

Wallula Indians. (Wahluke) Wanapams

A Prehistoric Pit House Village Site on the Columbia River at Wahluke, Grant county, Washington. By Herbert W. Krieger, Curator of Ethnology, U.S. National Museum.

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During the spring and early summer months of 1926 and 1927 a regional archaeological survey of the middle and upper Columbia River Valley was made by the writer for the bureau of American Ethnology. This survey is part of a large project to determine how far the general plateau culture may be classified according to its sub areas and to what extent these subareas interrelate with each other and with early cultures on the north, west east and south. The survey began with a study of the extensive collections obtained by members of the Columbia River Archaeological Society from burials and surface finds at various ancient and historic Indian village sites and cemeteries in the middle and upper Columbia River valley.

Most noteworthy among the collections studied are those of H.T. Harding of Walla Walla; the Ellis collection of Whitman College also of Walla Walla, Wash.; of Adams H. East, O.B. Browne, R.T. Congdon, T.H. Grosvenor of Wenatchee, Wash. of F.C. Evertsbusch and others at Pateros, Okanogan county, Wash.; of Earl Simmons and others of Quincy, Wash.

and the extensive and valuable material collected by F.S. Hall and others for the state museum of Washington in Seattle. Enthusiastic interest in the survey was shown by members of the Columbia River Archeological society who have done pioneer work in locating many aboriginal villages and burial sites and in gathering and classifying many different types of archaeological material.

Information as to the location of sites and distribution of type

specimens was in every instance cheerfully given. A check was made on data already collected, amplified in several instances by a visit to the reported location of an isolated pit house ruin, camp site or talus burial.

The next step in the survey was the plotting of an archeological map of the middle and upper Columbia and tributary river valleys showing known aboriginal village sites and cemeteries. The necessity for obtaining an archeological map of the valley at this time becomes apparent when one notes that the ancient village sites is usually the most favored location chosen by the modern orchardist for his planting. The reason for this lies in the need of each for protection, shelter and an adequate water supply.

A young orchard can successfully be developed only on a level river bench high enough to be secure against seasonal flood waters and near enough to the towering escarpment of the river bluffs for shelter from the winds which sweep over the plateau above. It was just this type of narrow bench land, located above danger from floods and close to the precipitous basaltic or lava capped river bluff, that was selected by the prehistoric occupant of the Columbia River valley as a location for his permanent winter home. Here under the practically inaccessible cliff barrier was security for the primitive group against attack by hostile bands.

From the Dalles in Oregon and Spedis located on the Washington side of the Columbia to the environs of Kettle Falls, near the Canadian border, the mapping of archaeological stations was continued both along the middle and upper Columbia and tributary river valleys as the lower Snake, Yakima, Walla Walla, Deschutes, John Day, Wenatchee, Methow, Okanogan and others.

Lewis concluded:

Albert B. "Tribes of the Columbia Valley: and Coast of Oregon and Washington and Oregon."

Lewis concluded:

"The stone arrowheads, stone mortars and pestles and carved stone images and animal heads found along the Columbia from the mouth of the Willamette to near the mouth of the Snake river show that the similarities throughout this region are not of recent origin.

...The falls and gorge of the Columbia river where this stream breaks through the Cascade Mountains marks the beginning of the wooded area of the lower river valley. The early aboriginal inhabitants of this region possessed a distinct type of culture which was based principally on the use of wood in their arts and crafts while the tribes occupying the middle and upper river were expert in the utilization of stone, horn and bone.

...Traces of Indian occupation are in the process of rapid obliteration by the plow which is today the most productive excavator of antiquities. Of the many sites inspected by the writer excavation was undertaken at eight. The largest collection of material exhumed such as ceremonial burial offerings and skeletal remains was obtained from the prehistoric pit house village site and cemetery at Wahluke, Grant county, Wash. There was no evidence that burials there had ever been disturbed. Neither was there in the objects recovered from the graves any indication of Hudson's Bay Co. influence such as trade beads of glass or of such beads which in historic times were traded to the Indians as a substitute for the Dentalium indianorum, or of iron knives or copper implements. It was likewise impossible to obtain at Wahluke any direct evidence of great and undoubted antiquity of occupancy or of culture type.

