

VITALITY OF THE SEEDS OF *PINUS CONTORTA*.—How long pine seeds retain their vitality when inclosed in the serotinous cones which sometimes occur on certain species, has probably never been very carefully noted. In 1874, Dr. Engelmann collected in Colorado a branch of *Pinus contorta*, to which were still persisting the closed cones which had ripened in 1873-72-71-70-69-68-66-65. In the spring of 1879, four years and a half after the branch had been taken from the tree, these cones were sent to the Harvard Arboretum that the vitality of the seed might be tested.

The following is the result:

All the seeds yielded by the cones were planted on the 27th of May, 1879, those of each year in a separate pot. They all received the same treatment. The final examination was made on the 13th December, 1879.

1865—18 seeds from 3 cones were planted. None germinated.

1866—No seed was obtained from the single cone of this year.

1867—No cones received for this year.

1868—24 seeds from 2 cones were planted. None germinated.

1869—24 “ “ 2 “ “ “ 4 “

1870—45 “ “ 2 “ “ “ 4 “

1871—6 “ “ 1 “ “ “ 2 “

1872—19 “ “ 2 “ “ “ 5 “

1873—9 “ “ 1 “ “ “ None “

This experiment is unsatisfactory owing to the want of seeds of 1866 and 1867, and because those of 1873 had probably never been fully developed. It is only interesting in view of the fact that it may possibly lead to this subject being more fully investigated. It is particularly desirable to obtain and test the seeds from old serotinous cones of such species as *Pinus serotina*, the Florida *P. inops* var. *clausa*, *P. tuberculata*, *P. muricata*, and *P. insignis*. There are always facilities for making such experiments at the Arboretum when sufficient material can be obtained.—C. S. SARGENT, Brookline, Mass.

VEGETATION UNDER THE ELECTRIC LIGHT.—In the number of *Nature* for March 11, appears the extract of an important paper by Dr. C. W. Siemens presented to the Royal Society on March 4. The question as to whether or not the dissociation of carbon dioxide and water in the leaf cells of plants could be made to take place under artificial light as it does under sunlight, caused Dr. Siemens to undertake the experiments described. The apparatus consisted of a vertical Siemens' dynamo-machine making 1000 revolutions per minute, and driven by an Otto gas engine of 3 horse-power; furnished with a lamp with carbon electrodes of 12 and 10 mm. diameter; producing a light equal to 1,400 candles. In the first series of experiments the lamp, with metallic reflector, was placed in the open air, two meters above the glass of a sunk melon house. Pots of quick-growing plants, such as mustard, carrots, beans, cucumbers, etc., were so arranged that the light would fall on them at approximately the same angle as that of the sun, provision being made for their protection



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