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*********** IN THIS ISSUE: ***********

NAMAWAI I: A STRATIFIED SITE ON THE MIDDLE COURSE
OF THE SNAKE RIVER. --Charles M. Nelson pp 2-9

COMMENT ON AN IMPROVED PHOTOGRAPHIC TECHNIQUE.
--C. G. Nelson pp 9-12

THE INDIANS OF PUGET SOUND. --Myron Eells pp 12-19

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WAWAWAII I:
A STRATIFIED SITE ON THE MIDDLE COURSE OF THE SNAKE RIVER

Charles M. Nelson

Abstract: A brief testing at the confluence of Wawawai Creek and the Snake River in Whitman County, Washington, established the presence of a stratified site. Alluvium containing cultural material below Mazama pumicite yielded 35 artifacts and the usual detritus materials. This assemblage is important because of the probable age of 4,000 to 6,000 B.C. and the predominance of leaf shaped artifacts, some of which are definitely Cascade points.

Wawawai I takes its name from a very small town situated where Wawawai Creek enters the Snake River, a few miles downstream from Lewiston, Idaho. It occupies the eastern margin of a small alluvial fan, deposited by a relatively inactive perennial stream.

Stratigraphy. The general nature of the stratigraphy at Wawawai I has been revealed by a railroad cut which bisects the toe of the alluvial fan. Two test pits were excavated along this exposure, but only one carried to the bottom of the deposits. The profile recorded at this excavation is presented in Figure 1. A similar profile was recorded at the second test pit which was carried to a depth of one foot below the pumicite.

The major stratigraphic units at Wawawai I are: sediments above the pumicite, the Mazama pumicite itself, and sediments below the pumicite. The deposits above the ash appear to be primarily, if not wholly, aeolian, at least in the area of the two test pits. They contain cultural materials throughout, although in no area was there evidence of an intensive occupation. One artifact, a small, well fashioned pestle, was recovered in slough above the pumicite.

The pumicite undoubtedly derives from an eruption of Mount Mazama (Crater Lake, Oregon) about 6,500 years ago, and has been deposited as outwash over the entire surface of the fan. This must have occurred shortly after the actual eruption of Mount Mazama, inasmuch as the pumicite is quite pure even though mixed with angular pieces of basalt. In addition, comparable deposits occur on all of the fans on both sides of the Snake between Lewiston and Central Ferry, suggesting a depositional pattern of regional scope, and affording a reliable horizon marker for the entire area.

Deposits below the pumicite were tested to a depth of five feet in Test Pit 1 and one foot in Test Pit 2. In Test Pit 1 cultural materials occurred to a
Figure 2-a. Core Tool, Basalt. Full Size

Figure 2-b. Keeled Scraper, Basalt. Full Size

Figure 1 - Profile of Test Pit No. 1.
depth of four feet below the pumicite, or nine feet below the surface of the ground. The matrix in which they occurred was characterized by small, angular and subangular fragments of water rolled basalt, deposited as outwash over the fan. These occurred in different concentrations at the various levels in the excavation, reflecting the relative intensity of outwash periods along the fan's eastern margin. In Test Pit 2, located about thirty feet west of Test Pit 1, the fragments of basalt were much more frequent, which is consistent as it is closer to the center of the fan.

Although the fan must have been periodically active during the entire early occupation of the site, this activity does not appear to have seriously altered the cultural deposits. Several lines of evidence suggest this is so. First, a definite rock feature was uncovered in Test Pit 1, ten inches below the pumicite. Second, bone and shell are well preserved. Third, waste flakes, artifacts, bone and shell show no wear or other signs of having been transported in outwash over the fan's surface. Fourth, cryptocrystalline flakes struck from the same core were occasionally found in close association. Fifth, artifacts, large flakes, shells, and bone fragments were frequently found lying in a horizontal position.

That the cultural deposits were not extensively altered during the active building of the fan may suggest that flooding was relatively infrequent and that vegetation stabilized its surface, keeping the soil from being eroded away. In the absence of a geological study of the site, these conclusions must, however, remain tentative.

Cultural materials from below the pumicite. Forty-five cubic feet of culture bearing deposits beneath the pumicite yielded a total of one rock feature, 35 artifacts, 279 flakes, 66 pieces of bone and eight pieces of shell. The rock feature occurred in the western end of Test Pit 1, at a depth (to its base) of ten inches below the pumicite. Associated remains included a piece of burned bone, several pieces of unburned bone, and a few flakes. Neither charcoal nor artifacts were noted.

The general level data for Test Pit 1 is presented in Table 1. Notice that the number of basalt flakes is four times that of cryptocrystalline quartz flakes, though the numbers of artifacts manufactured of these materials is about equal. This relationship may also be stated in the following way: 23% of the pieces of cryptocrystalline quartz found were worked or utilized, while only 7% of the basalt specimens recovered were altered. These figures are not changed if the data from Test Pit 2 is added, nor invalidated by sampling technique, as all the deposits were sieved through a half-inch, wire mesh screen and all recoverable detritus recorded.