Wahluke is in Grant county on the west bank of the Columbia river which in this part of its course flows north, immediately south of the point where the stream impinges on the

precipitous escarpment formed of yellowish gray volcanic debris , white silt, volcanic dust and ash known as White Bluffs.

Wahluke is the site of a former pit house village consisting of 30 semisubterranean structures erected in an irregular row extending a distance of 100 rods along the river bench. Each habitation ruin today consists of nothing more than a stone capped rim of earth surrounding a centrally excavated pit of varying depth with a diameter of 30 or more feet.

The bench at Wahluke is broad and high enough to afford protection against the flood waters of the Columbia river. The opposite flank of the river is much lower and is subject to seasonal inundations hence was not ~~for~~ occupied by the ancient inhabitants of the region except as a place for procuring game. Low-lying river benches gradually slopping down to the river's edge were favored watering places for animals which often traveled many miles to reach them although no evidence was uncovered that the bison ever reached this region.

The high river bluff which faces Wahluke at right angles on the north is an exposed section of the Ellensburg formation laid down in the late Tertiary in old fresh water lake beds that at one time extended from the Pacific coast to what is now the upper plateau country east of the Cascade Mountains. In the valley of the Yakima River the composition of the Ellensburg formation is coarser than that of the White Bluffs on the Columbia river which contains large quantities of volcanic ash and wind blown dust.

At Wahluke the Columbia river is deflected in a general south easterly direction where it completes and completes the final sector of its course known as the big bend. The vertical escarpment of the White Bluffs formation lies hard against the northern end of the village site; the cemetery proper is an extension of the

of the village and is directly south of the long and irregular row of semisubterranean pit-house ruins. "White Bluffs extends in a line reaching from east to west. From the point where the channel of the Columbia is deflected, ~~0000~~ the escarpment continues on the west as a range of hills known as Saddle Mountains, or locally as Sentinel Bluffs, forming a relief feature several hundred feet high.

Twenty five miles farther west this range again lies at right angles to the Columbia where the channel cuts a gap through it. This gap is just below the confluence of Crab creek and is about 40 miles by a circuitous course upstream from Wahluke. From the gap through Saddle Mountains to Wahluke the river inscribes a semicircle to which Saddle Mountains and White Bluffs are tangent. During this section of its course, the Columbia river passes over the 15 mile stretch of Priest Rapids famous as a gathering place for various tribes during the fishing season. Here on the west bank, was located the village of Smohalla, a leader in the Ghost Dance cult.

Saddle Mountains are of importance ethnologically as the range forms one of the few natural geographic barriers. Within historic times this range separated the Shaparian speaking tribes on the south such as the Wanapum or Columbia River Indians, the Palus the Yakima, the Walla Walla, the Umatilla and other tribes from the Salish groups as the Kalespel, Winatshi, Okanagan, Nespilim and others that occupied that region of ~~central and~~ central and eastern Washington north of the range.

Saddle Mountains are geologically important because of their bearing on any attempted interpretation of the antiquity of man in the valley of the Columbia.

In the deeply cut gorge of this river, in its escarpment of columnar basalt is written much of the early Tertiary geological history of central Washington. South of Saddle Mountains the basaltic lava

lava flow is covered with thick deposits of andesitic materials, volcanic ash and dust and loess.

During the Miocene, sheet after sheet of basaltic lava was poured over the greater part of Washington, all of eastern Oregon, part of California and a large area in the Snake River valley of Idaho. This basalt represents a great number of flows. About 20 of these are exposed in some of the lava bluffs of the Columbia and Snake rivers. A cross section of the gorge cut by these rivers shows intervening beds of varying thickness of soil in which trees grew to a thickness of several hundred inches before they were charred and buried by later flows. Embedded sand, clay, gravel and soil debris all bear evidence of burning and baking.

