

ARCHAEOLOGICAL SURVEY
of
WALHALLA GLADES



BY
E. T. HALL, JR.

Bulletin 20

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FOREWORD

In the summer of 1937, Edward T. Hall Jr. made an Archaeological Survey of the Walhalla Plateau for the National Park Service. The results of this survey he presented to the University of Arizona as a Master's thesis.

The Museum takes pleasure in publishing the report, because it presents one of the few areas so far studied north of the Grand Canyon in the Arizona Strip. We have the work of Judd, followed by Spencer, in the upper Virgin, and Harrington, Hayden and Schellbach in the lower Virgin, the recent work of Steward in the Paria and Kanab area, also the unpublished work of Ben Wetherill at Zion Canyon. With these studies, and with that of Baldwin in the Boulder Dam Recreational Area, we have a sketchy picture of the archaeology immediately north of the Colorado River. Any bit of information that can be added furnishes a few more strokes toward the completion of the picture.

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CHAPTER I

INTRODUCTION

A survey of the Walhalla Plateau, on the north rim of the Grand Canyon, was conducted by the writer within the following limits: Cape Royal on the south, the Canyon rim on the southwest and west, a point three and one half miles north of Cape Royal on the north, and the highway from Park headquarters to Cape Royal on the east. This area covered approximately six square miles. Although it had been planned to include more territory the archaeological remains proved to be so concentrated that the allotted time of six weeks was expended in this small space alone. (Fig. 1 and Fig. 2.)

A purely surface survey was made, no test excavations were undertaken. Samplings of sherds and artifacts, unless absent, were taken from all sites. These collections are on file at Wayside Museum of Archaeology, Grand Canyon.

The Walhalla Plateau has an elevation ranging from 7800 to 8500 feet, during the summer the climate is close to ideal. The plateau is composed of flat-topped ridges separated by steep canyons, in the latter is excellent grass which supports the many deer found all over the Kaibab Forest. Squirrels, rabbit, coyote, dusky grouse and many other birds and small rodents are plentiful, so that this would have been good hunting ground.

The flora is varied, on the exposed lower slopes are: wild locust, mountain mahogany, cliff rose, sagebrush, several cacti, juniper, pinyon, scrub oak, wild plum and currant. Higher up is a heavy growth of western yellow pine mixed with aspen. Douglas fir grows on the canyon walls wherever there is enough shade.

Water is not lacking, there is a good spring about a half mile northwest of Cape Royal, and in addition several natural depressions hold water for a part of the year at least. In summer there is ample rainfall, everything thrives, for example the wild flowers are exceptionally large and grow in profusion. In winter deep snows provide sub-surface moisture.

CHAPTER II

ARCHITECTURE

At first sight the concentration of small ruins in this area is somewhat surprising. No one at present reaches Cape Royal for the greater part of the winter due to heavy snows which block the road from Park Headquarters where it traverses the 9000 foot level. However Cape Royal itself, facing due south, is probably similar in temperature to the south rim, so that the former inhabitants may well have

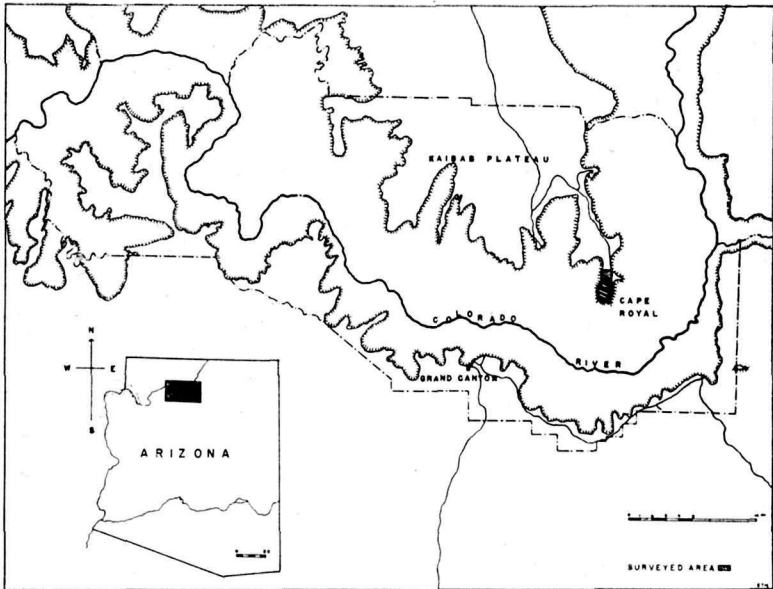


Fig. 1. The Grand Canyon Area.

passed the winters with some degree of comfort. A total of 273 ruins were located during this survey. These sites were quite diverse, ranging from small single rooms, circular or rectangular, to more complicated, larger structures.

Neil M. Judd, in his "Archaeological Observations North of the Rio Colorado", gives an excellent description of the country and its ruins. The name "Greenland", which he uses was the old cattleman's name for the region before it became a National Park.

"Greenland is a lonesome place, and as such it had its attractions for the aborigine. Many small ruins are to be seen among its tall

yellow pines; others lie concealed by the scraggy buckbrush and wild locust which find root in the shallow, less fertile soil near the rim. None of these ancient dwellings holds any interest to the casual passer-by. They are all comparatively inconsequential structures, now repre-

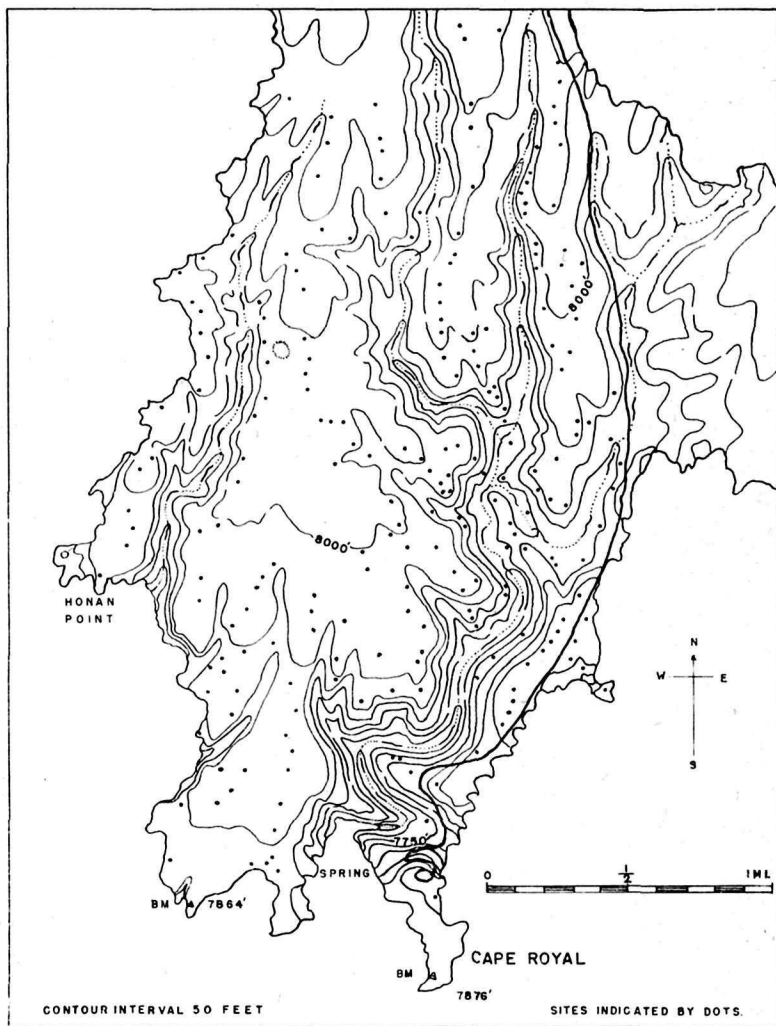


Fig. 2. Map of Walhalla Glades showing the sites.

