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PLANT ECOPHYSIOLOGY IN A TROPICAL FOREST CANOPY: METHODS AND PRELIMINARY RESULTS

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A construction tower crane was installed in a Pacific Dry Forest near Panama City, Republic of Panama, in order to provide safe, rapid access to the upper canopy (FIGURE 1). The crane was 30 m tall with a horizontal reach of 36 m. A research gondola carries two people and equipment to any point above or within the canopy, and does so without damage to foliage or disturbance to animal populations (FIGURE 2). The crane provides easy access to the interiors of treefall gaps and to other very uneven areas of canopy not readily reached by other methods.

Preliminary data are presented on water relations, spectral absorptance properties and Photosystem II fluorescence for three common canopy tree species in the dry season (see Parker *et al.* 1992 for more detail). As light increased during the day, water potentials decreased and apparent photoinhibition increased in the leaves of all three species. *Anacardium excelsum* (Ana-

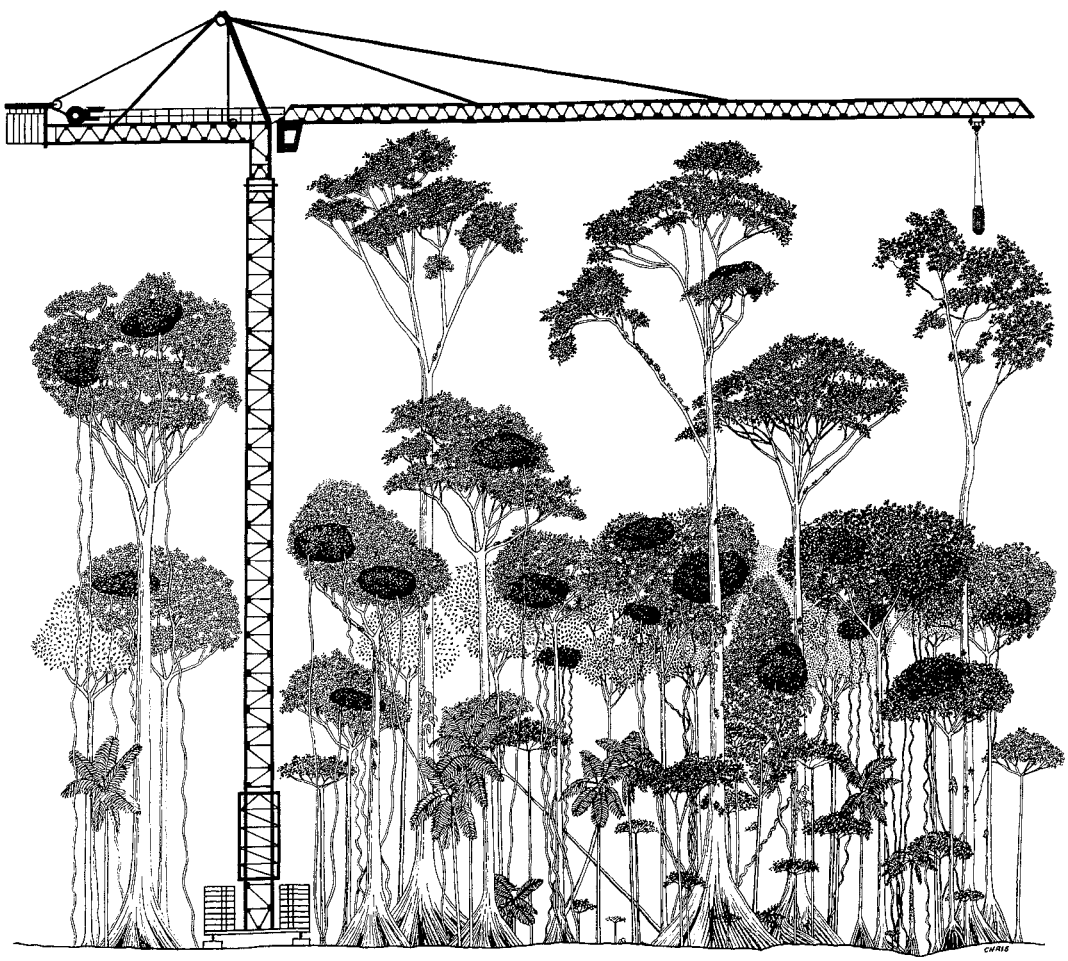

FIGURE 1. Profile drawing of a canopy crane.