After the completion of the period of basaltic upheaval and the later depositions of andesitic material in the fresh water lake beds which characterized the Tertiary history of central Washington, there began the gradual uplift of the Cascades in the Pleistocene and the formation of the high plateau region. The invasions of ice sheets from the north and from the northeast date from this period. One of these great ice sheets came down the valley of the Okanogan river from the north and filled the old channel of the Columbia river causing it to form new and more direct ones, among the most more important of which are the Moses and Grand Coulees. Later, on the recedence of the ice sheet the Columbia River again followed its old channel, which it still occupies

Any cursory study of the geological history of the Columbia valley must indicate that human occupation of this region during the Pleistocene was impossible. Supposedly valid evidence of man's antiquity in the valley of the Columbia has been found, nevertheless in the form of crude, unfinished stone implements cached in the vicinity of a glacial moraine in the Lake Chelan country. This cache however is

is entirely superficial or intrusive and was deposited at a much later date.

Another cache of unfinished knives or spear points, shaped likewise from andesite porphyry was found embedded in a cremation burial on the bench of the Columbia river at a location locally known as 'Simmons' graveyard near Quincy, Grant County, Wash. The burial here is unique in that it lies directly underneath and several feet below a pit house village erected at a later date.

The crude appearance of the roughly chipped unfinished leaf-shaped thick sectioned stone blades has led to the mistaken assumption of great antiquity.

Pleistocene faunal remains which protrude from the vertical escarpment of the White Bluffs formation along the Columbia river near Wahluke and are associated with weapon points and implements of chipped stone are no true indication of a living association of Pleistocene fauna and ancient man, as has been supposed.

The elevation above the country surrounding White Bluffs proved a splendid observation point for the Indian hunter in search of game or on the lookout for hostile strangers. White Bluffs also was a well marked trail used by the Indian when he journeyed eastward and southward and northward away from the river on food gathering expeditions. The chipped stone objects found are clearly intrusive and belong to a much later date.

The geologic history of central Washington does offer, however, an explanation in part of the material culture of the early occupants of Wahluke. Environmental factors there have served as a causative agent, likewise as a barrier to the development of a culture complex within other than certain conscribed limits. This basic fact is most strikingly brought out in a consideration of their stone culture.

Evidence obtained from the nature of the objects exhumed at Wahluke would appear to indicate that in prehistoric times up to some as yet

undetermined date there existed a close connection of material culture and tribal practices throughout the entire area of the western plateau in what within historic times became known as distinctly Salish, Shahaptian and Shoshonean cultures. There is definite evidence that this culture extended far to the south and formed the nucleus or substratum of the Basketmaker culture of the Southwest.

At many places along the banks of the Columbia and tributary streams sedimentary deposits are exposed which were carried down in the flood waters caused by the melting snow in the Cascades and in the Rocky Mountains. These deposits often covered charred cooking stones, heaps of charcoal, kitchen refuse and occasionally artifacts shaped from stone, horn and bone, together with other definite evidence of the location of a camp or burial ground.

Temporary fishing camps, where many discarded objects of domestic use and weapons and implements of stone and bone were abandoned and covered with several thick deposits of sediment were again in later years exposed when the stream formed a new bed or when flood waters eroded the banks.

At Pateros, in Okanogan county, ~~and~~ at the confluence of the Methow River with the Columbia, seven strata showing human occupancy with intervening layers of sedimentary deposits are exposed on the flanks of a small island formed on the Methow side of the channel. ^{nr l}

At Vantage Ferry, Kittitas county, on the west bank of the Columbia river there are three such strata and so on almost continuously along either bank of the river wherever local conditions as to geological formation, elevation of sedimentary river bench land above danger from high water, steepness of banks and bench location, such as width accessibility, contour and other factors warranted.

The cemetery at Wahluke contained both primary and secondary burials but practically no other type than that of ceremonial cremations. Burials were

were placed in graves forming an irregular row along the river bench south of an upstream from the pit-house ruins which at one time made up a village of semi-subterranean habitation structures. There is but one site known in the middle Columbia river valley where pit-house village had been erected above a habitation site and cemetery of an older date. This site has become known as 'Dimmons' graveyard and is located about five miles downstream from 'Trinidad and about 50 miles upstream from 'Wahluke and several miles north of 'Vantage 'erry, where are located the ruins of another pit-house village and cemetery of a later date.