If 279 flakes and 35 artifacts may be considered as substantively accurate indicators, we may conclude that there was a preference for cryptocrystalline materials.
Figure 3 - Chipped stone artifacts from below the pumiceite.
FULL SCALE
<table>
<thead>
<tr>
<th>Depth in inches below pumicite</th>
<th>Basalt flakes</th>
<th>Basalt artifacts</th>
<th>Cryptocrystalline flakes</th>
<th>Cryptocrystalline artifacts</th>
<th>Mammal bone</th>
<th>Fresh water mussel</th>
</tr>
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<tr>
<td>0-6</td>
<td>29</td>
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<td>8</td>
<td>2</td>
<td>0</td>
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<tr>
<td>6-12</td>
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<td>4</td>
<td>10</td>
<td>1</td>
<td>15</td>
<td>0</td>
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<tr>
<td>12-18</td>
<td>37</td>
<td>3</td>
<td>10</td>
<td>5</td>
<td>26</td>
<td>1</td>
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<tr>
<td>18-24</td>
<td>20</td>
<td>2</td>
<td>6</td>
<td>2</td>
<td>8</td>
<td>1</td>
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<tr>
<td>24-30</td>
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<td>0</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>30-36</td>
<td>10</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>9</td>
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<tr>
<td>36-42</td>
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<tr>
<td><strong>TOTALS</strong></td>
<td><strong>179</strong></td>
<td><strong>13</strong></td>
<td><strong>47</strong></td>
<td><strong>14</strong></td>
<td><strong>66</strong></td>
<td><strong>8</strong></td>
</tr>
</tbody>
</table>

**TABLE 1.** Artifacts and associated materials recovered beneath the reworked pumicite in Test Pit 1.

Catalog of artifacts from below the pumicite. The thirty-five artifacts recovered from below the ash are described in the following catalog. In addition to these, two unifacially flaked cobble implements were recovered in slough and cannot be related to the stratigraphic section at the site. The chopping edge of one has been battered.

Hammerstone. An ovoid cobble, measuring 9.0 x 7.5 x 5.3 cm., was recovered at a depth of 0-6" below the pumicite. It is slightly battered at each end.

Chopper fragment. Originally an elongate cobble the narrow end of which was unifacially flaked into a cutting or chopping edge, this specimen in its fragmentary state measures 10.0 x 9.2 x 4.7 cm. The working edge is 6.0 cm. across, and there is evidence of slight edge grinding, or more precisely, edge pecking, extending from the working edge along the specimen’s periphery.
Boulder chip scrapers (Fig. 3, j). The fragments of two worked boulder chips, probably created in the manufacture of cobble implements or the preparation of cores, were recovered at depths of 0-6" and 6-12" below the pumicite. They are uniaxially flaked in such a manner that the exterior surface of the cobble was not scarred. The largest measures 5.5 x 4.4 x 0.9 cm.

Core remnants, cores, or core tools. (Fig. 2, a; Fig. 3, k). Five such objects were recovered, one deriving from the contact of the pumicite and deposit beneath, and two from 0-6", one from 6-12", and one from 18-24" below the ash. The two most interesting are illustrated in Figures 2 and 3. They measure 7.5 x 5.2 x 4.2 cm., and 4.4 x 3.0 x 2.4 cm. The other three are fragmentary. One would have been a good deal larger than either of the complete specimens.

Keel-scraped scraper (Fig. 2, b). This specimen resembles an oversized end scraper, with a narrow, convex scraping edge at one end. The scraping face is steeply keeled and intersects a very flat surface. It may therefore have been a scraper plane. This specimen is fragmentary, measuring 8.4 x 3.9 x 2.5 cm. It was recovered between 0-6" below the pumicite.

Flake scrapers. Three small flake scrapers, all of cryptocrystalline quartz, were recovered from beneath the pumicite, at depth of 0-6", 18-24", and 24-30". One is fragmentary. The others measure 4.0 x 2.7 x 1.0 cm., and 2.6 x 2.4 x 0.8 cm.

Utilized flakes. Six utilized, cryptocrystalline flakes were recovered, four at 12-18", one at 18-24", and one at 24-30" below the ash. The largest measures 3.4 x 2.2 x 0.9 cm.; the smallest 1.5 x 1.3 x 0.5 cm.

Utilized blades or blade-like flakes. (Fig. 3, l). Two such specimens were recovered at depth of 6-12" and 12-18" below the pumicite. Both are cryptocrystalline quartz. No comparable unworked or unutilized specimens were recovered. Each of these specimens measures 3.5 x 1.7 x 0.3 cm.

Large knife fragment. (Fig. 3, g). The basal fragment of a large, broad basalt knife was recovered at a depth of 6-12" below the pumicite. It measures 4.5 x 4.0 x 0.7 cm.

Leaf-shaped knife (Fig. 3, h). A thick, crude, leaf-shaped knife was recovered at a depth of 0-9" below the ash. It is basalt, and measures 5.2 x 2.5 x 1.0 cm.

Fragmentary leaf-shaped points or knives (Fig. 3, f, h, i). Five basalt and one cryptocrystalline specimen are represented by this category. All were recovered from beneath the pumicite, two each at depth of 0-6" and 6-12", and one each at 12-18" and 36-42". They vary in width from 2.5 to 2.8 cm. and in thickness from 0.3 to 0.7 cm. There are three tips, two middles, and one base. The base measures 6.5 x 2.5 x 0.5 cm. (Fig. 3, f).

