

**PLANT CULTURE BY ELECTRICITY—AN INTERESTING EXPERIMENT.**

BY HAROLD J. SHEPSTONE.

An exceedingly interesting experiment is being conducted at the Royal Botanic Gardens, Regent's Park, London, under the name of "the Thwaites Electric Culture"; and if it bears out under a lengthy trial all the features that the inventor claims, it is likely to revolutionize the present methods employed both in the heating of glass-houses and the manner in which plants and fruits are hastened to maturity independent of the seasons.

Before describing this new system of electric culture, a brief reference to previous experiments will not be without interest. Very soon after Jablockhoff invented the electric arc, it was discovered that the rays from this light stimulated the growth of plants, and the work was continued by Sir W. Siemens in England, Bailey in America, Lebstrom in Sweden, and Berthelot in France. Both Sir W. Siemens and M. Berthelot died before the results of their experiments became known, but they were quite classical and of splendid promise. Bailey was convinced that the arc light promoted assimilation and hastened growth and maturity. Lebstrom found the positive electrostatic current to greatly accelerate the circulation of the sap, and the more fertile the soil the more vigorous the vegetation, and the more effective the current; it was also found to increase the proportion of saccharine.

Coming to the present experiment, we have an ordinary glasshouse in which have been placed some two hundred plants, consisting of geraniums, fuchsias, various kinds of palms, grasses, tomato plants, etc. The plants are being forced by light from an arc lamp, and the house heated in a new and ingenious manner. This apparatus, which is causing much discussion among electricians, consists of a modern producer-gas suction engine coupled to a dynamo. The electric energy developed by this plant is allocated to the feeding of the arc lights in the glasshouse. An electrostatic machine is driven from the gas-engine crank-shaft, and the electricity is discharged by points along the plants to electrify not only the air, but the plants and their roots as well.

The arc lights are equipped with special reflector hoods, by which the beam of light is confined within narrow limits of concentration. The open end of the hood is closed by a water screen, made up by a glass trough filled with water. This water screen, through which the light rays have to penetrate, is intended to secure as near an imitation of natural solar effect as possible, and to limit the effect of the rays; and if it is desired to

screen from the plants any portion of the spectra, colored water can be employed. The roof of the reflector is provided with a chimney, to permit the escape into the roof of the glasshouse of the nitrous oxides that may be produced. It is arranged that the arc lights are automatically constantly and almost imperceptibly moving along the entire length backward and forward of the glasshouse, radiating a powerful beam of light on both sides of the house.

The traveler is electrically driven, and the speed may be controlled.

By this plant Mr. B. H. Thwaites, who by the way is a well-known electrician, hopes to secure the six essentials which he regards necessary to force the plant's growth. They are: (1) an ample supply of violet or chemically active rays projected from powerful and moving arc lamps; (2) a supply of electrostatic current for the atmosphere and the roots; (3)



The Two Plants on the Right Have Been Stimulated into a Vigorous Growth by Electric Rays.

an atmosphere containing moisture and carbon dioxide in the proportion common to most fertile countries; (4) a temperature within the limits of 70 and 80 deg. Fahrenheit; (5) an ideal fertilizing agent; (6) an ample supply of water for the roots.

It is also the inventor's contention that the apparatus is an economical one. It is expected that the figures will show a saving of thirty per cent over all systems at present employed. Indeed, it is claimed that the whole cost of the apparatus and its working comes out in the end at the rate of two cents, as at present compared with six cents per hour. Then it

Thwaites estimates that with his system, from three to four producing seasons in the year will be attainable. If, of course, choice fruits and flowers can be produced at any period of the year at no great cost, the invention should certainly possess great commercial value. As already stated, at the moment it is purely in its experimental stage, the plant having only been in working order for just about a month, too short a period for one to predict likely results.

At the same time, it is an experiment which will undoubtedly be followed with the greatest interest.

