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Agricultural Terracing *in the* Aboriginal New World

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About the Author . . .

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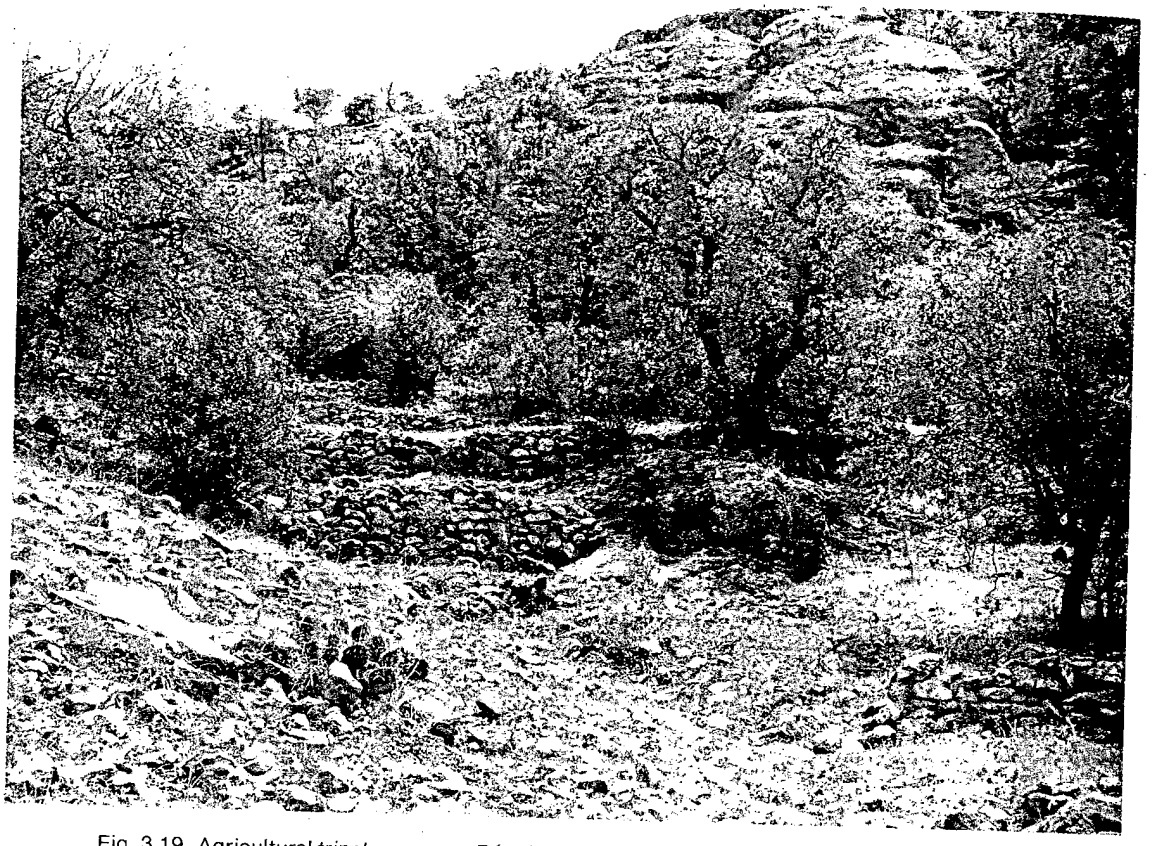

Fig. 3.19 Agricultural *trincheras*, near Río Piedras Verdes, northwest Mexico (L. Herold, 1965)

Fig. 3.20 Hopi terrace gardens, near Wipo Springs, First Mesa, Arizona (G. R. Stewart, 1940)

Gavilan, southwest of Casas Grandes, Chihuahua.[79] Here precipitation increases with altitude from 375 mm to 625 mm per annum, but the only areas cultivated today are occasional strips of alluvium along streams. The great majority of the terraces are of the cross-channel *(trinchera)* type (fig. 3.19). The walls, up to 2 meters high, are sometimes sited at nick points so that "a maximum of fill could be controlled by a minimum of trinchera wall construction."[80] The normal processes of deposition and mass wasting appear to explain the formation of cropping surfaces. No evidence of artificial filling was found.

Southwest of the Río Gavilan, similar cross-channel terraces have been recognized around Nacori[81] and in the Sierra de Teras[82] (within the great bend of the Río Bavispe). Like those of the Gavilan, they mostly lie within the zone of oak, pine and juniper forest and have long been abandoned.