Cascade points (Fig. 3, a-c). Three Cascade points were recovered at depths of 0-6", 12-18", and 18-24" below the pumicite. Two were basalt and one was a cryptocrystalline quartz. They measure 3.9 x 1.7 x 0.3 cm., 4.2 x 1.8 x 0.3 cm., and 4.0 x 1.5 x 0.25 cm. In addition, two appear to be manufactured
on purposefully struck flakes or blades, remnants of the striking platforms of which appear at the base of each.

Leaf-shaped point (Fig. 3, d). A leaf-shaped basalt point possessing a faint suggestion of slight bilateral shouldering near the base was recovered at a depth of \( \frac{1}{2} \)" below the pumicite. It measures 5.3 x 1.7 x 0.35 cm.

Lanceolate point base (Fig. 3, e). The base of a cryptocrystalline lanceolate point was recovered at a depth of \( \frac{1}{4} \) to \( \frac{1}{8} \)" below the pumicite. A small portion of the very base has been broken away and reworked, and the edges have been dulled presumably for hafting. This specimen measures 2.4 x 1.9 x 0.3 cm.

In addition to the above mentioned artifacts, a small unidentifiable fragment of a unifacially flaked basalt object was recovered at a depth of 6–12" below the pumicite.

Comparisons and conclusions. Because of the nature of the site, this section will necessarily be limited to the cultural materials found beneath the volcanic ash. This assemblage possesses comparative importance, first because it occurs beneath a reliable horizon marker dated at about 4,500 B.C., and second because it contains, with the exception of the lanceolate specimen, only leaf-shaped points and knives some of which are definitely Cascade points. Similar assemblages in the same relative stratigraphic position occur in the area of The Dalles (Butler 1961; 1962); at Hames Rockshelter (Fryxell and Daugherty 1962; Fryxell 1963); at the Goldendale site (Jarren, et. al. 1963); at Ash Cave (Butler 1958; 1961; 1962); and at the Weis Rockshelter (Butler 1962). Carbon-14 dates associated with some of these sites suggest that the assemblage occurred at an earlier time level in the west and diffused eastward into Idaho (Butler 1963: 77–80). Carbon-14 dates obtained from Hames Rockshelter and Ash Cave, the nearest sites along this west-east line, suggest that the early component at Wawawai I dates from 4,000 to 6,000 B.C.

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Fryxell, Roald
COMMENTS ON AN IMPROVED PHOTOGRAPHIC TECHNIQUE

C. G. Nelson

Abstract: Chipped stone artifacts are prepared for photographing by painting them with a water soluble paint applied with an air brush. The use of bottom and side reflectors with a ring flash type of stroboscopic unit are the main features of illumination and exposure. The result is a highly definitive photograph which will produce a half-tone plate that retains most of the detail of the original.

Certain recent European publications have had outstanding illustrations of chipped stone artifacts. The consistency of the clarity of detail indicated that this was being accomplished by some other means than the usual photographic techniques. On a recent trip to Europe Dr. Richard Daugherty (Washington State University) made some inquiries and was advised that the chipped stone artifacts had been painted with a water soluble paint before the photograph was made. With this information, a series of test exposures was made by C. G. Nelson and the author. A procedure was developed which will produce results comparable to the aforementioned publications.

The problem is to produce a photograph or a series of photographs of chipped stone artifacts which will consistently have all the details of chipping, form, etc., that would be observed if the specimen were in hand, and to have this detail preserved in the process of making half-tone which is the instrument of the final reproduction. We are speaking of 'black and white' photographs and the more economical means of making half-tone plates and reproducing them, i.e., photo-offset. The proposition that a photograph can be equal to the object itself is in a sense fallacious because with the piece in hand, the sense of sight in three dimensions is enhanced by the sense of touch as opposed to an immobile two dimensional representation. However, in a two dimensional context, the photograph can record a specific area and when the detail is of the first order, there is no question but what this is not only an acceptable substitute but may even be superior to the object itself. In this regard many of the psychological factors of perception are involved. The photograph does permit an author to make a statement or exposition of his perception, i.e., interpretation. Along this same line of thought, the quality of archaeological research depends not only on the sophistication of methodology but also on the effectiveness of the written, i.e., graphic, communication employed to report this research.
The procedure of photographing chipped stone artifacts is:

1. Paint the surface of the artifacts to be photographed;
2. Place the artifacts on a non-reflecting translucent surface which is supported by a box containing a bottom reflector;
3. Place side reflectors around the periphery of the area to be photographed;
4. Make exposure with a plate camera using only a ring flash for illumination.

The painting of artifacts is performed to correct the problems that differences in color create. Usually in an assemblage of artifacts that are to be photographed, there is a wide range of color. Each of these colors requires a different treatment of illumination and exposure. Since color is absent from the conventional "black and white" photograph, the reproduction of color per se is not a factor. If all of the artifacts in an assemblage were the same color, there would be no problem. The concept of uniformity of color becomes more attractive when there is a large series of photographs involved. There is a question of propriety involved here: is it proper to paint an artifact? Since the form is not being altered and none of the diagnostic elements are being changed, the technical license employed here is valid.

