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GIRLS' PUBERTY RITES IN WESTERN NORTH AMERICA

BY
HAROLD E. DRIVER

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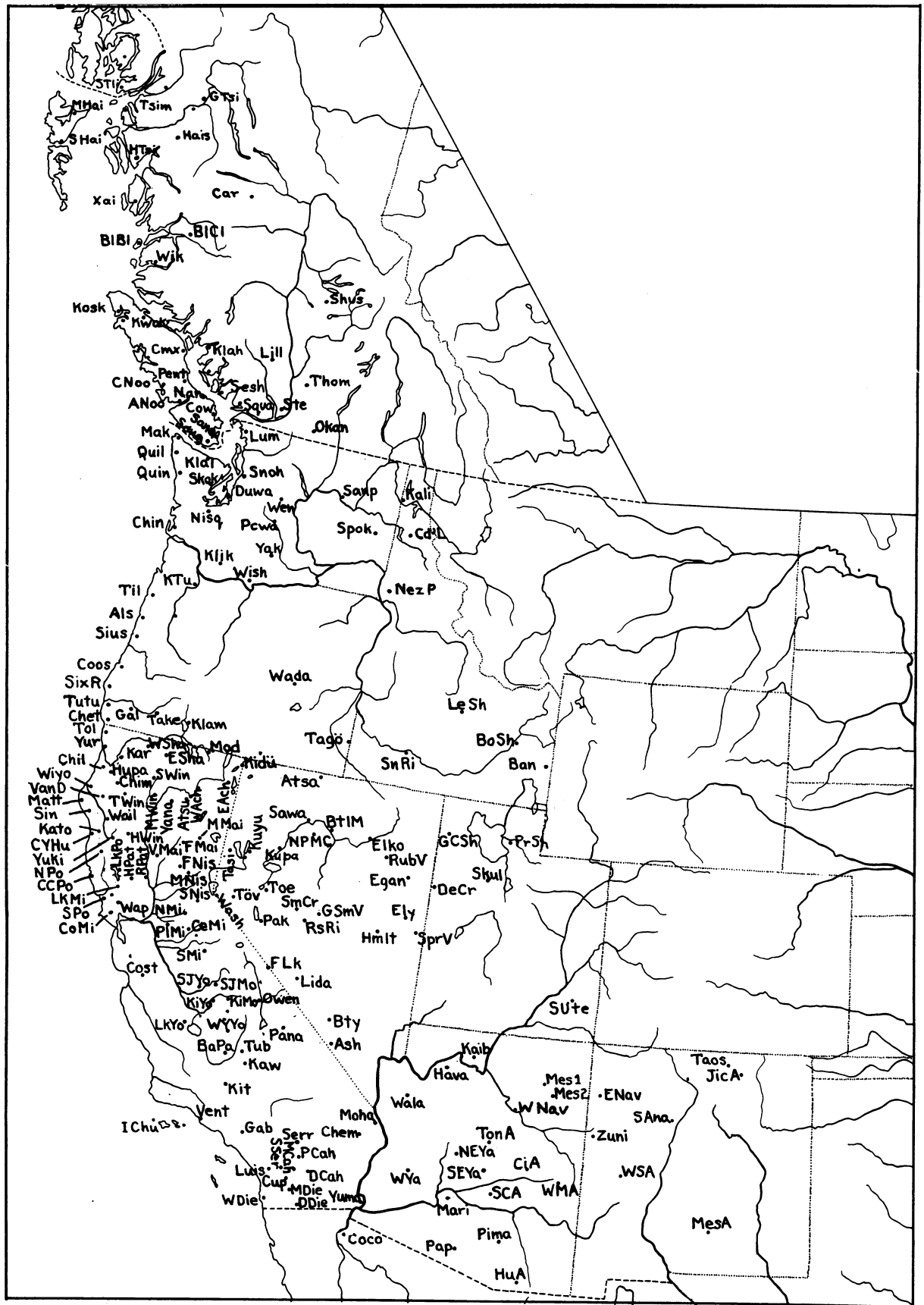

Map 1. Tribal localities. (For full rendering of tribal names see section, "Tribal Abbreviations," Appendix 2.)