Cremation burials at 'Wahluke are usually three or more feet below the surface when undisturbed. A layer of flat stones was invariably placed in an oblong or circular ring as a protective cover against marauding animals and to prevent erosion of loose sand which forms a bench at this place. A thin covering of soil

consisting of winblown ash, dust and calcareous clay over compactly embedded sand make up the formation of the village site proper.

The body to be cremated was placed on a piece of matting of Indian hemp, oriented sometimes with the head facing upstream, sometimes toward the east or seemingly haphazard, but always with face downward or on the side. Accompanying the burial were ceremonial offerings of personal use and ornamentation--the personal property of the deceased. The pyre was built of driftwood logs. The fire must not have been carefully attended as many of the skeletons are merely charred while sections of logs together with burial offerings of wood and objects shaped from bone are often intact.

No indication of burial houses such as were erected by tribes on the lower river were found at 'Wahluke or elsewhere on the middle Columbia.

Several other forms of burial were practiced both at 'Wahluke and elsewhere along the middle and upper Columbia river. Harlan I. Smith describes burials in domes of volcanic ash in the arid region locally known as scab land.

In some of the graves at Wahluke, skeletons were oriented in such positions as to suggest burial; parts of several skeletons were jumbled in heap and were accompanied by veritable storehouse of burial offerings. Bodies thus buried had apparently been collected from the mamalose or burial islands where they had been exposed before the ceremonial cremation burial in the villate cemetery. Individual cremation burials at Wahluke usually were primary burials. Skeletal remains from such burials were found to be intact in situ except for the several parts consumed in the cremation. Such individual cremation burials were effected with knees flexed and with skull facing downward or on the side. Incineration was so complete as to prevent recovery of any one entire skeleton. Skeletal fragments including eight skulls were recovered from the burn, providing sufficient material for reconstruction later at the museum. In every case the skull showed a degree of frontal occipital deformation, which was effected by pressure from a wooden cradle-board flat placed on the forehead in infancy, a practice continued by Indian tribes of the lower Columbia valley within historic times.

The cradle board used by the modern Wanapum or Columbia River Indians does not have this wooden flap or hinged flange passing over the forehead. There is, however, among these Indians a certain amount of flattening of the occiput due to contact of the plastic infant skull with the uncovered cradle board. One of the more pronounced artificially deformed skulls found at Wahluke was from an uncremated burial, although some of the cremated skulls are quite similar to those of the modern brachycephalic or broad headed Sahaptian tribes, all of which have a certain amount of occipital flattening but not of the anterior part of the skull.

One lesion of a pathologic nature in the skeletal material

recovered at Wahluke was noted. This is a fusion of a lower right tibia and fibula due probably to traumatic origin and occurring probably in sub adult life. Skulls ~~obtained~~ obtained from a cemetery at Vantage Ferry in Kittitas county and from other burial sites farther north which were accompanied by ceremonial burial offerings of a distinctly Hudson's Bay Co. derivation were in every instance similar to those occurring in the prehistoric burials at Wahluke.

Burial offerings found among the burned charcoal and charred bones of the cremation burials at Wahluke were useful and decorative objects constituting the personal belongings of the deceased. Some of the larger pieces, such as hollowed stone bowls and long, polished stone pestles, were intentionally broken or "killed." Just one decorated stone bowl was recovered. It is a ~~beaut~~ beautifully symmetrical polished ~~stone~~ granite piece, uniformly hollowed by pecking and crumbling with hammerstones and polished with pumice. A surface design in the form of repeated V shape bas-relief figures made by pecking and grinding encircles the outer circumference. Paint cups and mortar bowls of stone are for the most part crudely hollowed out, although showing evidence of constant use. Paint cups still contained fragments of red and yellow ochers but no trace of a green or other colored paint. A green stain covered the surface of elk teeth and certain shell objects. This condition was caused by the penetration of copper salts from near-by copper pendants and beads and was not an intentional paint. A paint cup of *haliotis rufescens* shell filled with red ochre used as paint was found. Most of the paint containers exhumed along the Columbia are of granite stone or of worked pumice.