The type of paint selected is water soluble. By water soluble is meant that the paint can be diluted with water and after having been applied and dried can be removed with water. There are rubber-base and plastic-base paints which are emulsified in water and can be diluted with water as long as the emulsion is intact. These will not dissolve in water after the paint has dried. The viscosity of the water soluble paint is another important factor. The thick opaque paints used for poster work will obscure the detail of chipping and, therefore, should not be used. While we did not test all of the water soluble paints available, we found that "Transparent Water Colors" manufactured by The Craftint Mfg. Co., Cleveland, Ohio, to be very satisfactory. A variety of colors was tested and the paint marked "Pearl Gray" provided the best contrast. This particular paint has for all practical purposes the same viscosity and surface tension as water. When this paint is applied to an artifact made from a cryptocrystalline material having surface characteristics similar to glass, the paint will not adhere to the surface but will form drops or droplets on the surface. This condition is due to the surface tension of the paint. This problem can be solved in part by adding a heavy detergent which will reduce the surface tension of the paint. Three drops of the additive, "Pakon Ink and Opaque Additive" manufactured by A. E. Haze, Omaha, Nebraska, per fluid ounce of paint were used to condition the paint. The relative temperature of the paint and the artifacts to be painted is also a factor in the forming of droplets or the adhesion quality of the paint. When the artifacts and paint are both at room temperature, 60° to 70° F., the lack of uniform coverage is still a problem. By raising the temperature of the artifacts to be painted to 120° to 135° F., uniform coverage and rapid drying of the paint on the artifact is achieved. Another feature of the paint used is that when applied in a thickness of not more than 25 microns, the material is sub-opaque or semi-translucent.
thus permitting utilization of the reflecting surface of the artifact. Because of this feature the textural qualities of materials such as basalt, quartzite, fine-grained rocks, porphyritic rocks and cryptocrystalline rocks can be distinguished. The paint is applied with a Thayer & Chandler Model A Air Brush. The air brush is an instrument used primarily by the commercial artist. The minimum air pressure required is 35 psi.; the maximum being 50 psi. Volume requirements are minimal. Little or no difficulty will be experienced if instructions are followed in the use and care of the air brush.

The plane at which the artifacts are placed is formed by a piece of plate glass which has been covered with Mylar drafting film. The surface of the Mylar has been treated to accept the usual marking devices, i.e., plastic pencils, plastic inks, India ink and graphite pencils. The surface is for all practical purposes non-reflecting. The particular film used has the non-printable one inch 10 by 10 grid superimposed on the drafting surface. This permits a quick and orderly arrangement of the artifacts. The plate glass is placed on a rectangular box which is lined with aluminum foil. The foil acts as a reflector which eliminates shadows between the leading edge of the artifact and the surface of the film. At the time the artifacts are arranged on the Mylar film for a specific plate arrangement, the artifacts and plate notations can be made by applying Planotype plastic letters. The one inch 10 x 10 grid automatically provides means for establishing scale.

Item 3 of the procedure provides for side reflectors around the periphery of the area to be photographed. In the experimental exposures, a rectangular prism 16" high was faced with aluminum foil so that the reflecting surface is at right angles to the plane being photographed. The side reflectors tend to highlight the chipping.

Ideally a 11" x 5" press camera or Graphlex should be used with at least a 135 mm. lens. A 9 x 12 cm. plate camera will produce good useable negatives. Ground glass focusing is essential and should be used for each exposure. The lens formulas is important—the better the glass the better the negative. When the larger cut film sizes are used, any of fast press film is satisfactory. Depending on the watt-second output of the stroboscopic unit (ring flash), the 'f' value can range between f18 and f28. Focal depth will approach 1". The selection of the ring flash for the only source of illumination was the result of a series of experiments. The use of natural light, while satisfactory, is very limiting in terms of available time. Also there can be exposure problems. Incandescent lighting, including back lighting and overhead flood-lighting, can be used, but each exposure has its own problems of shadow elimination. The ring flash produces comparatively uniform exposures for a large variety of artifact composition arrangements.

An example of the photographic technique described is to be found in Figure 3 on page 5 of this issue. The process involved in this presentation is a diazo print of a screened positive print. A photo-offset printing of this same negative would appear clearer because of the control over contrast in preparing the plate and the finish or coating of the paper used for this type of printing. From the text of the article artifacts a, e, i and l are described as cryptocrystalline; b, c, d, f, g and h basalt; j and k are not described in terms of material. The conchoidal fracture typical of cryptocrystalline material is
readily apparent in artifacts a, e, and i; l is questionable. The fine grained texture of basalt and its characteristic chipping scars are clearly shown for those artifacts described as basalt. Admittedly this is not the ultimate in graphic arts. The procedure outlined does however make it possible to reduce the hazards in producing an acceptable reproduction and when used properly should enhance the presentation of illustrative materials.

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In the first issue of Volume 7, the first of a series of reprints of the writings of Reverend Myron Eells was published. In this issue we are reprinting another such article. The Editor.

