# DISCUSSION

## PACIFIC ENTOMOLOGICAL SURVEY

THIS note has been prepared to clarify the meaning of the term "Pacific Entomological Survey" and thus make unnecessary the confusion indicated in correspondence and printed papers. The survey was organized in Honolulu in 1926 through a cooperative agreement, for a five-year period, 1927–1932, between Bernice P. Bishop Museum, the Hawaiian Sugar Planters' Experiment Station and the Association of Hawaiian Pineapple Canners, and had for its purpose "collecting, mounting, sorting and identifying insects of the Pacific islands (including Hawaii), preparing lists and descriptions for publication and publishing the same." As the director of the survey, the committee in charge appointed C. F. Baker, dean and director of the College of Agriculture, University of the Philippines. On the death of Dr. Baker on July 28, 1927, E. P. Mumford, Commonwealth fellow, University of California, was chosen as his successor, and in association with A. M. Adamson, now professor of entomology at the Imperial College of Tropical Agriculture (Trinidad), and local assistants, collected insects in the Marquesas Islands (January, 1929, to April, 1930; Adamson collected in the Society Islands, September to December, 1928). At the close of the period of cooperative agreement (1932), the organization was extended for one year (1933) and then disbanded with the understanding that papers based on these collections in preparation by specialists in entomology would be published by Bishop Museum and credited to the Pacific Entomological Survey (most of these papers have been issued as Bulletins 98, 133, 114, 142, in press). Since 1933, field studies of the insects of the Pacific Islands have been continued, organized and financed by institutions in Hawaii. In excess of 100,000 specimens have been brought to Bishop Museum from the Mangarevan Islands, Austral Islands, Tuamotu Archipelago, Rapa, Society Islands, Equatorial Islands, etc., in 1934; Micronesia in 1935–1936; Guam in 1936; Fiji, New Zealand in 1937; Fiji in 1938.

Some time after the official termination of the Pacific Entomological Survey and while studies of the Marquesan insects were in the process of publication in Honolulu, there was organized, and the name registered, a "Pacific Entomological Survey" under the directorship of E. P. Mumford, with headquarters at Oxford. Unfortunately, the name applied to the new "Survey" is the same as that long in use in Hawaii, and to avoid misunderstanding it is appropriate to note that the two organizations are entirely unrelated in present personnel, finance and program; that the new "Survey" is distinct from the survey organized in Hawaii, and has no control over the collections made in the Marquesas and Society Islands by Mumford, Adamson, Whitten, Tauraa and Le Bronnec during the period 1928–1933, nor over the publications resulting from their study. All correspondence pertinent to the original survey should be addressed to Bernice P. Bishop Museum, Honolulu.

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## DIURNAL CYCLE OF HEAT RESISTANCE IN PLANTS

A DAILY cycle of heat resistance in plants that does not appear to have been reported in the literature has been discovered in the several species of field crops studied including corn, wheat, barley, sorghum and alfalfa.

In these studies the daily maximum resistance to heat was attained by plants at about mid-day and continued during the afternoon. The minimum resistance prevailed early in the morning. Resistance to heat increased in plants when they were exposed to light and decreased in the absence of light. One hour of light, following normal darkness of night, was long enough for plants to acquire a measurable and, in some cases, a marked amount of resistance to heat. Ordinarily plants reached their daily maximum heat resistance within four hours after exposure to daylight following normal night. Plants exposed to electric light during the night were more resistant to heat in early morning than those that had been in the dark during the night.

The loss of heat resistance in plants when exposed to darkness was slower than the gain of resistance in the presence of light.

Most of the investigations were made with young plants, although corn and sorghum were tested also in the flowering stage. Exposure to high temperature for five hours was sufficient clearly to indicate differential resistance. The degree of temperature required to distinguish differences in heat resistance depended upon the species and the condition of the plants.

The following data are presented as illustrations of the experimental results that have been obtained in these studies. Young wheat plants, grown in the greenhouse in January, when tested at 122° F. for five hours beginning at 8 A.M., were injured 68 per cent. as indicated by the proportion of tissue that was killed. In similar tests beginning at 1 P.M. the injury was 18 per cent. Young barley plants which received