There were no woodendishes or bowls at Wahluke. A large, flat circular ~~granite~~ granitic mortar was picked up at the center of one of the pit house ruins, at the location of the primitive hearth, as evidenced by the accompanying charred cooking stones of fractured red

fred quartz and charcoal.

Pottery was neither made by the ancient occupants of "ahluke nor was its use known to them. The lack of a suitable friable potter's clay~~^~~ may account for this lack in part, but as in the case of definitely developed culture complexes elsewhere, it is impossible always to explain the absence or presence of pottery, agriculture, and the loom in terms of environmental factors. Objects recovered from graves in the cemetery and from surface finds at the site of the pit house village of "ahulke are principally animal, vegetable and mineral products obtained from regions near by. They consist of objects shaped from stone, bone, horn and the bark of trees, grasses and various vegetable fibers, human and animal hair, chiefly that of the mountain sheep and the dog. Many objects shaped from varieties of Dentalium indianorum and of abalone (Haliotis* shell of the varieties Haliotis kamchatkana, Haliotis fulgens and Haliotis rufescens were ~~among~~ exhumed with the burial offerings at Wahulke.

Other Pacific coast shells found in quantity in graves along the Middle Columbia, especially at Wahluke, are quite distinct from the union or fresh-water clamshell and must have been brought to the interior direct or indirect by trade with tribes of the Pacific coast, either by way of the lower Columbia river or across the mountains from Puget Sound. That few objects were found shaped from wood either of a useful or ornamental nature is noteworthy. Driftwood must have been plentiful if we are to judge from the large amount used in cremation. It is highly^{im} probable that artifacts shaped from wood might have been preserved in the burn along with basketry materials, fabrics and objects shaped from horn and bone had they ever existed.

It must therefore be concluded that burials at Wahulke antedate the highly developed technique in wood as practiced by the tribes of the lower Columbia. The more formal and conventional rectilinear art designs of the early occupants of the arid middle Columbia valley were

executed chiefly on antler and stone.

Tubular steatite pipes found at "ahluke are of two types. The one, a long tubular bowl-shaped object entirely undecorated, obtained possibly through intercourse with California tribes; the other a straight small-bowled tubular pipe with long narrow stem, etched as to bowl and stem with rectilinear ornamental designs similar to those executed on other objects from stone, bone and horn, is undoubtedly native to the middle and upper Columbia valley. This tubular stone pipe is identical with the native tubular pipe of southern British Columbia and of southern Idaho. Another tubular pipe found rarely is the carved bear figurine type which comes from the northwest Pacific coast tribes. A catlinite bowl pipe was exhumed which indicates influence from the east. Nephrite celts of various dimensions and with highly polished surfaces seem to suggest an important exchange of materials with tribes of British Columbia; it is possible that much of the native copper came originally from the interior of British Columbia. It is impossible to determine to what extent objects of carved stone, such as decorated pestles and tubular pipes or of copper beads, wristlets, amulets and bangles or of nephrite celts, enter primitive trade as finished products. This point must be determined by further investigation.

Species of shell from the Pacific coast other than dentalium and haliotis perforated either at the apex or lip were used as objects of personal adornment. Several examples mounted on necklace cords of hemp, cedar bark and senew were found among the burial offerings in graves at "ahluke, also at Vantage Ferry; several with fragments of cord still intact. Varieties of shell identified are *Diadora aspera*, *olivella*, *biplicata*, *glycymneris*, *subobsoleta* and a Columbia river species of bivalve belonging to the *Prothaca*.

Among the many articles of personal adornment recovered from the cemetery at "ahulke are rectangular perforated pendants, scrolled ear

bangles, laminated swristlets and tubular beads hammered and rolled from nuggets of native copper brought from the Cascades or obtained by barter from the coast tribes. Pendant cords of twiwted fiber or of senew were recovered only in part. Ornamental pendants and necklaces of elk and beaver teeth, ~~wood~~ hawk and eagle claws were still in situ as they were when attached to the body at the time of cremation. Such ornaments like those of horn and bone were incrustated with copper salts and thus preserved more completely than might otherwise have resulted. Etched bone tubes and gambling sticks of antler in sets of six, similar to those described by Teit and Smith from British Columbia were exhumed.