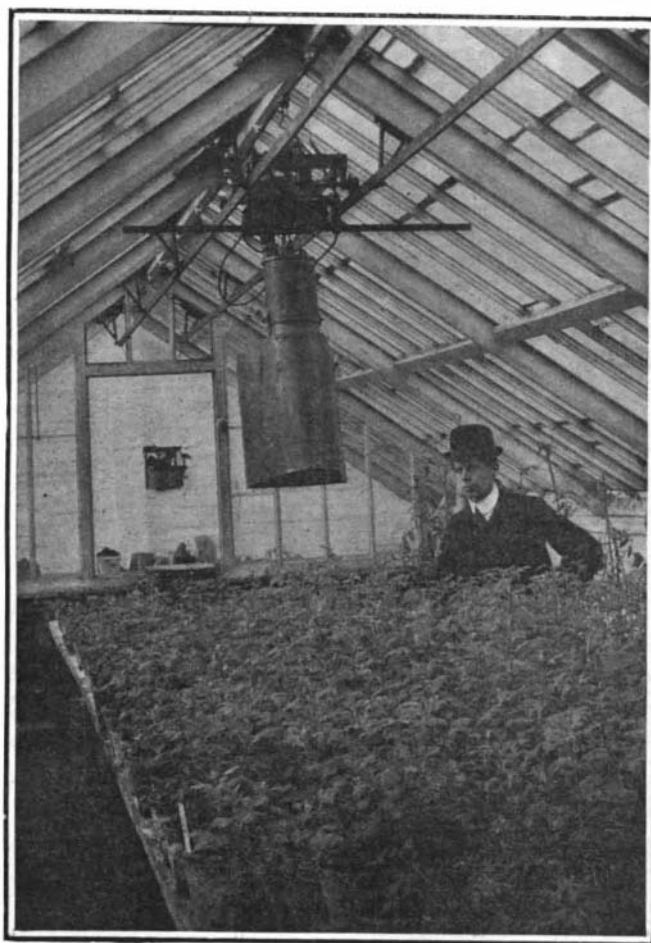
**A Remarkable Acoustic Phenomenon.**

An interesting acoustic phenomenon called, in Italy, "brontidi," has been investigated by Prof. T. Alippi, of the meteorological and seismic observatory of Urbino, Italy. These brontidi are mostly hollow noises, resembling the echo of a distant explosion, and are usually observed with a bright sky and calm air, occurring rather seldom in windy or rainy weather. They usually occur in the afternoon, both in winter and summer. These noises would seem to be of atmospheric origin. They do not produce any physiological effects of their own, nor do they seem to be connected with local earthquakes, though they sometimes cause window panes to vibrate. They are nearly everywhere considered as presage of bad weather, and are popularly supposed to be due to strong tides or storms at sea, whose echoes are transmitted to a distance. Prof. Alippi has obtained his results by means of a circular letter to which 217 observers have replied, and 135 of whom had noticed the sounds. The observers in question were distributed throughout the whole of Italy and its African colonies.

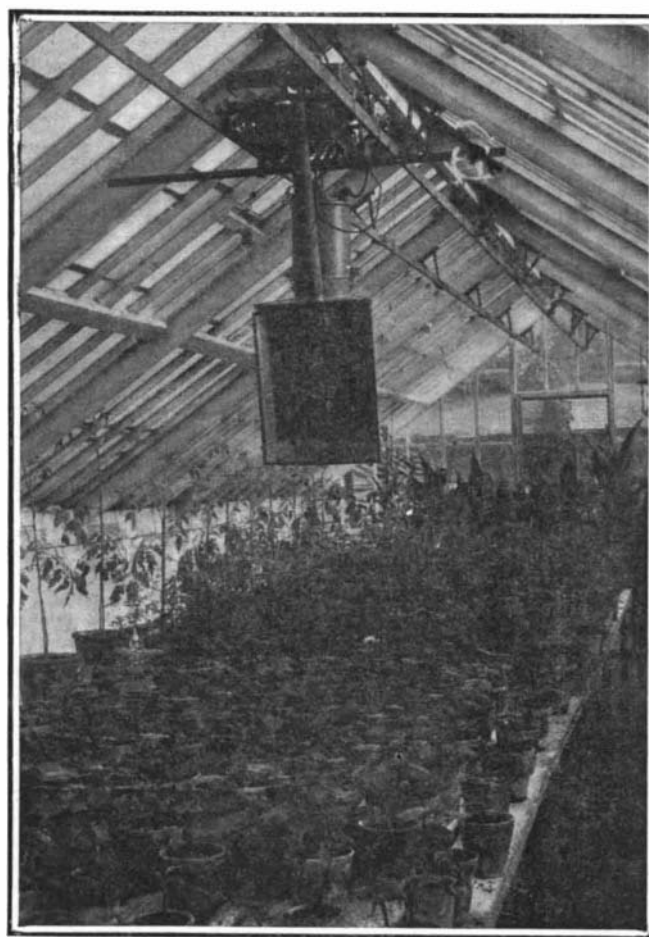
These noises do not appear to be due to artificial causes, such as mine explosions or gun shots, as they mostly occur in central mountain regions, where such causes are absent, while in some populated valleys where mines are common their existence is never noticed.

The author is not inclined either to ascribe this phenomenon to natural causes, such as winds, while the hypothesis sometimes suggested of thunderbolts under the horizon cannot be maintained either, owing to the equal distribution of brontidi over summer and winter.

There may be some connection between certain brontidi and seismic phenomena, while another class of brontidi may be connected with meteorological phenomena; and in order fully to elucidate this question, the observations will be continued from the Italian Central Meteorological and Geodynamical Office, which intends to send out more inquiry forms.



The Rear Side of the Light.



The Front of the Light.

**HOW THE ELECTRIC LIGHT IS USED TO STIMULATE PLANT GROWTH.**

is an apparatus well within the supervising ability of an ordinary intelligent workman, and can be left for hours together.

At the present time daylight is being extended for a period of four hours. Just before sunset the powerful arc lamps are lighted, and the beam flits from plant to plant as it moves slowly up and down the glasshouse. When the days get shorter, the light will be put in operation for longer periods. Mr.

town in Texas, recently included in the list of post offices. It is a village located on the 10,000-acre farm of Col. Cecil Lyon and associates in the Texas Panhandle. They have their own system of irrigation, and are not selling the land, but will cultivate it, employing about 200 farm hands. A commissary store is conducted as a part of the farm enterprise, and a large amusement hall has just been finished. The aim is to make Damsite a model community.