sented by piles of weathered limestone. Yet they furnish mute evidence that prehistoric man tarried here long enough to construct at least temporary homes while he sought out more favorable locations elsewhere. There are no inviting caves on the borders of Walhalla Plateau, and few sheltered ledges where dwellings might have been erected. Of the mesa ruins only a few examples need be cited; . . . "

"An interesting and at the same time large ruin is to be found at the edge of the timbered area not far from Cape Royal. Its walls are of unworked limestone blocks; the lower course stands on edge, a feature noted at several other sites on the plateau. Outcroppings of limestone, extending in straight lines like walls, are to be noted in the immediate vicinity. The amount of building stone about these standing blocks is so meager one is led to believe that here, as in House Rock Valley, masonry was used only in part for construction purposes. The upper walls may have been of rubble; more likely of adobe"

"South of the main house group is an area which appears to have been inclosed by a single wall of masonry. The west side of this court is curved, and adjoining its southern end there remains the foundations of a large angular space of unknown use. All together the ruin forms one of those oddities of construction so frequently met with on the Walhalla Plateau.

"Near the wire fence which divides the lower half of Greenland is a two-room house. In both size and arrangement it does not differ materially from several ruins passed hereabouts. One exception is to be noted, however. Its walls were built not of limestone but of large sandstone blocks, most of which were roughly shaped. It is rather remarkable that throughout the entire region traversed—masses of sandstone were invariably dressed with some degree of regularity before being placed on the walls of an ancient house. Limestone, on the other hand, although employed more frequently, rarely exhibits any trace of the shaping process.

"Many problems arise in connection with the prehistoric remains of the Walhalla Plateau. Some of these problems seem explicable after an examination of other ruins where similar features obtain; others defy explanation. One such enigma arises in connection with our next ruin.

"The dwelling itself is a simple structure of three adjacent rooms. In orientation, in the size of the individual apartments, and in character of stonework it does not differ in any marked degree from a dozen other ancient dwellings observed on Kaibab Plateau. If anything the ruin is less complex, less irregular, than many of its neighbors. But just in front of the three connecting rooms is a semi-circular court formed by ridges of flint and chert spalls. Chunks of flint, weathered from innumerable outcroppings, are of common occurrence in the vicinity. In front of the houses however these fragments appear to have been raked together, forming the ridges or 'windrows' indicated in the ground plan. The space between them and the ruin is totally free from chips—as free as a carefully prepared garden. The purpose of all this is not clear.

"Similar ridges appear on the opposite side of the ruin, but in this instance they form rectangles of various sizes. The component stones certainly originated in the flinty ledges repeatedly seen in this section of the plateau, but how and when they were gathered into the little rows visible today are questions that still puzzle."

So good is the foregoing description that although Judd did not precisely locate the ruins, the writer was able to locate and recognize them from among many others. Although Judd considered that the "little rows" of rock might be garden plots he did not accept it as probable. In this writer's opinion these were garden plots, for reasons which are presented in more detail in the following pages.

The majority of sites were of small one or two room

rectangular type, in fact fifty percent come under this classification. Because of the thinness of soil above the bedrock, (often less than two feet), pit houses would have been difficult to construct. It seems logical to accept Judd's conclusion that a temporary superstructure was built on a stone foundation. (Fig. 3.)

Earlier structures, round or D-shaped, made up only twelve percent of the total. These were often on the edge of a ridge or on natural benches. They were built like those described by Judd except that in some cases they seem to have been partly dug into the sloping ground.

An intermediate architectural stage is represented by a house built like those described above, but larger. The out-



Fig. 3. Site G.C. 267, showing large undressed building blocks standing on end.

lines are not obscured by fallen walls. Adjoining this large room are smaller rooms, possibly for storage, built at first with temporary upper walls, and later on with walls entirely of masonry, if one may judge by the amounts of fallen wall material. This type included sixteen percent of the total sites. (Fig. 4.)

From this intermediate stage develops a house with large central livingroom entirely of masonry and a room on each end, these were evidently of stone for about half of their height. The ruins now present a large mound of rocks

about four feet in height at the center flanked by lower mounds about two feet high. This house type was apparently in use just before the area was abandoned and comprises about eight percent of the total.

This evolution of house types was first postulated by the writer on the basis of the appearance of unexcavated sites, and was later supported by the evidence compiled from sherd collections. The classifications have been necessarily formalized since each ruin had its own peculiarities. As a rule the sites fitted into one of the above groups. Of the total sites surveyed only nine were of contiguous room type with more than two rooms. Six sherd areas were recorded,



Fig. 4. Site G.C. 274, a typical ruin on the Walhalla Plateau.

two cliff granaries (Fig. 5), and two sites which may prove to be true pit houses. These and unclassified sites make up fourteen percent of the total.

Most of the sites occupied the ridge tops and were not far from the agricultural terraces which follow the sloping contours. No sites were centered in large level spaces. A few small rooms were perched on slopes or small ledges, possibly some of these represent an early occupation. The majority were directly associated with the garden terraces and so may be considered as store rooms. The writer conceives that these rooms were too small for habitation and, further, that as the area was, at least during part of its

occupation, safe from enemy attack that crops might be stored and left unmolested as well as unguarded. Isolated cliff granaries in parts of the Grand Canyon as well as the Tsegi may be pointed to in support of this theory.

A problem presenting itself as the survey progressed was that very few sites were pure, the greater part showed reoccupation. The distribution was as follows:

Pure Pueblo I or earlier	3%
" early Pueblo II (ca. 900-1000 AD)	1 "
" late Pueblo II (ca. 1000-1100 AD)	3 "
Mixed early and late Pueblo II	9 "
" Pueblo I and early Pueblo II	25 "
" Pueblo I to late Pueblo II	12 "
" Pueblo I to early Pueblo III	24 "
" early Pueblo II to early Pueblo III	5 "
" late Pueblo II to early Pueblo III	14 "
Sherd areas and misc.	4 "

From this table it may be seen that Pueblo II is well represented. To put it briefly in another form, of the total sites:

64 percent bore Pueblo I and earlier sherds,
92 percent bore Pueblo II sherds,
43 percent bore early Pueblo III. No later Pueblo III types were found.