THE AMERICAN ANTIQUARIAN AND ORIENTAL JOURNAL

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THE INDIANS OF PUGET SOUND

Myron Eells

FIRST PAPER

In the following pages I have tried mainly to describe the Indians of Washington Territory as they were formerly, with frequent allusions, however, to their present condition. They are now in a state of transition, some being more advanced in civilization than others. In a general way I should say of the greater part of those under forty-five years of age, that if they had white skins, talked the English language,—if a part of them had abandoned their belief in their medicine men,—as some have not done,—if they travelled in boats instead of canoes, if their women wore hats or bonnets on their heads, and if they were neater, they would be called civilized, at least as much so as the lower class of whites. Consequently I have often been obliged in the following pages to use the word "were" instead of "are," and sometimes on account of the difference of civilization between the younger and older ones, and the difference also in different localities, it has been somewhat difficult to know when to say "are," and when to say "were," and yet in order to describe the Indians correctly, it has seemed to me, that I ought to make a distinction.

My residence during the past twelve years has been on the Skokomish reservation, among the Twanas; a few Squaksons and Clallams having also lived on the same reservation. My work as a missionary has been among these three tribes, and with the few Chemakums, who are left. Consequently my observation of the manners and customs has been mainly among them. Indians from nearly all the other tribes on the main part of Puget Sound have either intermarried with those of this reservation, lived here for a time, or made visits here, and I have visited some of these other Indians at their homes, so that I have had an opportunity to see considerable of other tribes, and I have here recorded what I have thus learned. Hence I have entitled the work, "The Indians of Puget Sound,"
although the greater part of the work refers to the four tribes first mentioned; for the habits and customs of all the tribes on Puget Sound, although speaking different languages, are much the same.

I have been surprised to see how little has been written about these Indians. As far as I can learn, Vancouver, in 1792, was the first writer who speaks of them, but his notices of them as a discoverer, are necessarily very meager. Commodore Wilkes in 1841 is next. Gathering his information largely from the officers of the Hudson Bay Company, he was more full, yet his statements refer more to the number and situation of the tribes than to their manners and customs. Dr. George Gibbs made a report in 1854 to Captain George B. McClellan, of the same character, but a year or two later wrote out by far the fullest account extant of their habits and customs, which, however, was not published until 1877, when it was printed by the Ethnological Bureau at Washington in Vol. I of contributions to North American Ethnology. In it is also given a vocabulary of the Nisqually languages. He also prepared a small dictionary of the Clallam and Lumid languages, which was published in Shea's Library of American Linguistics, very few copies of which are extant. In Tolmie and Dawson's Comparative Vocabularies of the Tribes of British Columbia, (Montreal, 1861) are given short vocabularies of about two hundred words in the Snohomish and Chehalis languages. Early residents among the tribes on the Columbia River, as Ross Cox, G. Franchere, and Alexander Ross, have written fully in regard to those tribes, and Hon. J. G. Swan has described the Indians on the Pacific coast of Washington Territory, but no resident among the tribes on Puget Sound has described them with perhaps the exception of Dr. Gibbs, and his residence, was, I believe more properly among the whites of the Sound, than with the Indians, though his eyes and ears were open, and he gathered information largely from other whites.

NAMES AND SITUATION OF THE TRIBES

Before giving the names of the tribes, I wish to speak of two elements which are common to a large number of them, the initial "S," and the termination "mish," or "bish."

S. This initial begins a large number of Indian words, especially names in the region, and when these were first written by the whites it was generally separated from the rest of the word by an apostrophe, thus: S'Kokomish, S'Nohomish, S'Klallam, S'Na-nai-mo. In the first two of these, of late years, the apostrophe has been dropped by the whites, and the second letter changed to a small one; in the two latter the S has been dropped.

The meaning of the letter I have been unable to learn. It has sometimes seemed to me that they use it, or drop it, without attaching any meaning to it. In conversation I have heard the Twanas speak of the Makah and Haida Indians as S'Makah and S'Haida, and yet when I asked them what tribes they spoke of, they said Makah and Haida. In gathering common words I have often been puzzled, because in pronouncing them sometimes they would begin the word with an S, and on pronouncing it a second time, they would leave off that letter. In these common words I have, after considerable study, come to the conclusion generally to drop the S, as the more correct way.
On questioning one of the most intelligent educated Twana Indians on this point, he said that there was a reason why it was used, but that he could not explain it to me in English.

Mish or bish.—This termination enters into a large number of names in the land occupied by the Indians speaking the Twana, Chehalis, and Nisqually languages, as follows. Among the Twanas, Skokomish, or Skakabish, and Kolsidobish; among the Upper Chehalis, Sats-a-pish, and Ow-il-la-pish, and many others; among the Nisqually speaking tribes, Snohomish, Squaksha-mish, Du-wa-mish, Samish, Stillaguamish, Swinomish, Skywhamish, Sukwamish, and at least twenty others.