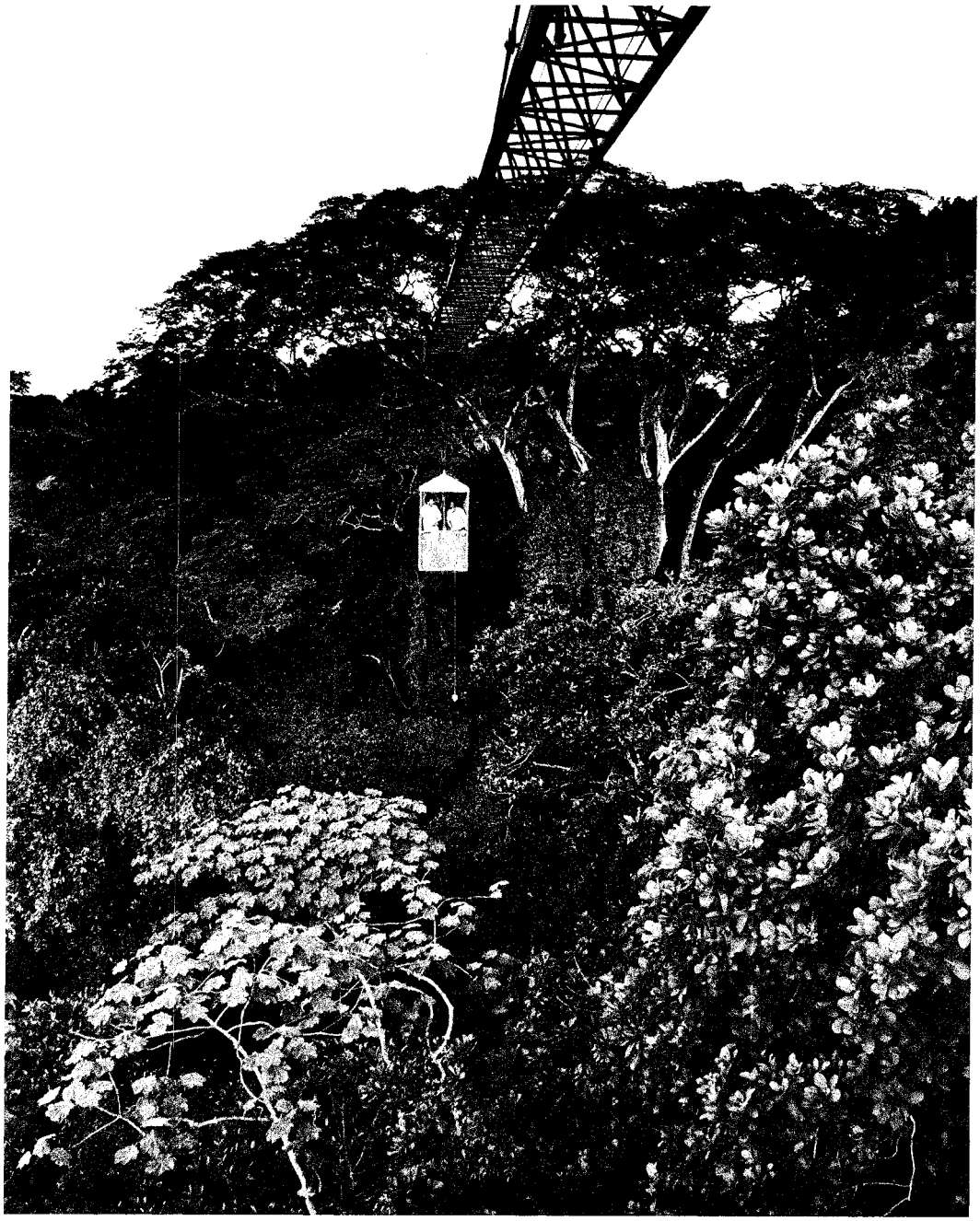

FIGURE 2. Researchers in gondola at the end of the jib, in a Pacific Dry Forest.

cardiaceae) appeared to develop photoprotection; *Luehea seemanii* (Tiliaceae) and *Didymopanax morototonia* (Araliceae) appeared to suffer photodamage. Apparent photoinhibition was reversed by early evening.

A larger crane has now been installed at the same site, with a horizontal reach of 55 m and a height of 40 m. Long-term research programs on canopy dynamics, ecophysiology and biodiversity are in progress. We plan to install a large

crane in the Tropical Moist Forest of Barro Colorado Island, permitting comparisons of canopy biology in wetter and dried forests.

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Literature Cited

Parker, G. G., A. P. Smith, and K. P. Hogan. 1992. Access to the upper canopy with a large tower crane. BioScience 42(9): 664–670.