

Some Cultural Practices Observed in the Simbai Administrative Area, Madang District.

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Introduction.

During the initial agricultural patrol to assess the economic potential of this area, made from Aiome during August-September, 1962, a number of unusual cultural practices was observed.

The Simbai area comprises the valleys of the Asai and Simbai Rivers, which flow east to the Ramu, and the Kaironk River, which joins the Jimi River of the Western Highlands, subsequently to enter the Sepik. These valleys are separated by the main ranges and spurs of both the rugged Bismarck and Schrader systems.

Some seven years after the earliest penetration of the area, a patrol post was established at Simbai in early 1959, and law and order has been brought to the area since that time. However, no work has been undertaken in the fields of education, health or economic development except for recent small-scale moves by the missions with regard to education and health.

Recent census figures revealed a population of some 12,500, broken into four dialect groups, the bulk of which resides between the altitudes of 2,000 feet and 5,500 feet. The inaccessibility of the area to any means of transport, together with the scarcity of arable land, would appear to preclude any agricultural development on present lines, i.e., with plantation crops.

Subsistence Agriculture.

The subsistence gardening techniques follow closely the "Highlands" pattern, especially in the range and diversity of plant species utilized for food production. The major variation noted is in land utilization. The Highland pattern is a semi-perennial cropping of one area; the practice adopted within this area follows the coastal pattern, i.e., an annual cropping with a three to eight years fallow period.

The male members of the clan or group clear, fence and burn the land, after which it is divided into plots which are planted and maintained by individual female members of the same clan. Despite this individual work, all foodstuffs are cooked and eaten communally.

Owing to lack of arable land, cultivation of extremely steep slopes becomes necessary in order to prevent exhaustion of the better soils. Several practices employed to achieve this can be clearly observed. (Plate II). A solidly constructed retaining wall of casuarina and bush timbers is built across the length of the lower side of the gardens. This also serves to exclude pigs. Then rough terraces of casuarina limbs are constructed across the slope at approximately ten-foot intervals to prevent, to some degree, extensive erosion.

In grassland areas such as the Asai, little timber is available for fence building, hence the practice of ditch construction. Depths range from three to six feet, widths from three to four feet, with ditches running both across and down the slope, thus becoming erosion foci. This is a major cause of soil erosion.

Mixed gardens are planted throughout the year but a more or less seasonal planting of the staple sweet potato occurs in November-December. A number of different varieties was observed. There is no definite cultural technique or practice adopted with this staple, such as hilling or mounding, the runners being planted into a small hole made by a digging stick of fire-hardened casuarina.

When the sweet potato, *Ipomoea batatas*, has been harvested for the final time at 12 months of age, (previous harvests made at five and eight and a half months), pigs are allowed to graze the garden. No damage is caused to the sugar-cane, *Saccharum officinarum*, or bananas,



Plate I.—The Asai valley, looking east towards the Ramu.

Musa spp., which were originally interplanted with the sweet potato, but considerable soil movement is caused by the foraging habit of the pig, followed inevitably by gully and sheet erosion.

Taro, *Colocasia esculenta*, is the secondary staple and is planted both in dry land and irrigated gardens.

Some groups have so-called "off season" gardens which are planted during hunting expeditions to other valleys, but are no more than rough clearings in the forest which receive little further attention. Among the groups are the upper Asai people, with gardens in the Aunja Valley, and the Maring people of the lower Simbai with gardens on the north wall of the Jimi Valley.

The use of *Casuarina equisetifolia* as a cover-fallow crop, as practised in other Highland areas, was noted only in the Kaironk and upper Asai Valleys. The young seedlings are transplanted

from stream sandbars to the gardens immediately after the food crops have been planted. Thus, at the end of 12 months, a partial cover is present and this appears to be the only feasible agronomic method to combat infestation of kunai grass, *Imperata arundinacea*. This is then replaced by *Paspalum conjugatum*, *Digitaria violascens* and other soft grasses. Depending on land pressures, the area may remain under casuarina cover for from three to eight years. When the land is required for gardens again, the casuarinas are ringbarked, the branches lopped for fence and retaining wall construction, while the trunks remain until required for firewood or for building materials.