How far agricultural terracing extends west of the Río Bavispe is not entirely clear. There are reports for the Papaguería as far as Caborca on the Río Magdalena.[83] But the question is complicated by the presence north and west of the Río Sonora of terraces, also known as *trincheras,* of a different kind. These are narrow, contour benches, with little or no fill, and apparently designed as house sites and fortifications.[84] The builders are thought to have farmed the surrounding flood-plains and outwash fans where terracing is unnecessary. The *cerros de trincheras* were essentially settlement sites.

THE SOUTHWEST OF THE UNITED STATES

There are two main areas of aboriginal terracing in the deserts and steppes of the Southwest: the valley systems of the middle and upper Gila and Salt rivers, and the Colorado Plateau, north and east of Flagstaff.

The valleys of the middle and upper Gila and Salt rivers: In Hohokam times (100 B.C. - A.D. 1400), there developed in the Gila-Salt basin the most advanced system of canal irrigation in North America.[85] This survived in part under the Pima[86] who also terraced for agriculture and practiced flood-water farming. The cross-channel terraces[87] are very similar to those already described for the northern Sierra Madre. While the Pima and the Papago leveled fields artificially in preparation for the use of flood-water,[88] the terraced plots appear to have been formed by the gradual accumulation of water-borne alluvium.

Colorado Plateau: Several hundred contour and cross-channel terraces have been identified at Mesa Verde (Colorado)[89] where farming probably ceased *circa* 1300.[90] From Citadel Ruin in the San Francisco Mountains of northern Arizona, G. R. Stewart and M. Donnelly reported abandoned terraces that were partly filled with domestic refuse.[91] Probably the best examples of terraces still in use are to be found around Hopi settlements on First Mesa (fig. 3.20).[92] Traditional agricultural practices have survived more completely among the Hopi and Zuni than elsewhere in the Southwest.

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79. L. Herold, 1965 and 1966. See also Bandelier, 1892, 62; Sayles 1936, 38; McCabe, 1955, 75-90; Howard and Griffiths, 1966.
80. L. Herold, 1965, 147.
81. Lumholtz, 1902, 21-22.
82. Bandelier, 1892, 62; Lumholtz, 1902, 45; Sauer and Brand, 1931 (photographs).
83. L. Herold, 1965, 1.
84. Schumacher, 1882, 227-29; McGee, 1895, 372 (Papaguería of Sonora-Arizona); Sauer and Brand, 1931; Ives, 1936, 257 (Quitovaquita, Sonora); Hoover, 1941, 228, 231; A. F. Johnson, 1963-4, 178, and 1966, 32-33; Harlem, 1964, 339-50.
85. Haury, 1936, 48-50, and 1962, 122; Halseth, 1936, 42; Woodbury, 1961b, and 1962, 302; E. K. Reed, 1964, 182. Schroeder (1966) discusses the diffusion of cultural features, including irrigation, from Mexico toward the Southwest after c. A.D. 600.
86. Bartlett, 1854, 232-33, 242-43; Bandelier, 1892, 104, 254; Castetter and Bell, 1942, 59, 151; Ezell, 1961, 36; Woodbury, 1962, 302.
87. Stewart, 1940, 217; Woodbury, 1961a, 11-12, and 1962, 302-304.
88. Castetter and Bell, 1942, 161, 169. On flood-water farming, see Bryan, 1929, 444-56, and 1941, 219-42; Spicer, 1961, 12, 50.
89. Stewart, 1940, 214; Stewart and Donnelly, 1943, 34; J. Herold, 1961, 103-108, 111; Woodbury, 1962, 304; Rohn, 1963, 441-56; Erdman, Douglas and Marr, 1969, 57-58.
90. J. Herold, 1961, 111. On the abandonment of settlements in arid North America c. A.D. 1300-1400, see Hewett, Henderson and Robbins, 1913; Bryan, 1941, 72, 74; O'Bryan, 1952, 153-57; Stevens, 1964, 292; Armillas, 1969, 697-704. Woodbury (1962, 304) places the beginning of terracing in the Southwest in the eleventh century or earlier. According to L. Herold (1965, 1), the [abandoned] terraces of northern Mexico were constructed between c. 1100 and 1450.
91. Stewart and Donnelly, 1943, 42-43. For brief references to abandoned terraces elsewhere in northern Arizona and in southern Utah, see Kidder and Guernsey, 1919, 64 (Marsh Pass, Arizona); Stewart and Donnelly, 1943, 37 (Navajo Mountain); Brew, 1946, 10 (Alkali Ridge, Utah); Woodbury, 1962, 304 (Kayenta, Arizona).
92. Forde, 1931a, 364-5; Colton, 1932, 16; Stewart, 1940, 201-20, 329-40; Hack, 1942, 34-37.

HP507