I am satisfied that it means people, although it has taken me a long time to come to this conclusion. On the subject I have been able to obtain very little light from the Indians. One very intelligent Indian and a white man, well versed in Indian affairs gave me as their opinion that it meant much the same as it does in such words as Flemish, Scottish, English, and the like, but I have been unable to accept this, as Puget Sound is too far from Europe to allow me to believe this the origin for this termination. The word for Indians, or people in Twana is Klo-wal-biah; in the upper Chehalis, it is E-la-mish; and in Lower Chehalis, Klo-wal-bish. It is hence very natural that in speaking of certain people, they should add the termination bish or mish to the name of the place where they live; for instance Kol-sid is the name of a bay in the Twana territory, and Kol-sid-o-bish that of the Indians living there. One thing only puzzles me, and that is that in the Nisqually language which is spoken by far more Indians than the three languages above named combined, the word for people is Atc-il-tul-bo. This termination however may have been given to their names by other tribes mentioned, or there may be some way of explaining this which I have not yet learned, as all of their languages are closely related.

I. Twanas. Their name is spelled Too-an-hooch, in the treaty which was made in 1855; the Clallams, Squakscons, Chehalis, and Indians on the eastern side of Puget Sound say Tu-an-hu; and the Twanas say Tu-ad-hu. These various pronunciations have been shortened in Twana, now, used in all government reports. Mr. George Gibbs says that the word means in the Clallam tongue, a portage and to be given to them from the portage between the head of Hood's Canal, and North Bay, a branch of of the main Sound, where the Indians by carrying their canoes across an isthmus three miles wide, avoid going around a peninsula, the extreme point of which is sixty-five miles from this portage by water. I have never been able, however, to verify this meaning from the Twana Indians, some of whom deny it, and others of whom say that they do not know its meaning.

They originally occupied both sides of Hood's Canal for its whole length. They were divided into three bands, the Du-hle-lips, Skokomish and Kol-sids.

The Du-hle-lips lived at the head of the canal, where a small stream empties into it, called by them Du-hle-lip, but now named by the whites Union Creek, and for about ten miles below the head.

Fifteen miles below Union Creek the Skokomish band who lived around the mouth
of the river of that name, where is the present reservation. This name is pronounced Ska-ka-bish by the Twanas, and Ska-ka-mish by the Clallams. The Americans have changed it to Skokomish, and thus they universally spell the name of the river, reservation and postoffice. Dr. Gibbs in Vol. I, "Contributions to North American Ethnology," gives this as the name of the whole tribe, but it was originally only the name of one band; as it is the name of the river and reservation, the whole tribe are known better to the whites on the Sound by the name Skokomish than by their original one of Twana. Ska-ka-bish, means "the river people," and was naturally given to them as theirs is by far the largest river on Hood's Canal. Kain Twana means "Fresh water." It is doubled, that being one form of the plural, doubtless because of the size of the river.

Thirty miles below the Skokomish river lived the Kuil-sids, or Kuil-sid-o-bish, as pronounced by themselves, who lived around the Kuil-sid bay, the northern arm of Hood's Canal and the mouth of the Duk-a-boos, and Dos-wall-opsh rivers. I have heard them speak of this band as Kuil-sid-o-bish. The Clallams call the place Kol-sin. As a postoffice the Americans spell it Quill-cene, and hence I shall use that orthography.

These three bands were not always at peace, but waged petty contests with each other. For more than twenty-five years, however, most of them have been collected on the same reservation, have been on good terms with one another, and have intermarried, so that these band distinctions are now practically obsolete. When however the older Du-hle-lips leave the reservation for fishing, they are apt to go to their old waters, and the same is true of the Quil-sids.

The dialects of these three bands formerly varied a little; thus the word for go in Du-hle-lip was bi-se-dab, while in Skokomish it was bi-he-dab. But at the present time I have not found it practicable, in collecting a vocabulary, to separate the dialects. I have gathered most of the words from the older school-boys, who have been brought up on the reservation, and who have heard all of the dialects, which are rapidly merging into one. Generally I have found it necessary to use English speaking Indians for the purpose, and the older school boys are the best there are.

At present most of these Indians live on the Skokomish reservation. About thirty live around Seabeck and Quill-cene.

Although the Squakson tribe, by treaty and language, belong to the Nisqually Indians, yet about thirty of that tribe, since the selection of the Skokomish reservation, have moved to it, and have become incorporated with the Twanas. They did so because their own people for a time were scattered, because of the nearness of the reservation to their old haunts and its advantages, and because of numerous intermarriages between them and the Twanas. For the most part, they use their own language, but they understand the Twanas, and the Twanas understand them. Twenty-five others for a time became connected with the Twanas, but because they did not obtain titles to the land on the reservation as soon as they expected, and as soon as they had a right to expect from Government promises, they became discouraged and left.

II. The Chemakums.--North of the Twanas were this tribe. In the treaty
their name is written Chemakum. Dr. George Gibbs writes it Tshein-a-kum. Hon. J. G. Swan follows the orthography of the treaty, which represents most correctly the way in which both the Indians and the whites of the region pronounce it. The whites call a prairie by the same name. Its origin or meaning I cannot learn. These people call themselves A-hwa-id-lu, as well as Chemakum.

