water supply structures and for the collection of rainfall and streamflow records.

These gages which are difficult to reach are read once each month or intermittently. Because of the great rainfalls, standard gages cannot be used. The gages are approximately the same over-all size as a standard gage but with the collection ring reduced to provide a ratio of ring to storage can area of 1:2 or 1:10. Accessible gages are read daily or after each rain.

In the rough forested areas of Hawaii, it is impossible to find locations for rain gages the exposure of which fulfills the requirements usually met in mainland United States. The rain gage shown in Figure 1 is a typical mountain gage, placed in a small natural clearing in a thickly forested area.

The measurements of rain at such gages are necessarily rough. In the case of gages having a 1:10 ratio, depth of water collected cannot be read closer than the nearest whole inch of rain. This means, however, that the ratio of error to total catch is comparable to standard gage readings in areas of lower rainfall. The readings themselves are subject to a multitude of errors. Since the depth read must be multiplied by the ratio of catchment to gage area, there is sometimes a possibility that the proper multiplication was not made.

TABLE 1

No. of Rain Gages Having Various Lengths of Records

Years	No. of Gages
≧ 40	9
30–39	4
20–29	15
15–19	12
10–14	20
5–9	34
1–4	20

Many of the faithful gage readers are men who have worked on the plantations for many years and who never had the opportunity for formal education. Often they speak but little English, and so there are possibilities which cannot be overlooked for personal errors in gage readings. However, the smooth isohyetal pattern lends confidence to the general quality of the records, even though individual readings are subject to a variety of possible errors.

For the construction of the mean annual isohyetal map of Figure 2, there were available records for 116 gages in

Figure 1. Rain gage No. 342, Puohakamoa No. 2, on East Maui. Gage is located in a clearing in the rain-forest where annual rainfall is 250 inches. Trees in background are ohia lehua. The diameter of the collecting ring of the gage is about two inches, and the ratio of collecting ring area to storage cylinder area is 1:10.