Stone ornaments, ^{implements} ~~implements~~ and weapon points were shaped from semiprecious agatized and petrified woods, opal, chalcedony and jasper taken from the river bluffs 80 miles to the north beyond Saddle Mountains. Ornaments, implements and weapon points shaped from such materials are expressions of some of the most beautiful examples of the stone chipping art. Small, narrow-stemmed and symmetrically worked arrow points of agate, chalcedony, carnelian, jasper and flint were found with the burials at Wahluke.

No weapon points or chipped blades of black obsidian which is so abundant further south, were obtained. A chipped, elongated diamond shape ceremonial object of mottled black and red obsidian eight inches in length is the only specimen of obsidian obtained from burial offerings at Wahluke. Five similar obsidian ceremonials are represented in individual collections obtained from various sites along the middle and upper Columbia.

To convey an idea of the abundance of resources in stone and of the great variety of uses to which such material was put by the early inhabitants of Wahluke the following list is appended.

Agatized wood- drills, weapon points, scrapers, reamers, knives, agate: Drills, weapon points, scrapers, etching tools, knives.

Andesite--Fish knives; net sinkers.

Argillite--Knives, weapon points, weaving implements, beads

Basalt--Paddle shape blades; spindle whorle, abrasive saws; reamers, knives, wedges, weapon points, mauls, hammers, hammerstone, bowls, paint cups, pestles.

Basalt-Columnar escappment--pictographs, petroglyphs, scrapers, Chrysopase-ear pendants.

Chalcedony-Drills, scrapers, weapon points, knives, tools.

Diabase-Pestles, hammerstones.

Diatomaceous earth and abrasives, pumice.

Dyorite-Abrasives, whetstones, hammers, knives, net sinkers.

Felsite-Net sinkers.

Flint--Weapon points, drills, groovers.

Granite-Pestles, rollers, mortar stones, net sinkers, bowls, clubs, hammerstones, grooved hammers, and mauls, groovers.

Greenstone-Drills, hammerstones, abrasives, smoothing stones, pestles.

Jasper--Flaked and chipped points, scrapers, etching tools, compasses, groovers, reamers, knives.

Nephrite-Adzes, celts, chisels.

Obsidian-Ceremonials.

Opal-Weaving implements; weapon points, scrapers, points, knives, scrapers.

Petrified wood-Drills, scrapers, perforators, weapon points, weaving implements, reamers.

Quartzite-Cooking stones, hammerstones, hammers, net sinkers, mortar stones, anchor stones, mauls, clubs, pestles.

Sandstone-Arrowshaft smoothers, bowls, abrasives, ornamental disks.

Schist(Chlorite and mica) Pipes- pendants, weaving implements, beads.

Slate-Knives, weapon points.

Steatite or soapstone-Ear ornaments, pendants, tublar pipes, bowls.

The animal resources utilized by members of this tribe as revealed in burial offerings and surface finds at "ahluke are noted in the following:

Elk-*Cervus Canadensis*-Decorated, geometrically etched, perforate ribs used as fillets, gaff for fishhook from section of antler, weaving implement from antler, bone gouges, digging stick handle, gaming sticks shape from sections of antler, wedges for splitting, knives for cutting, writslets and ornamentally incised pendants, teeth perforated for use as pendants; meat dried for food; antler for bow staves.

Deer--*Odocoileus Americanus*--Horn used as flaking tool, awl, weaving implement, skins, used as clothing, sinew for sewing, meat used for food, sinew used for reinforce bow stave, antler used as gouge.

Dog--An extinct variety kept for the use of their shaggy coat of hair in blanket making kept as watch dogs and used on the hunt but not eaten. ✓

Mink-*Putorius vison*-For as ornaments on headresses.

Beaver-*Fur*, teeth perforated and carved as pendants; also as knives, beads.

Rabbit-Hunted for its meat, skins, used in weaving blankets.

Mountain sheep-*Ovis Cervina*-Bow stave section; horn spoons.

Fresh water clam or unio (*protothaca* sp. Used as a food; shell cut and perforated for use as a pendant.