They formerly occupied the land from the mouth of Hood's Canal to the mouth of Port Discovery Bay. According to their tradition and that of Kwille-utes, they originally came from the latter tribe, who live on the Pacific Coast about thirty miles south of Cape Flattery, and a hundred and twenty-five miles distant, and from whom they are now separated by the Makahs and Clallams. Hon. J. G. Swan says in regard to this in his work on the Makahs (p. 57) that the Kwille-utes have a tradition that a long time ago, there was a very high and sudden tide which took four days to ebb, after which a portion of the tribe made their way to the vicinity of Port Townsend, and are known as Chemakums. The latter tribe have a similar tradition, and the numerals of the two tribes seem to corroborate this.

They are said to have been originally a warlike tribe, not very numerous but strong and brave. They had a village at the head of Port Townsend Bay, called Tsots-i-bus, which is said to have been a kind of capital for nearly all the tribes on the Sound, where they occasionally collected for various purposes. Dr. Gibbs 1852 states their number to have been ninety, but they are now virtually extinct, there being only seven left, who are not legally married to white men or into other tribes. Of these there is only one complete family, and it has connected itself with the Clallam Indians at Port Gamble. With the exception of one or two very old ones they now commonly use the Clallam language. They say that their diminution was caused by the small-pox, but probably war had something also to do with it, as Dr. Gibbs says that they had been engaged in wars with the Makah, Clallam, Twana, Snohomish and Duwamish Indians, by whom their power was broken.

III. The Clallams.--In the treaty this name is spelled S'Klallam. This has already been explained. It is now generally dropped, and the k changed to c. A county is named from it, which has dropped one I and in some official seals the word is spelled Clal'm. Other tribes now call them Klallam and S'Klallam. It evidently originated from their own names for themselves Nu-sklalm, which means a strong people for they formerly were a strong tribe.

Their territory formerly extended from Port Discovery Bay west to the Hoko river on the northern coast of Washington Territory. The treaty expected them to go to the Skokomish reservation, and the Government was to furnish the means for this purpose. This has never been done, and they have never been moved and probably never will be. At present many of them have moved further up the Sound to obtain work. The following is a description of their villages. (1) Across the bay opposite Port Gamble is quite a village of them who earn their money largely at the sawmills there. (2) Around Port Ludlow are a few who fish and work in the sawmill. (3) Near Port Townsend are a few more who make their living by fishing. (4) Opposite Port Discovery is a small village of those who live mainly by working in the sawmill. (5) At
Sequim is another small village the most of whom are old, and live by canoeing, fishing, and clam digging. (6) At Jamestown, five miles from Dungeness, is a flourishing village of those who have obtained land; it is the home of the head chief, where there is also a school, church, and jail. They gain their living by working for the neighboring whites, by farming on this land and by canoeing and fishing; a dozen years ago these were a worthless set, being so often drunk that the neighboring whites petitioned the Agent to remove them to the Skokomish reservation; hearing of this the leading ones, as they did not wish to be removed from the land of their fathers determined to reform. Gathering together five hundred dollars, they bought two hundred and ten acres of land, divided it among themselves according to the amount contributed by each one, and have since that time been slowly improving it. They have also improved in morals until now they are the most civilized and prosperous band of the tribe. (7) At Port Angelos has been another village of some importance. Many years ago the U. S. Custom House was here, work was abundant, and the Indian village lively; but the Custom House was afterwards removed to Port Townsend, most of the whites moved away, employment became scarce, and nearly all of the Indians have gone, a good share moving across the Straits to the British Columbia side. (8) At Elkwa was formerly the largest band of the tribe; but they have grown less numerous and weaker. Five or six of them have homesteaded land a mile or two back from the beach, the only ones of the tribe who live so far from the salt water. These Indians live by canoeing, fishing, and what they raise on their places, and in the latter part of winter and spring go to the Makah waters for seals. (9) At Pysht are a few families, who live mainly by fishing and sealing. (10) At Clallam Bay a number, about the year 1830, bought about a hundred and fifty acres of land, in imitation of their Jamestown neighbors, but they have not progressed as rapidly, owing to the fact that fewer whites live in their neighborhood to encourage them, and that more of their number are rather old, and so less progressive than those at Jamestown. They raise a little on their land, they fish and seal.

According to the Census which I took for the United States in 1880 the Clallam Indians were then distributed as follows: six were on or near the Skokomish reservation, ten at Seabeck, ninety-six at Port Gamble, six at Port Ludlow, twelve at Port Townsend, twenty-four at Port Discovery, eighteen at Sequim, one hundred and twenty-two at or near Jamestown, fifty-seven at Port Angelos, or across the straits from that place, sixty-seven at Elkwa, twenty-four at Pysht, forty-six at Clallam Bay and three at Hoko. Since that time those at Skokomish, Seabeck and Hoko have left those places, nearly all have gone from Port Angelos, while the numbers at Port Ludlow, Port Townsend and Port Discovery have increased.

I can learn of only two dialects spoken by this tribe, those at Elkwa, Pysht, and Clallam Bay, speaking it is said, as if with thicker tongues, than the others, and so pronouncing some words different.

