that island is exposed.

In their native soil several species of *Eucalyptus* attain an extraordinary height. Baron Ferdinand von Müller tells of a *Eucalyptus amygdalina* which, by its height (152 metres), might overshadow the Pyramid of Cheops, the loftiest structure erected by man. The *Eucalyptus globulus* does not, it is true, attain such extraordinary dimensions, but yet its trunk can yield boards of enormous breadth. The timber being distinguished for solidity, toughness, and durability, is in request for ships' keels. It possesses certain resinous properties which preserve it from decay, whether underground or in water. The growth of the tree is extremely rapid—a rare circumstance with trees having wood of firm texture. Especially in its early years does the tree grow with astonishing rapidity; but it goes on growing in height till about its eightieth year. After that time the stem, which is usually very erect, increases only in diameter. The stem rises to a great height before it sends out branches, and its summit is scantily crowned with

foliage. "Fever-tree" is the name given at Valencia, Spain, to the eucalyptus-trees planted there in 1860. The title is due to the fever-dispelling properties which the *Eucalyptus* possesses. In point of fact, those regions where this beautiful tree is indigenous, and where it grows into forests, enjoy a very healthy climate. But, further, we have evidence that the planting of the *Eucalyptus* in marshy localities counteracts paludal fever. This has been shown by experience at the Cape, in the provinces of Cadiz, Seville, Cordova, Valencia, and Barcelona; in Corsica, and in Algeria. At Pardock, distant a few miles from the city of Algiers, there was a farm on the banks of the Hamyse which was noted for its fevers, so that people died there "like flies," so deadly was the atmosphere. In the spring of the year 1867, 1,300 eucalyptus-trees were planted there, and even in July of the same year—the month in which the fever is wont to be most virulent—there was not a single case of disease, although the trees were then only nine feet in height; and the place has been free from fever ever since. In the vicinity of Constantine, the farm Ben Machydlin was in the like bad repute; all around it were swamps that never were dry, not even in the hottest summers. Still, in five years this great morass was completely dried by the planting of 14,000 eucalyptus-trees, and the health of the inhabitants has ever since been excellent. So Gue, near Constantine, once a place infested by fever, is now salubrious and free from fever, having been surrounded with a plantation of *Eucalypti*. The Abbé Felix Charmetan states that, at Maison Carrée, near Harrasch, the eucalyptus-plantations have rendered the use of quinine unnecessary. Finally, the same is said in regard to Cuba and Mexico. In the department of Var, Southern France, there is a railway-station situate in a very insalubrious locality. The place has become perfectly healthy since forty eucalyptus-trees were planted there.

These facts justify the hope that the *Eucalyptus* will yet free the Roman Campagna of its fever, and Garibaldi, who is now agitating the question of restoring to cultivation that wilderness, would perhaps do well to visit the Trappists of Tre Fontane, and acquaint them with his intentions.

The *Eucalyptus* has, in sundry instances, proved to be advantageous as a remedy for periodic fevers, and it furthermore possesses disinfecting as well as antiseptic properties. Distillation of the leaves and other parts of the tree produces an essential oil, the physiological effects of which upon both the sick and the well have been carefully studied by Dr. Gimbert.

The hardiness of the *Eucalyptus globulus* is still in dispute. It is asserted that the tree cannot endure the severity of our northern winters, and that it can hardly thrive save in a climate like that of its native habitat—Australia and Tasmania. In support of this view we

have the observations of many gardeners in the British Isles, who assert that the tree "cannot resist severe frost, and consequently does not last many years." "I have frequently seen," writes one, "young trees, ten, twenty, and even thirty feet high, in the Channel Islands, growing vigorously during a period of three, four, or more years in sheltered situations, but, on the appearance of severe frosts, killed to the ground." On the other hand, various correspondents of the *Gardener's Chronicle* write that, during the severe cold of last winter, the *Eucalyptus* was uninjured in the island of Anglesea, and in the west and south of Ireland.

THE SUN'S WORK.

THAT the Sun causes a saving of fire and candle was known to all antiquity from the day fire and candle were first invented; and that was nearly all they knew about him. Nothing more was known for ages. It was only yesterday that he set up the business of sketching portraits and no matter what. He did it so cheaply and so correctly as to rob poor miniature-painters of their bread; and then came another halt, though only a short one, in our knowledge of what the Sun can do. But now, the more we know about him, the more grounds do we find for surmising that he is a marvelous servant—perhaps master—of all work.

Among the *cartes de visite* with which the sun presents us, are now to be included his own, in various moods of temper and expression. Thanks to photography and spectral analysis, the solar phenomena are daily fixed on paper and submitted to the inspection of an inquiring public. They thus escape from the narrow and not very accessible domain of observatories, and enter the grand current of publicity. Both in America and in England, numerous specimens of astronomical photography are offered for sale. First as to merit stand the admirable photographs of the moon published by Mr. Lewis Rutherfurd; and those of the Sun's disk, which present the spots, the facules, and the brilliant marblings of his surface with as much clearness and as striking an effect as the very best telescope; and also those of the solar spectrum, whose stripes have been self-registered with a fidelity which leaves no room for cavil. The low price of the "Annuaire of the Bureau des Longitudes"—where M. Faye has published the essay from which this paper has derived its facts—does not allow it to give actual photographs; it is obliged to be content with carefully executed engravings from originals supplied by the Observatory of Wilna.

Cosmic meteorology, that is the meteorology of the universe con-