Plainly the area was inhabited over a long period with greatest concentration during Pueblo II. This contention is supported by the distribution of housetypes as well as quantitative distribution of sherds.

Several features in the sites mentioned by Judd were independently noted by this writer. The presence of large enclosures is puzzling, the fallen material does not suggest a wall high enough to be defensive unless the foundation stones were capped by some temporary material such as adobe. In only one location was the site actually defensible, but five open sites with such enclosures were recorded.

The writer offers no suggestion for the provenience of house types. Judd mentions similar houses in House Rock Valley, and Colton describes others in the San Francisco Mountain region. It is possible that both of these influences were present, plus adaptation on the part of the builders to this individualistic country. That the writer differs from Judd in some instances in his interpretations of the ruins is not intended for criticism. While both engaged only in survey, Judd's visit was too limited in time to enable him to determine some facts implied—on repeated examination—by surface indications. It is possible that he may not have accepted the theory of agricultural plots due to the presence of large yellow pines now overshadowing the terraces, a factor which would render agriculture wellnigh impossible to primitive people. But a study of the forest indicates a probable advance of the forest border since the cultivation of these

plots. If we presume the absence of the trees the possibilities for farming are sufficiently plausible.

CHAPTER III

AGRICULTURAL FEATURES

These form an important part of the sites. Small garden plots are laid out near the houses. The earth appears to have been cleared of rocks, these were thrown or gathered into hillocks or rows separating the strips of ground. Along nearly all practicable contours are terraces, these are sometimes as many as nine deep. They run up to 20 feet wide and 300 yards in length, and may easily be traced. These are the most extensive and best constructed garden terraces



Fig. 5. Site G.C. 371, a small cliff granary.

of prehistoric origin in the southwest, to the knowledge of this writer. (Fig. 6, Fig. 7.) Terraces of somewhat different nature are described by Colton in his "Survey of Prehistoric Sites in the Region of Flagstaff, Arizona".

Several small dams of rock remain in the Walhalla Glades, built across ravines to divert rainwater into ditches which led the water to terraces. (Fig. 8.) One reason for this system is the scarcity of topsoil, heavy rains must have carried it rapidly away. The Indians built up the terraces, filling them with earth cleared of rocks. In many cases the earth is now quite gone, leaving only flinty gutters. To

make and maintain such a system with the primitive implements then at hand must have meant hard and constant labour. Judd refers to the occupation of "Greenland" as a temporary one. The writer does not share this viewpoint, the surface pottery represents at least six hundred years of occupation. The country, while cold in winter, was sheltered, had abundant game, forest and rainfall, certainly it offered more inducements for occupation than many miles of adjacent desert. In addition this terrace and garden plot system represented a heavy investment in labour on the part of the owners which they would have been disinclined to make on a mere temporary halt. In fact the crops which they raised here and the presence of granaries in conjunction with the terraces seem to remove any doubt that the



Fig. 6. Piles of stone marking the agricultural terraces west of Site G.C. 350.

country was occupied the year around, if we may discount possible excursions for hunting in the vicinity.

Kivas were not noted, but there may be some present in Walhalla Glades. Without excavation this point is indeterminate.

Circles of rock on edge, from one to three feet in diameter were noted near a few ruins. One of these was cleared with a trowel and proved to be a neatly slab-lined firepit, showing traces of fire.

A number of faint trails, generally following the easier grades on a diagonal and winding over the ridges, were at first supposed to be vestiges of the cattle days. But this idea

was discarded on observing the many large trees growing directly in the trails, of an age far greater than the cattle era, some are not only fallen but in a state of advanced decay. The trails proved often to lead from one site to another,

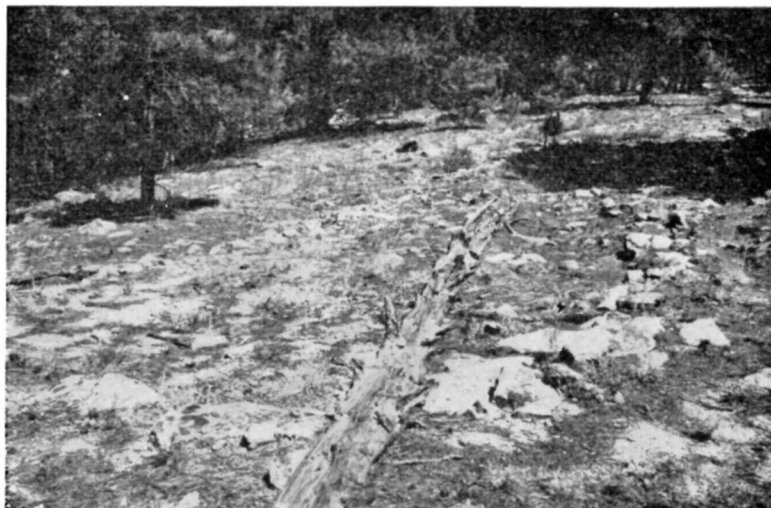


Fig. 7. Lines of stones marking the agricultural terraces north of Site G.C. 365.

it is reasonable to suppose them contemporary with the dwellings. By intention or usage they are cleared of rocks which are piled along the trails.

That these aboriginal footpaths are still easily visible brings up a striking point in connection with the Walhalla Glades. All of its surface remains are in a remarkable state of preservation. The Grand Canyon on three sides and a high pass to the north form natural barriers which seem to have held the area in suspension. In so far as has been determined only bands of wandering Utes and a few cattlemen have trod the ridges for centuries. Ruins have weathered into mounds but are otherwise untouched, apparently by man or beast. The forest itself, due to its exceptional cleanness and lack of underbrush at the occupation level, has little altered the sites. Few places in the southwest exist where garden plots, terraces, storage dams, diversion ditches and trails may so clearly be seen on the surface.

CHAPTER IV

CERAMIC ANALYSIS

The pottery of Walhalla Plateau is more varied than the house types. At least two influences and four stages of Anasazi culture are manifested. A primary examination of the material showed that Utah types were present and that some northern Arizona types were atypical. Many decorated sherds were badly weathered and eaten by humic



Fig. 8. Rock Barriers built across a small wash to divert flood water onto the agricultural terraces located west of Site G.C. 350.

acid, despite this it was usually possible to place them in their proper ware. In the statistical analysis plain portions of decorated vessels and weathered sherds not classifiable were listed as such, only three percent were so listed. (See Figs. 9, 10, 11, 12.)

The following analysis was made on a quantitative basis to supplement the site analysis. Another object was to point out the variety of pottery types present and, if possible, to show their relationship to one another. The writer was not familiar with decorated styles from the Virgin River, Utah. Because of insufficient data on the Utah Black on White sherds they have been grouped as a Virgin River series without specific type identifications. The main utility types from that region are well enough established to be identifiable. Future work in the Virgin River may demonstrate

the existence of additional types, for the present they are considered under existent classifications.

