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Price 10 cents. For sale by all newsdealers.

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ELECTRO-HORTICULTURE.

It has often been remarked by Arctic explorers that plants which require several months to ripen their fruit in temperate climates complete the same round of budding, blooming, and maturing in a few weeks under the continuous sunshine of the Arctic summer.

A species of corn which flourishes in Canada failed to ripen in Kentucky, though the warm season there is some weeks longer than in Canada. The superior rapidity with which vegetation pushes forward during periods of full moon and light nights has also been widely noticed; these facts of general observation, with others of a more experimental character, going to show that many of the plants of our temperate climate thrive in proportion to the duration of the daily (direct or indirect) sunshine they enjoy, rather than according to the temperature of the air.

A curious confirmation and extension of these observations in regard to the influence of light upon vegetation is furnished by the recent experiments of Dr. C. W. Siemens, testing the influence of the electric light upon certain plants. These experiments were described by Dr. Siemens at considerable length at a late meeting of the Royal Society in London. According to the report of the London Times the method pursued by Dr. Siemens was to plant quick-growing seeds and plants, such as mustard, carrots, ruta-bagas, beans, cucumbers, and melons in pots, dividing the pots into four groups, one of which was kept entirely in the dark, one was exposed to the influence of the electric light only, one to the influence of daylight only, and one to daylight and electric light in succession.

The electric light was applied for six hours each evening—from 5 to 11—and the plants were then left in darkness during the remainder of the night. The general result was that the plants kept entirely in the dark soon died; those exposed to the electric light only or to daylight only thrived about equally; and those exposed to both day and electric light thrived far better than either, the specimens of mustard and of carrots exhibited to the society showing this difference in a very remarkable way. Dr. Siemens considers himself as yet only on the threshold of the investigation, but thinks the experiments already made are sufficient to justify the following conclusions: 1. That electric light is efficacious in producing chlorophyll in the leaves of plants, and in promoting growth.

2. That an electric center of light equal to 1,400 candles placed at a distance of two meters from growing plants appeared to be equal in effect to average daylight at this season of the year; but that more economical effects can be obtained by more powerful light centers. 3. That the carbonic acid and nitrogenous compounds generated in diminutive quantities in the electric arc produce no sensible deleterious effects upon plants inclosed in the same space. 4. That plants do not appear to require a period of rest during the twenty-four hours of the day, but make increased and vigorous progress if subjected during daytime to sunlight and during the night to electric light. 5. That the radiation of heat from powerful electric arcs can be made available to counteract the effect of night frost, and is likely to promote the setting and ripening of fruit in the open air. 6. That while under the influence of electric light plants can sustain increased stove heat without collapsing, a circumstance favorable to forcing by electric light. 7. That the expense of electro-horticulture depends mainly upon the cost of mechanical energy, and is very moderate where natural sources of such energy, such as waterfalls, can be made available.

THE MIGRATION OF THE GREAT AMERICAN DESERT.

The irrepressible conflict between herders and farmers along the Kansas and Nebraska frontier is steadily growing in magnitude, and on its issue depends the future of the great tract of country between the 100th meridian and the Rocky Mountains. The stock raisers and government surveyors pronounce the region fit only for pasturage lands, and ask that it be leased in large tracts to herders; the farmers claim, on the other hand, that the region embraces some of the finest farm lands in the country, and insist that it shall be held subject to homestead pre-emption and timber claim entry.

As spokesman for the latter party, Professor C. D. Wilber, of Wilber, Saline County, Nebraska, has been giving a correspondent of the Inter-Ocean a history of the controversy, and no end of evidence that the desert makers are wholly and designedly in the wrong. The desert country reported as lying west of the 100th meridian has, he maintains, no real existence. The entire region west of the Missouri River was formerly held under the same reproach. Now the country

bears magnificent crops of corn, wheat, rye, oats, barley, in many instances exceeding in productive capacity the famous valleys of the Mohawk, the Genessee, the Muskingum, and the Miami.