Each clan or group has at least two or more producing gardens at any one time, together with a newly planted one and one reverting to bush. Garden areas range from some two to three square chains to over an acre in extent. Reversion of gardens to montane forest is unusual, except



Plate II.—Steep hillside subsistence garden Kaironk valley.

in the case of the previously discussed "off-season" types; rather, most areas revert to grasslands, or, as in the lower Asai and Tagui Valleys, reversion to a dense forest of *Alsophila* spp., occurs. Retrogression to grassland is aided by the practice of burning off for hunting purposes.

The use of *Casuarina equisetifolia* for a garden cover is to be recommended as this will not only prevent the spreading of grasslands, but will eliminate the use of ditches by providing building materials.

Irrigated Taro Gardens.

These are ancillary to normal gardens, providing food during the slight shortage occurring during the time of planting sweet potato gardens in November-December. These were found only among the Karam people of the Asai Valley. Areas varied from a half to four or five square chains. Some were located on slightly sloping land close to the larger streams while others

clung to greater than 40 degree slopes, thus involving more work terracing. Clearing commences in May. The area is burnt off and strongly fenced with casuarina. Then large quantities of casuarina are split and terracing commenced. The billets are lined across the slope at approximately two to three-foot intervals and strongly pegged in place by small pieces of casuarina.

The soil may be loosened and then firmed in place on the topside of the terraces, thus preventing excess water losses. Lengths of timber placed on top of the terraces and lying down the slope delineate individual plots in some cases; in others, the garden is planted progressively by the owner so that there may be a gradual age difference of some weeks within the garden, depending on labour availability and weather conditions. The terrace along the upper boundary of the garden is large to allow a good flow of water. This can be noted in Plate III.



Plate III.—Irrigated Taro garden—distant view.

Depending on the nature of the soil, the topography and the distance to the stream, the inlet line may be constructed by one of two methods. Where there are few boulders in the soil and the ground is fairly level from the stream to the point of inlet to the garden, a ditch may be dug some 12 to 18 inches wide and the same depth. This is contoured surprisingly well, little scouring being apparent. Some inlet ditches were anything from 10 to 25 yards in length. Where soils are stony and terrain uneven, fluming of bark is obtained and supported by light timber frames. These flumes are never of any great length. Often the top terrace serves as the inlet also. This occurs where the stream flows through the garden, thus allowing the water to be diverted directly into this terrace with a small piece of bark. Where internal high points occur, short lengths of bark bring water from a higher terrace, thus allowing for as near to maximum utilization of existing land as possible.

The water then filters from one terrace to the other, and, provided the correct flow is maintained after saturation of the soils, very little erosion can or does occur. Planting is done in June or July. Occasionally the soil is irrigated prior to planting but this is by no means common. However, it has much to commend it in that any breaks can be repaired and the soil is loose and allows for easier planting, apart from the fact that the taro would strike much more rapidly. A hardened digging stick of casuarina or a shovel is then used to make the planting holes at approximately 12-inch intervals. The taro butts are then planted and the soil firmed around the bases. The only species of taro planted in the garden is *Colocasia esculenta*, but Aibika (*Hibiscus abelmoschus*) and *Xanthosoma* spp. taro are often planted along the garden borders. Tapioca (*Manihot esculenta*) was noted in some gardens, but only on the borders.