The writer has followed the outline of the "Handbook of Northern Arizona Pottery Types" since most types included in this survey are described in it. The writer also wishes to note that the staff of the Museum of Northern Arizona have been most helpful in verifying these identifications. The following is the result of the analysis of 10,800 sherds.

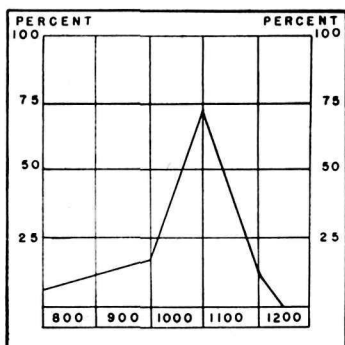


Fig. 9. Graph showing the percentage of sherds of different dates from the Walhalla Plateau. This graph shows that the greatest concentration of population was about 1100 A.D.

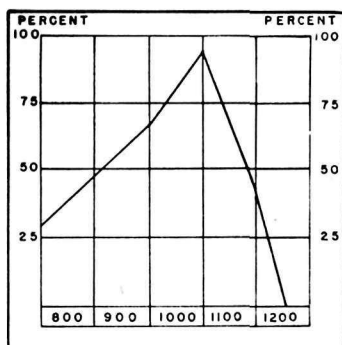


Fig. 10. Distribution of sherds from sites on the Walhalla Plateau during Pueblo I, II and III based on the range of occupation of analyzed sites.

NORTHERN ARIZONA POTTERY TYPES⁽¹⁾

Type:

Percent of painted or unpainted.

SAN JUAN RED WARE⁽²⁾

Bluff Series⁽³⁾

Bluff Black-on-Red⁽⁴⁾ N.R. 28..... 0.44

Deadmans Series⁽⁵⁾

Deadmans Black-on-Red⁽⁶⁾ N.R. 1, 2, 274 & 277..... 2.

Medicine Black-on-Red⁽⁷⁾ N.R. 27..... 0.44

Tusayan Black-on-Red⁽⁸⁾ N.R. 29-32..... 2.3

Citadel Polychrome⁽⁹⁾ N.R. 34 & 300..... 1.

Polychrome, Undescribed⁽¹⁰⁾ N.R. 35 & 36..... 0.44

San Juan Red Ware⁽¹¹⁾..... 16.

1 Type sherds will be on file at the Wayside Museum of Archaeology, Grand Canyon.

2 Colton and Hargrave, 1937, p. 67.

3 *ibid.*, p. 68.

4 *ibid.*, p. 69.

5 *ibid.*, p. 70.

6 *ibid.*, p. 71.

7 *ibid.*, p. 72.

8 *ibid.*, p. 74.

9 *ibid.*, p. 75.

10 These sherds closely resemble Citadel Polychrome, but are decorated on both sides alike, i. e., there is, instead of the

slip, the same decoration on the outside of these sherds that is ordinarily on the inside only. Hargrave, in a personal conversation (12/30/37), gave it as his opinion that this type should be included in the Deadmans series. These few sherds may have been the work of one potter or, on the other hand, this may be a local type previously undescribed.

11 Weathered portions of decorated sherds and undecorated parts of same which could not be definitely identified as to type but belonged in this group were listed under the above heading.

TSEGI ORANGE WARE⁽¹²⁾

- Tusayan Polychrome⁽¹³⁾ N.R. 33, 229 & 273..... 0.44
 Dogoszhi Polychrome⁽¹⁴⁾ N.R. 232 & 233..... Two Sherds

TUSAYAN GRAY WARE⁽¹⁵⁾

Tsegi Series⁽¹⁶⁾

- Lino Gray⁽¹⁷⁾ N.R. 137-145..... 5.
 Kana-a Gray⁽¹⁸⁾ N.R. 119-121..... 3.
 Tusayan Corrugated⁽¹⁹⁾ N.R. 123-136, 281 & 292..... 40.
 Moencopi Corrugated⁽²⁰⁾ N.R. 116-118..... 19.
 Medicine Gray⁽²¹⁾ N.R. 293..... 1.
 O'Leary Tooled⁽²²⁾ N.R. 291..... One Sherd
 Coconino Gray⁽²³⁾ N.R. 109-114..... Eight Sherds

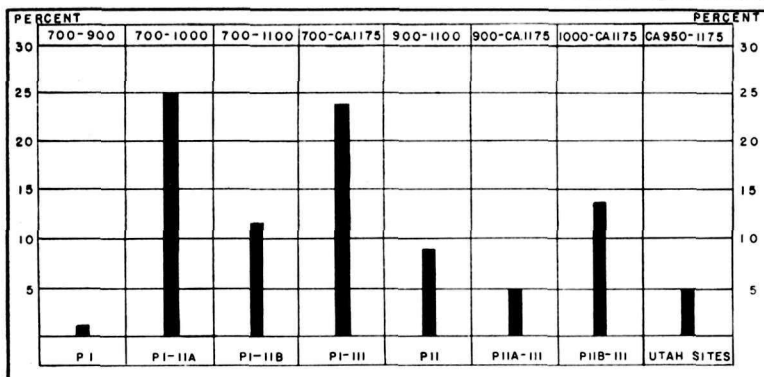


Fig. 11. The percentage of sites in time. The majority of sites were occupied more than once, so they were analyzed according to the period represented.

Honani Series⁽²⁴⁾

- Honani Tooled⁽²⁵⁾ N.R. 115..... Two Sherds

TUSAYAN WHITE WARE⁽²⁶⁾

Kayenta Series⁽²⁷⁾

- Kana-a Black-on-White⁽²⁸⁾ N.R. 76-83..... 2.
 Deadmans Black-on-White⁽²⁹⁾
 N.R. 84-87, 188, 190, 199, 219, 224, 260 & 265..... 11.
 Dogoszhi Black-on-White⁽³⁰⁾ N.R. 88-94..... 4.
 Sosi Black-on-White⁽³¹⁾ N.R. 56-67 & 108..... 6.

Polacca Series⁽³²⁾

- Kia-ko Black-on-White⁽³³⁾ N.R. 102-104, 200 & 208..... Five Sherds

12 Colton and Hargrave, 1937, p. 92.
 13 *ibid.*, p. 96 (these sherds were labelled 'not typical' by Hargrave, letter 3/4/38).

14 *ibid.*, p. 98 (these two sherds were also called 'not typical' by Hargrave).

15 *ibid.*, p. 190.
 16 *ibid.*, p. 191.
 17 *ibid.*, p. 191.
 18 *ibid.*, p. 195. Note: the presence of Lino and Kana-a Gray confirms the existence of an early occupation on Wallowa Plateau, for further data see Colton and Hargrave, 1937.