Land otter-*Lutra hudsonica*--river case.

Porcupine-Quills for ornamental display.

Bear-Teeth as pendants and weaving implement; claws as ornaments; skins as robes; as food.

Wolf and coyote-Teeth used as ornaments; skins for covering.

Eagle--Feathers for headress; for feathering arrow shaft; claw used as pendant.

Hawk--Same use as eagle feathers and claws.

Sturgeon-*Acipenser transmontanus*-^As food, dried on racks and stored.

Blue backed salmon-*Oncorhynchus* sp. ^As food; dried on racks and stored.

Steel-head salmon-*Salmo gairdneri*. ^As food; vertebrae perforated as beads.

Trout-^As food.

~~Beel~~ Eel-*Lampreta cibaria*-Food.

Suckers-^Food.

Whale--No artifacts shaped from its bones uncovered. No

Horse--No skeletal material uncovered.

Bison-*Bison Americanus*-No skeletal material uncovered nor artifacts shaped from bison bones found. L

Vegetable and plants:

Cedar-*Thuja gigantea*-^Dark used in weaving baskets; mats and as cord; hearth for fire making; bow stave.

Indian hemp-*Apocynum cannabinum*-^Woven fabrics as twine.

Squaw grass--*Herophyllum tenax*-^Woven fabrics, basketry.

Cat-tail-*Typha latifolia*-Matting and woven fabrics for floors of tipi and sweat house.

Reed-*Scirpus lacustris*-^Watting and as covering for lodges.

Birch bark rolls-*Betula microphylla*--^Uses unknown.

Elderberry-^Whistles, other unknown uses.

Sagebrush-^Woven, rough, twined fabrics, basketry.

Willow-*Salix lasiandra*-^Framework for sweat house, basketry; bow stave.

Rye Grass-*Elymus*-^Fabrics and matting.

Barley Grass-^Fwine fabrics, matting.

Bear grass-*Xerophyllum tenax*--^Fabrics.

Cottonwood-*Populus trichocarpa*-^Bast or innerbark used as bedding and as twine; trunks hollowed by fire into dugout canoes.

White pine-*Pinus Monticola*--^Firewood; canoes.

Red fir-*Psudotsuga mucronata* -firewood.

Juniper-*Juniperus occidentalis*-berries for food; uses varied.

wild onion-*allium georgii*--food.

wild carrot--*daucus pusillus*-do.

Ash wood-as bow staves.

wild tobacco. *Kinnikinnick-valeriana edulis*--smoked in pipes as tobacco.

Liche-*Alectoria* sp- used as food when stripped from bark of pine trees and boiled.

Huckle berry-*Vaccinium membranaceum*--Used as food; both fresh and preserved

Spruce root-as a twine in making coiled or twined baskets.

Sunflower-*Helianthus* sp. food.

Currant--*ribes cereum*-do.

Gooseberry and other varieties of berries gathered in midsummer--Do

Salmonberry-*Rubus Spectabilis*..food.

Wapato--*Sagittaria latifolia*-roots used as food.

Kouse-lomatium kaus-tubers used as a food in much the same way as camas.

Camas-*Camassia esculenta*-tuberous roots used as food which was roasted in ovens and dried.

Habitation structures at Wahluke as indicated by their ruins were subterranean circular pit houses. They were 30 in number. No evidence remained to show the type of superstructure as practically all of the original framewood had rotted away. This condition is in striking contrast with well preserved artifacts of wood that were exhumed from cremation burials. Similar conditions of decay in pit house ruins were noted at Pasco, Vantage Ferry, at the mouth of the Yakima river and elsewhere.

The pit house as a habitation was formerly built by the peoples in British Columbia, in Alaska, along the Yukon and on the coastal islands from the Aleutians to Bering Straits also in Siberia. This habitation structure was formerly known to groups of plain Indians as the

Pawnee, Mandan and others. It survives as a ceremonial chamber among the Pima, Pueblo and certain California tribes and as a sweat house among the Columbia River Indians.

Two such structures were observed, one at the lower ^{falls} ~~mouth~~ of the Yakima river and the other at the mouth of Crab Creek ✓