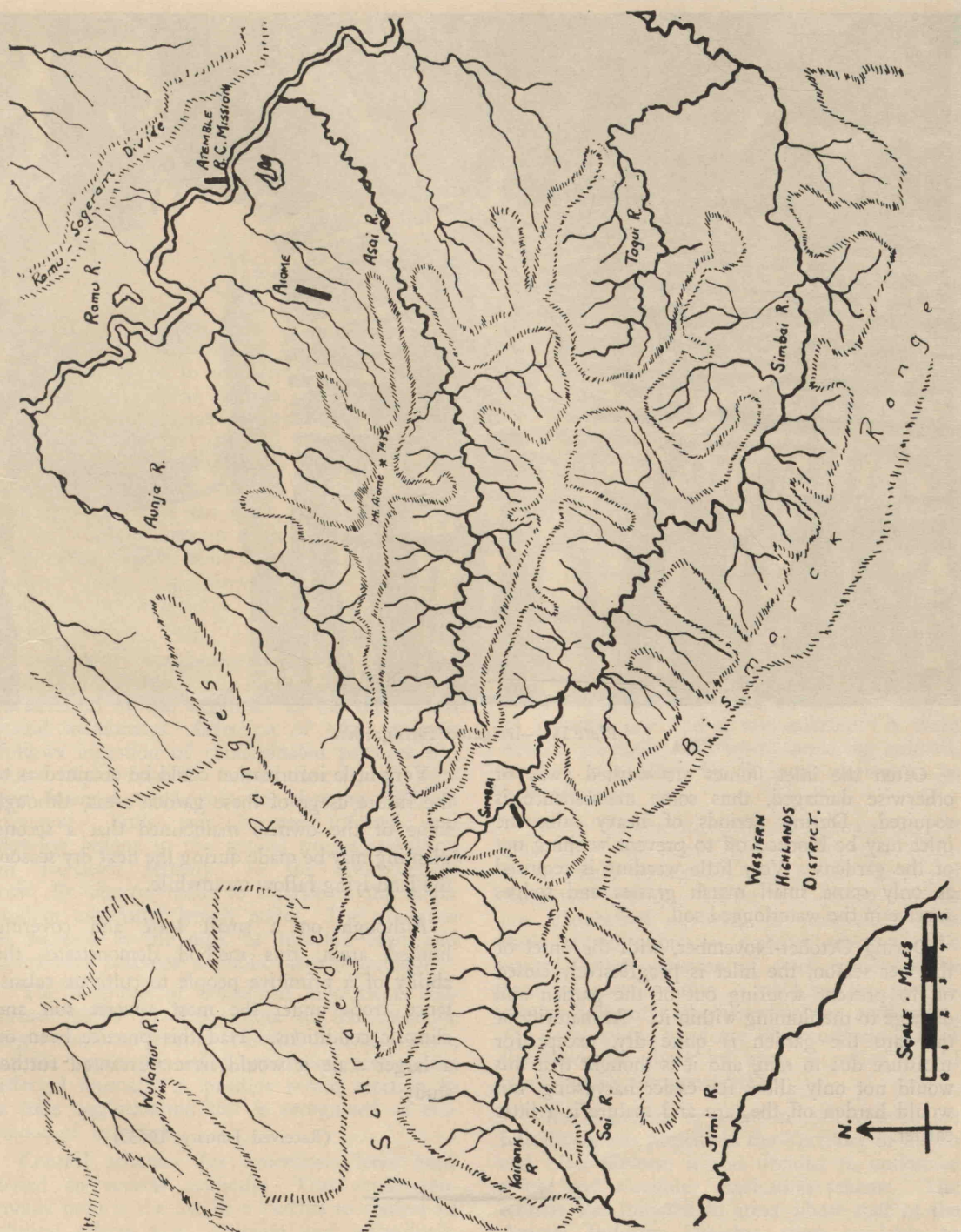




Plate IV.—Irrigated Taro garden.

Often the inlet flumes are washed away or otherwise damaged, thus some maintenance is required. During periods of heavy rain, the inlet may be blocked off to prevent washing out of the gardens. Very little weeding is required as only some small marsh grasses and sedges survive in the waterlogged soil.

During October-November, with the onset of the wet season, the inlet is progressively closed off to prevent scouring out of the garden and damage to the fluming within it. At maturity of the taro the garden is quite dry, except for moisture due to rain, and it is thought that this would not only allow for easier harvesting, but would harden off the taro and mature it a little earlier.

Very little information could be obtained as to the future usage of these garden areas, although some of the owners maintained that a second planting may be made during the next dry season, the land lying fallow meanwhile.

Although on a small scale and covering limited areas, this method demonstrates the ability of a primitive people to cultivate subsistence crops under the most adverse soil and climatic conditions. Had this practice been on a larger scale it would have warranted further study.

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