19 *ibid.*, p. 196.
 20 *ibid.*, p. 197.

21 *ibid.*, p. 199.

22 *ibid.*, p. 200.

23 *ibid.*, p. 201.

24 *ibid.*, p. 202.

25 *ibid.*, p. 202.

26 *ibid.*, p. 202.

27 *ibid.*, p. 205.

28 *ibid.*, p. 205.

29 *ibid.*, p. 208.

30 *ibid.*, p. 209.

31 *ibid.*, p. 219.

Note: exterior surface of these sherds is rougher than those from the Tsegi; paste and temper closely resemble Flagstaff Black-on-White.

32 *ibid.*, p. 218.

33 *ibid.*, p. 219.

Wupatki Series⁽³⁴⁾

Flagstaff Black-on-White ⁽³⁵⁾ N.R. 95-101.....	4.
Tusayan White Ware ⁽³⁶⁾	48.

LITTLE COLORADO WHITE WARE⁽³⁷⁾Walnut Series⁽³⁸⁾

Walnut Black-on-White ⁽³⁹⁾ N.R. 68-75.....	3.
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SAN FRANCISCO MOUNTAIN GRAY WARE⁽⁴⁰⁾

Deadmans Gray ⁽⁴¹⁾ N.R. 7-26.....	9.
Deadmans Fugitive Red ⁽⁴²⁾ N.R. 3-6.....	Eight Sherds

MISCELLANEOUS TYPES⁽⁴³⁾

Kokop Black-on-White ⁽⁴⁴⁾ N.R. 105, 106.....	Two Sherds
N.R. 250: has been described by Hargrave as a "temporal intergrade between Kana-a and Deadmans Black-on-White, or between Deadmans and Flagstaff Black-on-White" ⁽⁴⁵⁾	One Sherd
N.R. 208: was described by Hargrave as a "temporal intergrade between Lino Black-on-Gray and Kana-a Black-on-White" ⁽⁴⁶⁾	One Sherd

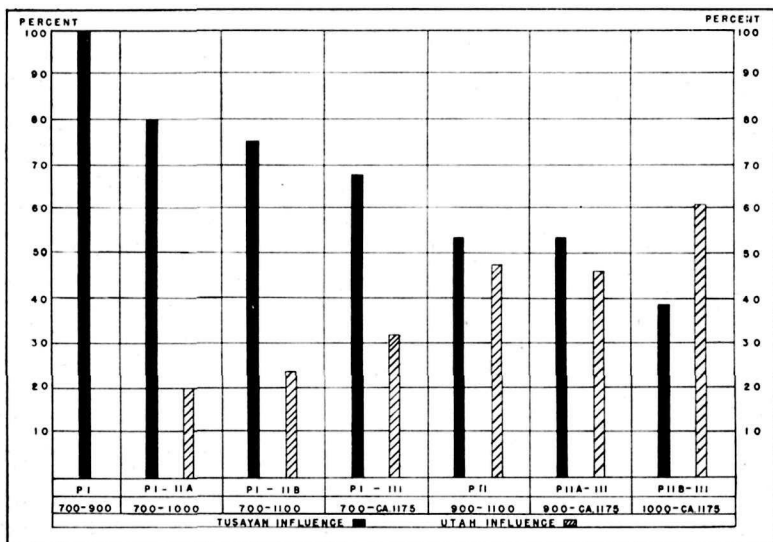


Fig. 12. The relative amount of sherds from the Kayenta Branch (Black) and Virgin Branch (Cross-hatched), based on all the pottery from 135 analyzed sites. This shows that the Kayenta influence from east of the Colorado River diminished in time, while the influence from the Utah area increased between Pueblo I and Pueblo III.

34 *ibid.*, p. 245.

35 *ibid.*, p. 225.

36 Badly weathered sherds and undecorated portions not identifiable by type but recognizable as of this group.

37 *ibid.*, p. 234.

38 *ibid.*, p. 235.

39 *ibid.*, p. 237. There is a slight regional idiosyncrasy, the rim of sherd No.

73 has a decorated lip, a feature not specified in the above reference.

40 *ibid.*, p. 251.

41 *ibid.*, p. 252.

42 *ibid.*, p. 252.

43 *ibid.*, p. 246.

44 *ibid.*, p. 248.

45 Personal letter, 3/4/38.

46 *ibid.*

Northern Arizona Pottery Types made up 60 percent of the analyzed sherds, the remainder were tentatively identified as representative of types from southern Utah.

Taking the Arizona sherds as a group 18 percent were representative of Pueblo I and earlier, 72 percent of Pueblo II, and 10 percent of early Pueblo III. (Figs. 9 and 10.)

That there was an early occupation is indisputable since Lino Gray is definitely present, several sherds might have been identified as Lino Black-on-Gray had they not been so weathered. The lower portions of Lino, Kana-a and Medicine Gray are indistinguishable so that rim sherds are essential for distinguishing these types. Excessive weathering of decorated sherds also made it advisable to lump them in their respective wares without specialized identification. The utility sherds were in better state and so were of assistance in conjunction with recognizable decorated sherds as a rough criteria in dating sites.

The numerical strength of Deadmans Black-on-White and Tusayan Corrugated would indicate a marked increase in population of the area during Pueblo II. Presence of types extant in early Pueblo III, such as Flagstaff Black-on-White, Walnut Black-on-White, Citadel Polychrome and Tusayan Polychrome, and total absence of types associated with late Pueblo III, such as: Betatakin Black-on-White⁽⁴⁷⁾, Kayenta Black-on-White⁽⁴⁸⁾, Kayenta Polychrome⁽⁴⁹⁾, and Kiet Siel Polychrome⁽⁵⁰⁾, would indicate that the area was inhabited no later than 1175 A. D. Two sherds of Dogoszhi Polychrome (which were not typical) might be earlier than their type sherds or they might have been left by later parties of Indians camped in the area⁽⁵¹⁾. Since these two are the only sherds of the total representing a later date we may for the time disregard their occurrence in tentatively dating the exodus from the area. Excavation would of course throw more light on the subject especially if any wood or charcoal were obtained for tree-ring dating.

As has been said before, there were some regional differences in the pottery, a few decorated sherds were not quite typical of those found at their place of origin, and there were minor variations in paste, temper and finish.

Future workers in this region should be on watch for the unnamed polychrome in San Juan Red Ware, as well as for Alameda Brown Ware⁽⁵²⁾ which is so far absent, although

47 Colton and Hargrave, 1937, p. 215.

48 *ibid.*, p. 217.

49 *ibid.*, p. 99.

50 *ibid.*, p. 100.

51 Haury, E. W., Kivas of the Tusayan Ruin, Grand Canyon, 1931, pp. 12-13.

52 Colton and Hargrave, 1937, p. 157.

San Francisco Mountain Gray Ware from south of the Grand Canyon is present in small amounts.

SOUTHERN UTAH POTTERY TYPES

SHINARUMP WHITE WARE.