IV. The Lummi.— These Indians were situated on the East side of the Sound to the extreme northern part of Washington Territory. They speak another dialect of the Clallam language, and for some reasons ought to be included in the account of that tribe, but owing to their situation were included in the treaty made with the Snohomish Indians and others in that locality, and hence have become virtually more distinctly separated from the Clallams than
they were before the treaty was made. There were three bands of these, the
Lummi proper, who lived about the mouth of the Nook-sack river; the Swallah
who lived on Crrass, San Juan and the Puk-auki, who lived up the Nook-sack
river. According to Dr. Gibbs, this latter band spoke a dialect, so different
from the Lummis as to be almost unintelligible to them.

V. The Samish. These lived about the Samish river, south of the
Lummis. They speak the same language, but are said to be a distinct tribe.
There were but two bands of them; the Samish, who lived at the mouth of the
river, and the Bis-tla-tlous, who lived up the river.

VI. The Skagit. This tribe lived south of the Samish Indians, and by
language are more nearly related to the Snohomish and Nisqually tribes, on
the south, than to their northern neighbors. They lived mainly near the
Skagit river. As near as I can learn from the Indians there were five bands:
the Swinomish, who lived on the salt water not far from the mouth of the
river, and on Fidalgo and the northern part of Whidbey's Island, opposite;
the Do-lwa-tcubah who lived on the river at the mouth; the Ska-lu-hu, who
resided further up on what might be called the middle of the river; the
Ska-lo-hu, whose country was on the northern branch which flows from Mr.
Baker; and the Sa-li-te-hu who lived on the southern branch of the river.
Dr. Gibbs also mentions the Kikdalilu, Nukwatsamish, Tow-shinu, Sakumnu,
Miska-mnu, Nisqually and Skamamish, but does not state whether
they are villages or bands, or where they live.

VII. The Snohomish. These lived south of the last named tribe south of the
Stillagwamish river to the Snohomish river and on both sides of it and its
branches. The Indians speak of four bands, the Du-gwada-habuh, who lived on
the southern part of Whidbey's Island; the Snohomish proper, whose home was
near the mouth of the river of that name; the Ske-hwa-mish, on the north
fork of the Snohomish river, which on some maps is marked the Skykomish,
and on others the Skykomish; and the Snoqualmie, who lived on the southern
branch of the Snohomish river called the Snoqualmie river. Dr. Gibbs also
mentions the Sk-i-tah-lo-jum, Kwectl-mamish, and Stolutsjumamish bands. While
he confirms the statements of the Indians that the Snoqualmie or Snoqualmi
band was very intimate with and properly belonged to this tribe, he also says
that their dialect of the language agrees more nearly with the Indians on
their south, that is with the Nisqually language proper.

VIII. The Duwamish. These lived on the Duwamish river and its tributaries,
and on the islands and peninsula across the sound, west of the same region.
Some of them are on the Port Madison and some on the Muckleshoot reservation.
They were divided into several bands, as the Duwamish, Sukwamish, Samamish,
Skopahmish, Sk'tel'mish and St'k'ahmish.

IX. Puyallups. These were formerly called Puyallupahmish and lived on the
Puyallup river and Vashon's Island opposite its mouth. The Puyallups proper
lived about the mouth of the river, the Yikam-kwamish, on its upper branches,
and Sim-ah-mish on Vashon Island. They were formerly not very important,
but have of late years become so, because their reservation is the most
valuable on the Sound.
X. The Nisqually, or Squalliamish.—These lived mainly about the Nisqually river, south of the Puyallups and about Olympia and some of the bays west of it. The bands were the Stulakumish; who lived rear where Steilacoom now is; the Segwallits, the S'inctlemamish, of Case Inlet or North Bay; the Sahahamish of Hammersly Inlet, or Skookum Bay, the Sawamish of Totten Inlet or Oyster Bay; The Skwaltai of Eld Inlet or Mud Bay; the Stehtabamis of Budd Inlet, where Olympia now stands; and the Nusehstai of Henderson's Inlet or South Bay. Dr. Gibbs includes the Puyallups with these as one tribe, and probably this was correct formerly, but they have now become separated into two tribes owing to reservation system.

XI. The Squaksons.—East of Twanas and west of the Puyallups at and around the base of the great peninsula between Hood's Canal and the main Sound, were the Squaksons; or Skwaknamish. They speak a dialect of the Nisqually language, and were included in the treaty with that tribe at Medicine Creek, but owing to their nearness to the Skokomish reservation, about twenty miles, and their intermarriages with the Twanas, their children have been largely brought to the Skokomish reservation to school, and I have visited them as a missionary of late years.

XII. The Upper Chehalis.—These Indians live on the upper branches of the Chehalis river as far down and including the Satsop. Their proper name is not Chehalis; they have given me Kwai-nilk as their name; Dr. Gibbs says that they are known by the Sound Indians by the name of Staktamish, by others as the Nu-sa-lupsh, and by the Willows, as the Kw-teh-ni. The Chehalis proper live near the mouth of the Chehalis River, and they thus gave their name to the stream; the whites having first visited it at the coast; after that the Indians on the upper branches became known as the Upper Chehalis Indians. I have not been able to learn that they were divided into bands, but one Indian has given me the names of forty-eight villages, which they once occupied between the Satsop branch and the Cascade mountains.

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