great where hardpan or underlying rock restricted root growth, while the wetness of the soil due to four days of rain prior to the storm was an important factor in weakening the anchorage of shallow-rooted trees.

There has been a lesson to be gained from the hurricane by every one interested in trees. While New England may not be visited again by so great a storm for another hundred years or more, the factor of wind destruction to trees is always with us to a greater or lesser extent and the planting of sturdy varieties and proper care of our valuable shade trees should lessen and restrict to a considerable degree storm damage in the future.

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THE POINT OF ORIGIN OF THE BLOSSOM-INDUCING STIMULUS[1]

THE use of such techniques as grafting,[2] defoliation and the exposure of different parts of the plant to unlike photoperiods[3] has given rise to the belief that a "flower-forming hormone" originates in the foliage near the tip of the plant. The classical experience of inducing plants to flower by girdling would suggest that the leaves may not be the exclusive means of control of the blossom-inducing stimulus.

To observe the response of some plants to the transfer of the flower-forming substance by grafting, flowering and non-flowering plants of *Cosmos sulphureus* var. Klondike, morning glory, var. Heavenly Blue, *Petunia,* poinsettia, soybean var. Biloxi, stock (*Matthiola incana*) var. Xmas pink, tobacco var. Maryland Mammoth and *Xanthium echinatum* were grafted by the approach method, a modified tongue being used. Positive results were secured with morning glory, *Petunia,* soybean and *Xanthium,* the "donor"[3] plants stimulating the "receptors" to produce blossoms. The state of growth of the plants as well as the cultural environments appear to affect the results secured from grafts. For example, deflorating the *Xanthium* donors increases their influence. Flowering was not initiated by grafting in the case of plants of *Cosmos,* poinsettia, stock and tobacco.

It appears that a successful transfer of the flower-forming stimulus by a graft contact depends upon whether the species being used will give a systemic or local response to a photoperiod treatment of only a part of the plant. Exposure of a part of a morning glory, *Petunia,* soybean or *Xanthium* plant to the proper environment induces flowering throughout the plant. *Cosmos,* poinsettia[4] and tobacco, on the other hand, give local responses, as the part being exposed to the proper photoperiod comes to flower and the remainder stays vegetative.

The older receptor branches of *Petunia* in a warm environment blossomed in short days before the younger donor branches which were exposed to long days. That is, it appears that the presence of flowers is not essential to the functioning of branches as donors of the stimulus to flower.

Poinsettia and tobacco plants were induced to blossom in a warm, short-day location, contrary to their habit,[5] by the application of a current of cool air to a short length of the stem some three to four inches below the tip of the plant. These species were also stimulated to blossom in warm, short days by wrapping a taut rubber band about the stem a few nodes below the tip to constrict it.

The variable responses to grafting and to donor branches depending upon the flowering habit of the species and the effects of a "temperature girdle" and banding in causing blossoming indicate that the stem of the plant plays a part in the appearance of blossoms as well as does a leaf-formed hormone-like substance.

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ON DESLOTHING THE SLOTH

DURING several visits to Panama and while making other observations, the possibility of raising the level of activity of the sloth made an interesting appeal. Considered academically and also to test the action of certain substances or conditions, this animal makes an excellent subject. Its basal level of movement is exceedingly low, and increments may readily be observed. Other features make it almost ideal for study, including its ease of handling and training and the plentiful supply in the tropics. Tests were made on both two-toed and three-toed species, the experimental work having been carried out mainly at Barro Colorado Island Laboratory, Canal Zone, and Gorgas Memorial Laboratory, Panama. It may be said that several ways were found of speeding up their activities.

Recognition that the body temperature of the sloth is normally much lower than that of other mammals suggested a temperature test. Mere exposure to the tropical sun for an hour or two raised the rectal temperature 4° or 5°, and thereupon the activity of the animal became much greater. This was evidenced by its rate of travel along the under side of a twelve-foot horizontal pole, timed by stop-watch. Again, setting up an emotional reaction in the sloth, by simple feints and passes before it, augmented its speed very markedly. Extract of the adrenal cortex made in this labo-

[1] Published with the approval of the director of the Agricultural Experiment Station.

[2] M. Ch. Cajlachjan, *Compt. Rend. Acad. Sci. U. R. S. S.,* 18: 606–612, 1938.

[3] K. C. Hamner and J. Bonner, *Bot. Gaz.,* 100: 388–431, 1938.

[4] R. H. Roberts, J. E. Kraus and N. Livingston, *Jour. Agr. Res.,* 54: 319–343, 1937.

[5] R. H. Roberts and B. E. Struckmeyer, *Jour. Agr. Res.,* 56: 633–678, 1938.