Type:

Type Sherds:

Virgin Black-on-White⁽⁵³⁾

N.R. 186, 187, 193, 196, 202, 210-213, 216-218, 221, 226-228,
251-253, 255-257, 262, 264, 267, 271, 282, 283.

These sherds comprise various types found in the Virgin River Valley, Utah. Types are not yet satisfactorily worked out so the writer is unable to further classify them. Included under this heading were 22 percent of the Utah type sherds, the remainder were utility sherds.

SHINARUMP BROWN WARE⁽⁵⁴⁾

Shinarump Brown⁽⁵⁵⁾ N.R. 43-47, 248

Shinarump Coiled⁽⁵⁶⁾ N.R. 146-159

Shinarump Corrugated⁽⁵⁷⁾ N.R. 160-175, 247

UTILITY SHERDS—N.R. 176-183.

Corrugated: The distinguishing characteristic is the shallow pinch which leaves an impression of the thumbnail at each indentation of the coil. This type was present on numerous Walhalla Glade sites.

N. R. 297: The decoration consists of fingernail impressions forming a design superimposed on the corrugations.

N.R. 175, 184 & 185: are good examples of plain and corrugated pottery believed to belong to Shinarump Brown Ware⁽⁵⁸⁾. The surface color is brown to brown gray, finish irregular and often rough, (corrugated sherds barely show indentation which is irregular and sloppy.) Paste is brown resembling the surface color, paste texture is soft and crumbly. Inclusions, often light colored and rounded, make up a large proportion of the paste, are irregular in size, (large to very large), and protrude from the surface of the vessels. Wall thickness ranges from 3 to 10 mm. At present no more may be said of this type until future study establishes its true relation to other types.

MISCELLANEOUS TYPES:

N.R. 287, 288, 290 and 291: are examples of utility sherds found which are distinguished by impressions made with a stick or other sharp implement. These are not common in the area.

North Creek Gray N.R. 48-55 & 249

53 Classification suggested by Hargrave in a personal letter.

54 Designation used by Hargrave in personal conversation with the writer.

55 Spencer, J. E., 1934, p. 74.

56 *ibid.*, p. 75.

57 Type not mentioned by Spencer but identical to Shinarump Brown except that it is corrugated.

58 Identified by Hargrave as a Utah type, 3/4/38.

This type as represented in Walhalla Glades is difficult to define.

Middleton Red N.R. 37-42, 243-245

Intentionally oxidized sherds of Shinarump Brown are identical to Middleton Red. No whole vessels of the latter are known to the writer, it is possible that sherds so labelled are merely accidentally oxidized Shinarump Brown.

Colton has proven, by tests with Shinarump Brown, Shinarump Corrugated and Middleton Red that all of these sherds, when fired in a reducing atmosphere, will turn to dark gray typical of Shinarump Brown Ware. Parts of the same sherds when fired in an oxidizing atmosphere closely resemble Middleton Red. Dr. Colton has been kind enough to subject some sherds, (N.R. 234-242), to oxidizing and reducing tests for the writer in verification of this point. In the light of his results it is entirely possible that Middleton Red is accidentally oxidized Shinarump Brown. Sherds of the latter when oxidized turn to a similar red, Middleton Red sherds in a reducing atmosphere turn to gray. How much of the firing was deliberately controlled by the potters is a matter of conjecture, at the present time no whole vessels are available for diagnostic purposes.

The sherds already described under "Shinarump Brown Ware", (N.R. 175, 184 and 185), are not included among the above type-duplications. These soft paste sherds are quite different in composition from the run of the Utah series, when comparative material is available they may fall into a general Colorado River series.

It is unfortunate that so little reference material is available on the Utah sherds⁽⁵⁹⁾. Their presence in Walhalla Glades is noted in early Pueblo II and increases in strength until Pueblo III when we find them more abundant than the styles from the Tsegi and San Francisco Mountain districts. (Fig. 12.)

Only seven pure Utah sites were recorded, these bore only utility sherds. Sherd types from the south and east mixed with those from Utah were on a majority of sites, if anything may be inferred from surface appearances this may be taken to indicate contemporaneous occupation.

59 The Museum of Northern Arizona has now a type collection of Utah sherds and has prepared a bulletin

which will give the descriptions of the types. To be published in 1942.—(Ed.)

CHAPTER V

LITHIC INDUSTRY

Stone work on Walhalla Plateau was not of very high standard. A few implements were collected on or near each site, making a total of 700 artifacts, the majority were of chert, about 95 percent, and very poorly worked. Other materials used were: quartzite, fossil sponge, chalcedony, flint, milky quartz and banded agate and obsidian. Manos and metates were made, 60 percent of grits and 40 percent of sandstone.

Stone material common on the north rim does not lend itself readily to fine flaking. With the exception of a few obsidian flakes no material was noted not directly native to the area. Most of the artifacts collected were made by percussion with little or no pressure retouch, in fact percussion appears to have been used even for small flaking, shaping edges, etc. Most of the implements were of the flake variety, struck off a larger core. Projectile points and a few blades showed pressure shaping. The lithic industry was not well advanced, to produce the desired shapes tools seem to have been made in whatever was the most rapid and easiest possible way. That this was deliberate is attested by quantities of examples in all stages of knocking off flakes strewn about the ground, and all strikingly consistent in pattern. Most of the implements were small enough to use conveniently in the hand or to be hafted, however some large chert objects shaped like rude carpenters planes, probably scrapers, were observed near several sites, these must have required two hands due to their size.

Two types of artifacts are especially to be noted: one a scraper with celt-like edge (Fig. 13,a-j), the edge was chipped from both sides and is the widest part of the scraper so that the sides taper away from the edge to dorsal and ventral ridges. This tool seems to have been a specialized one and is quite well worked. Morss⁽⁶⁰⁾ pictures scrapers seemingly similar from the Fremont River, Utah. These Walhalla Glades scrapers were found on pure Pueblo II sites and so may be associated with this stage. Secondly are: crude blades of chert, (Fig. 13 k-m), thick in cross section yet long and narrow when viewed from the side. Flaking of these blades was undoubtedly done by percussion since no pressure retouch was observed on them and because the material does not lend itself to pressure flaking. This type

60 Morse, N., 1931, Plates 32 & 33.

of tool appears also to have been a specialized one and to have been in use earlier than the celt-like scraper since it does not occur on pure late Pueblo II sites. Thin flakes of chert were also used as blades with little shaping or retouch, (Fig. 13n).