Touching the agricultural value of this region and the recent change of opinion regarding it by those who have learned its value, Prof. Wilber said:

"Only eight years ago, being one of an excursion party—chiefly the pioneers of the M., K. and T. R. R. from New York city, I made an extended tour over the plains toward the Colorado line. Mayor Opdyke said: 'The country is, indeed, beautiful; but what a pity it is so worthless. Is there not some way to overcome this desert condition? It must remain a waste thousands of years. The Indians are welcome to it, if only they will keep it.' Messrs. Skiddy, Schell, Parsons, Dickinson, and other men of great wealth, returned from the Sahara confirmed in their traditions, saying, 'It will never be worth a dime per acre.'

"To-day, ten years later, the New York capitalists are pushing railway lines and branches with unparalleled rapidity, eager to be first in possession of the same country, no longer a desert, dry, sterile, worthless, but, as they now know it to be, the best portion of the continent.

"The Boston capitalists were quite as the New Yorkers. Twelve years ago the wise men of the 'Hub' projected their first Nebraska railroad, from Plattsmouth to Fort Kearney, nearly 200 miles, based upon the usual land grant of 12,800 acres per mile of track. But in this desert Nebraska, as they judged, the less land the better. In the bill conveying the grant it needed only five or ten lines, or a score of words, to have secured gratis the entire route through the great Republican valley, with the accompanying grant of over 4,000,000 acres of the richest lands in America, but by them, at that time, not considered worth asking for. And now, after ten years, the aforesaid wise men of Boston, in the autumn of 1879, passed over the same route with a corps of engineers to choose the route, purchase the right of way, and make ready to spend \$10,000,000. They knew the country west of Kearney would never be habitable except by Indians, gophers, and owls."

The government experts who have described the country as fit only for pastoral uses, have done so, Prof. Wilber claims, without actual study of the plains they have condemned:

"Whatever they have put on record in their reports mostly concerns the mountainous regions of Wyoming, Colorado, Utah, and New Mexico.

"The plains or middle country of Dakota, Nebraska, Kansas, Eastern Colorado, and Wyoming, have either been wholly neglected or dismissed after hasty visits, with a brief report made up of most superficial and erroneous observations.

"What apology can either Prof. Hayden or Major Powell offer for their notes on the region just referred to?"

"Speaking of Nebraska, Hayden says:

"For 150 to 200 miles west of Omaha the soil is very fertile and can hardly be surpassed, but beyond that there is an absence of both wood and water, which will render it impossible to cultivate the western half of the State of Nebraska successfully."

"Major Powell, of the United States Geological Corps, says: 'There is not of available land belonging to the United States enough left to make an average county in Wisconsin.'

"There are to-day in Western Nebraska and Kansas; far beyond the 100th meridian, many thousand prosperous farmers, whose full granaries give the lie to the statements of the government explorers, Hayden and Powell."

Last year the acreage of new farms all along the western border of the settlements was enormous, bringing under cultivation a strip ten miles wide, extending north and south through Dakota, Nebraska, and Kansas. Previously the country was barren, but rain follows the plow, as it has heretofore, across a belt 350 miles wide.

"The first settlers, twenty-five years ago, placed the desert limits just west of the Missouri River counties. These being occupied, the desert line was established on the Big Blue, 70 miles beyond. But the farmer invaded the Big Blue Valley, and the desert line was established near Kearney, 190 miles west of Omaha. But the irrepressible plow broke the barrier in so many places that the desert makers fled with their line to the 100th meridian, determined to have and enjoy a desert. But herds of farmers have gone far beyond and secured farms whose products equal those of Iowa or Illinois."

The desert was a reality; but agriculture has practically abolished it.

"The owners of the great herds of cattle are constantly obliged to retreat before the immense army of emigration from the Canadas, the Eastern and Middle States, and especially from Wisconsin, Illinois, Iowa, and Minnesota.

"Coming with their families and their farming outfit, generally without previous inspection, they become squatters upon any lands not taken at the Land Office. As the land laws are impartial, who comes first is first served, and the herd owner, though a millionaire, as some are, is, much to his disgust, forced further out on the plains.

"The reactions that follow are obvious. The ranchmen or herders insist that the country will never raise grain, is only fit for cattle and sheep, is a desert, without water for irrigation, and insufficient rain. It is by nature's law the herdsman's country, and the national law must be made to coincide. To bring these laws into effect is the animus of