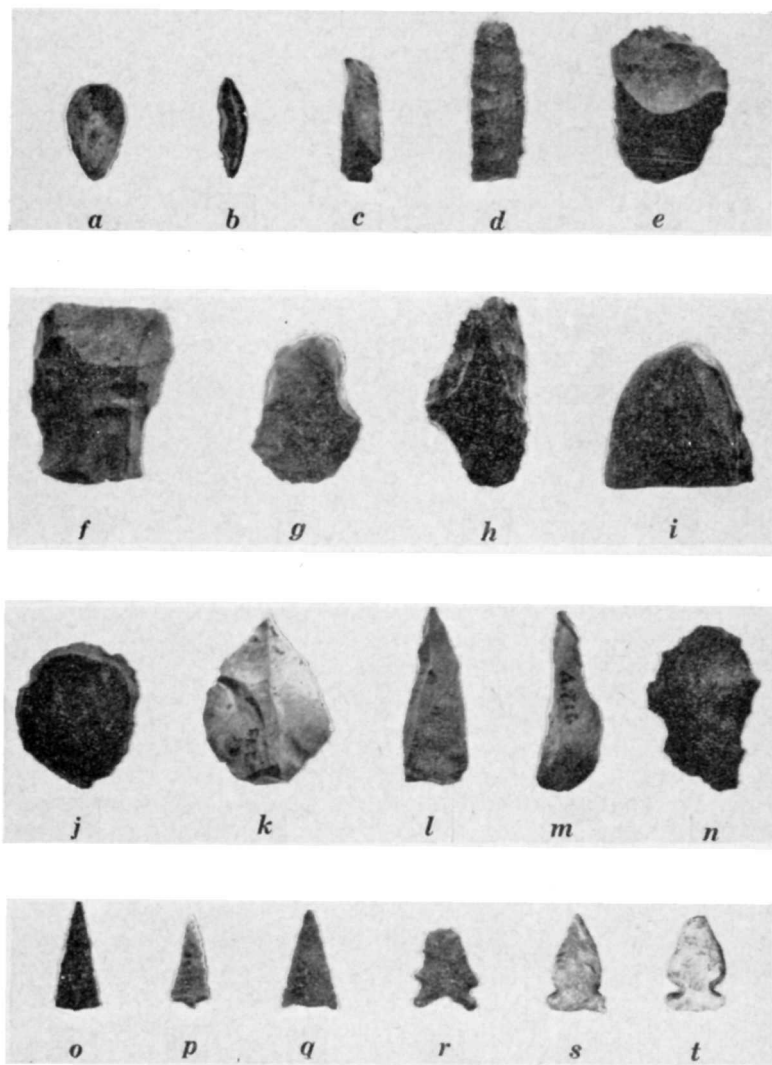


Fig. 13. Stone Artifacts: a-j, scrapers with celt-like edge; k-m, crude blades of chert; n, thin flake used as blade; o-t, arrow points.

Implements were collected in these proportions after lumping the material from all sites:

Celt-like scrapers	4%
Thick blades	3 "
Thin flake-blades	8 "
Flaked blades	7 "
Thin round-end scraper	3 "
Square end scraper	5 "
Snubnose scraper	1 "
Side scraper	15 "
Plano-convex scraper	3 "
Notched scraper	5 "
Scraper-graver	2 "
Flake-graver	2 "
Scraper-flake	30 "
Projectile points	4 "
Awls	1 "
Polishing and rubbing stones	2 "
Metates	2 "
Manos	3 "

Comparing the quantity of projectile points to be found nearly everywhere on the surface of the south rim of the Grand Canyon, the amount collected on the north rim is insignificant. Possibly the dwellers on the north rim used wooden points for their arrows. This is a notable point defined by the survey on both sides of the Canyon, projectile points on the south side being commonplace, and scarce on the north side. (Fig. 13.)

Metates were open at one end, fully shaped on the outside and formed from thin sections of rock, they average sixteen inches in length. Steward's general description of the Uintah type metate covers those from Walhalla Glades, except that here the trough does not run out at both ends and is very shallow. At the deeper end of the trough it is wider than at the shallow end unless it shows much usage, when it is uniform in width. (Fig. 14.) The mano was made to fit the trough.

As has been already noted, lithic industry was of a low standard, a lack of material lending itself to pressure flaking may have some bearing on the fact. Flakes were used for scrapers and blades, they show little or no retouch and have no uniformity in shape or size. No stone axes or mauls were collected, not even a broken fragment was seen. In Utah regions where northern Arizona influence is less marked than on the north rim, this is also the case. It is notable that in the Walhalla Glades with so predominantly an Anasazi population, axes are still absent.

CHAPTER VI

CONCLUSION

That the Walhalla Glades were occupied as early as in late Basket Maker III is certain, several sites bore Lino Gray sherds. A few sherds appeared to be precedent to Kana-a Black-on-white, although due to weathering the Lino Black-on-gray sherds were of little value as criteria.

In Pueblo I times more people settled the area, eighteen percent of the sites bore Pueblo I or earlier pottery. A convincing amount of Kana-a Gray and Kana-a Black-on-white sherds were typical.



Fig. 14. A trough metate from the Walhalla Plateau

During the Pueblo II period there was a mass movement into the region and there was, apparently, the greatest concentration of people. Ninety-two percent of the sites bore sherds diagnostic of this epoch such as Deadmans Black-on-white, Tusayan Black-on-red, and Tusayan Corrugated. At the same time there began the influx from the north, first gradually then becoming more apparent. From the pottery we may assume that this migration came from the Virgin River Valley, Utah. No pottery from, or related to, this region is evident until it appears on early Pueblo II sites. The Virgin River chronology is as yet unestablished, it is,

roughly, classed as contemporaneous with dated northern Arizona sites where the ceramic wares of both sources are found together. That Dogoszhi and Deadmans styles of decoration appear on Virgin River wares supports this theory. The reason for the movement from the north is at present conjectural. It is possible, as Steward suggests, that Pueblo I was not well established in Utah, or that in the Virgin River area it varied from the norm. Surface indications give no hint of infiltration from the north into the Grand Canyon during Pueblo I times. It is only in Pueblo II that the new influence is seen. If we may assume that a branch of Anasazi culture travelled north during Basket Maker times, and then returned from Utah in general and the Virgin River in particular during Pueblo II, we must infer that one or more adverse influences deflected the natural expansion of Anasazi culture. Steward mentions a complete absence of Pueblo II in the Salt Lake Region. The hypothetical influence which forced this contraction of people is presumed to be some hostile group which continuously over ran its limits toward the south.

In early Pueblo III a marked decline in population is seen, 50 percent of the sites are unoccupied. From dated sherd types we may safely set the time of desertion of the area at somewhere about 1150 to 1175. No ceramic styles of later date were found. Although the region seems semi-isolated, its protection seems to have been inadequate as by mid-Pueblo III the owners had crossed to the south rim. The agricultural works constructed with great labor seem to have meant considerable investment, which the builders would have been disinclined to abandon. Rainfall on the north rim is more plentiful than on the south, drought can hardly have been a factor. Only a forcible abandonment brought on by hostile inroads seems to explain this desertion.

During Pueblo III it is apparent that Anasazi culture was concentrated into fewer locations. The Tusayan Ruin, near the Wayside Museum at the Grand Canyon on its south rim, represents a typological development of the latest architectural plan to be found on the north rim. This ruin has yielded Tree-ring dates of 1198 to 1205. Haury believes that it is an example of the final occupation of the south rim by Pueblo people, and has so expressed himself to the writer. This supports the writer's premise of an exodus from the north rim 25 to 50 years earlier. The whole movement in fact falls in with a general pattern which is gradually becoming more apparent, and has done so with increasing clarity during the years since this report was first written. All along the northern borders of the Anasazi area we see

a retreat, culminating in more densely populated but defensive sites. In favorable locations the great cliff dwellings were built as a part of this defensive move. Hostile newcomers seem to be a plausible explanation.

That the Grand Canyon has sometimes been a deterrent to man is patent. The Spaniards when they first came to its brink were appalled at the formidable walls and turned back. However familiarity with the topography and a desire to cross have overcome the chasm many times. More than one prehistoric trail is still distinguishable, parts of them scale sheer cliffs with rudimentary handholds cut into the rock, or with crude ladders, until recently still in place. Later on the white prospectors, who for a time infested the Canyon with their burros, found it possible to cross the chasm. Their trails became a network along the inner rim and had at least two crossings.

Thus the Canyon may have acted as a partial defensive barrier but when the unknown hostiles had arrived in sufficient numbers the Anasazi dwellers at the Tusayan and nearby ruins were forced to gather up their belongings and move away.

The distribution of house types confirms the theory as to the relative concentration of people in Walhalla Glades at different times. Of early circular or D-shaped houses there are only a few. If pit houses exist here they may have been missed, only two sites which may prove to be pit houses were recorded. Lack of soil above bed rock may have precluded their construction in the region.

During Pueblo II time architectural development is interesting. The small rectangular surface structure evolves into a two room, then a three room, affair. At this time began a habit of building a row of contiguous granaries from one side of the livingroom. These houses had a temporary superstructure to judge from the amount of fallen wall material, insufficient for a complete masonry wall. Houses of this period were the most numerous of any type.

In Pueblo III houses became larger, but less numerous. In the earlier examples granaries appeared to have been built of masonry, while the large room had a temporary superstructure. A short time later the whole plan changed, the central room was of solid masonry while the two rooms at each end were of temporary material at least for the upper portions of the walls. This impression is based on surface indications, these latter houses show a central mound of fallen debris of several feet in height, with end rooms of much lower mounds of debris.

The stone enclosures are unexplained, and must remain

so for lack of excavation. They are present on sites of Pueblo II and Pueblo III.

Agricultural terraces and garden plots must have been of importance in the life of their makers. The plots adjoin many ruins and are recognized by small rows of rocks which have been removed from the soil and piled along the sections. Terraces were laid out only on contours, the stones were utilized in building up low retaining walls. A scarcity of topsoil is evident, the soil here is very rich and loamy, but bedrock comes so close to the surface, sometimes within a few inches, that conservation of earth from run-off was necessitated. If the small valley floors were ever planted in crops, no evidence of the practice remains. That the Indians made use of freshets for irrigation by diverting the rainwater is still proven by small ditches running from a ravine to the garden terraces. With this gardening system and the many remaining granaries set along or close to the terraces we may assume that agriculture played no small part in the daily life.

Since the abandonment of the region the forest border has moved south in some places as much as two miles and to a lower elevation of from two to three hundred feet. The movement of forests may be influenced by time, climate, soil conditions and living organisms. Soil formations, in addition to the factors of parent material, location, climate, and time, show the effects of chemical processes wrought by the litter and deposition of forests as well as their growth. This close inter-relation has not been documented in southwestern forests as completely as it has been elsewhere, but the forces at work are well illustrated in this part of the Walhalla Glades.

That the movement of the forest took place after the desertion of the region is inferred. No one could plant or raise a crop in the heavy pine forest now standing in terraces and garden plots. Nor is it likely with primitive methods that the aborigines could have cleared such a forest had it been already established. It is more likely that the yellow pines had not yet moved into the marginal land. Normally the western yellow pine comes into mountain soils potentially arable, rather than into the higher and more humous belts preferred by the Douglas fir. The well known clean floor of the Kaibab forest, without fallen litter at the pine level, seems to support this theory. So also is the fact that a pine of the large diameter of many of those in Walhalla Glades may reach such size in a relatively short space of years. Borings from some of the larger living trees would soon prove this hypothesis.

Quantitative analysis of sherds was consistent with other data assembled. The earliest occupation was in Basket Maker III. Sherds of this and Pueblo I times comprised eighteen percent of the total. Pueblo II sherds comprised 72 percent of the total, and early Pueblo III was represented by only ten percent.

It must be borne in mind by the reader that positive assertions made here are few. In any surface survey the lack of excavation precludes verification of surface appearances of house types, as well as failing to provide datable wood. Thus we are left with one dependable criterion, dated pottery types. Since these are well established for the region included in this survey, much can be determined by this means. Comparison with analogous material from contemporary sites elsewhere has been made, at least for inferential purposes.

It so happens that analysis of sites, house types and sherds, each as a separate problem, has produced conclusions in agreement with one another. All indicate that the earliest visible occupation was in Basket Maker III, that the largest concentration was during Pueblo II, and that the area was abandoned early in Pueblo III. (Figs. 8, 9, and 10.)

These analyses also established the fact that there was an overlap of two Anasazi branches, people from the Tsegi and San Francisco mountains, and people from the Virgin River. The groups from the south and east came first, those from the north seem not to have appeared until during Pueblo II. Late in Pueblo II times the northerners seem to have been about equal to the Arizonans. By Pueblo III the northern influence is the stronger. (Fig. 11.)

Of the stone work little may be concluded; the celt-like scraper and thick crude blade may have been derived from Utah. That stone axes and mauls are absent is compatible with their absence in Utah sites. The scarcity of projectile points is to be noted—at least from a surface survey.

In considering the relationship of this survey of the Grand Canyon to archaeological findings elsewhere in the southwest the following comments seem pertinent: no regional development of material culture from this area was carried elsewhere, nor did anything in the culture sequence originate here even during local usage. The main significance of this area is that it establishes the presence of northern Arizona Anasazi where they have not hitherto been specifically recorded as well as the presence of people from the Virgin River farther south than they have previously been supposed to have penetrated. Both of these occupations are presumed to have been simultaneous. Even

with the meager data assembled here it is felt that something has been contributed to the sum total of knowledge concerning the expansion and contraction of the Anasazi culture. A future study of the sites along the westward rim of the south side, as well as the country lying to the north and west of the Grand Canyon will without doubt provide added knowledge along this line. Fortunately the aberration of ceramic development during the Utah period was sufficiently marked to be easily traced on its route to the south.

The survey of Walhalla Glades has barely scratched the surface of the main body of prehistoric material on the north rim. But from it may be gathered some notion of the quantity of sites once established there, and the fact that this summer playground for thousands of tourists was once a cross road of two groups of people, in the end, hard pressed and then dislodged by a third group of unfriendly nature.

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