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MANUFACTURED IN THE UNITED STATES OF AMERICA

CONTENTS

Page

Introduction 21

Part I. Ethnography

Girls' puberty patterns 25
North Pacific Coast area 25
Northern California area 27
Athabascan Southwest area 32
Southern California area 34
Discussion of other areas 37
Girls' puberty trait-complexes 38
Correlations with geographical environment 52
Correlations with language 53
Native explanations of observances 54
Physiological and psychological aspects 56
Historical facts 59
Historical speculations 59
Summary 62

Part II. Statistics

Statistical methods 63
Reliability and validity of data 69
Comparability of data 76
Inferred absences 77
Residual distributions 78
Geographical distributions of native rationalizations 78

Appendices
1. Basic list of elements 81
2. Tribal abbreviations 84
3. Bibliography by tribes 86
4. Bibliography by authors 88

TABLES

1. Relation of girls' puberty to ritual situations in Northeastern California 30
2. Correlations of puberty with language 53
3. Distribution of native rationalizations 54
4. Historical speculations 60
5. Correlations (r_{hk}) within trait pools 64
6. Correlations (r_{hk}) within tribal pools 65
7. Standard error of r_{hk} for symmetrical distributions 69
8. Reliability coefficients (r_{hk}) of elements 71
9. Reliability coefficients (r_{hk}) of tribal inventories 73
10. Validity of tribal inventories 74
11. Correlations (r_{hk}) among trait pools and individual traits . . . . . .at end
12. Correlations (r_{hk}) among tribal pools and individual tribes . . . . . .at end
13. Geographical distributions used in statistics . . . . . .at end
14. Incomplete geographical distributions . . . . . .at end

MAPS

1. Tribal localities . . . . . .[frontispiece]
2. Girls' puberty areas 24
3. Ceremonial numbers 39
4. Place of seclusion 40
5. Posture in seclusion 41
6. Food taboos 42

CONTENTS (Continued)

Page

7. Drink taboos 43
8. Running 44
9. Working at time of menstruation 45
10. Bathing at time of menstruation 46
11. Public recognition: repetition 47
12. Public recognition: number of girls 48
13. Public recognition: girl dances 49
14. Rattles 50
15. Reliability coefficients (r_{hk}) of tribal inventories 72

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INTRODUCTION

The present comparative study deals with girls' puberty rites among nearly all the tribes for which culture-element data have been recently collected (see Kroeber, 1939).[1] Besides, all previously published ethnographical literature available was used. Part I is written for ethnologists in general, Part II for specialists in statistics or their application to ethnology. The author has been more interested in methodology and in evaluating the culture-element-survey data than in girls' puberty rites per se. In fact Professor Kroeber was the one who suggested girls' puberty rites for a possible topic of investigation.

One legitimate question often asked is: How much has the culture-element survey increased the amount of comparative data in western North America? In order to answer this for the subject under discussion each source was kept separate in the original distribution tables (tables 13, 14). When these tables finally were as complete as the source material permitted, a count was made of the entries from essay-type sources, including unpublished essay-type manuscripts, and then, for comparison a count was made of the total entries. The following was the result:

	Essay-type sources	Total sources
Positive evidence (+)....	3538	8707
Negative evidence (-)....	4295	18488
Total evidence	7833	27196

The total evidence now available is about three and one-half times as great as the evidence from essay sources alone. (It is important to remember that this figure is computed from only about three-fourths of the culture-element material. All field work had not been completed when this count was made. Probably all data available at the time this paper goes to press would yield a ratio of at least four to one.) The culture-element data overlap the essay data to a great extent so that the total amount of the former is nearer the grand total than the difference between it and essay sources. The greater difference is in negative evidence.

Much more space has been given to pure description than in most previous statistically conscious studies. The purpose is twofold: to give a detailed idea of the main types of areal differentiation, and to present each individual trait in a context so that anyone can understand clearly the meaning of the captions in the distribution tables.

At the suggestion of Kroeber I spent about a month working only with culture-element data. The purpose was to see whether these data could be used satisfactorily without reference to essay sources. It proved not possible. The culture-element data on this topic were too uneven. For example, those from the Pomo area were so abbreviated and consisted so largely of widespread traits, such as the meat taboo and the scratching stick, that comparisons with other areas showed only very high correlations. The lack of sufficient negative evidence made it impossible to demonstrate any marked differences with other areas. To a lesser extent such inadequacies were apparent from other areas where the element data on girls' puberty were scant, the Southern Sierra Nevada area worked by me. I finally set up criteria for inferring absences (given in Part II) and applied them to essay and element-list sources alike. The real issue here is not whether element-list sources are better or worse than essay sources for a single topic or generally, but whether or not one wishes to neglect part of the primary source material.

Because the present author has had at his disposal several times as many data as anyone who has previously written on girls' puberty in western North America, it would seem pedantic to criticize these earlier works in detail. Therefore only brief discussion of them, in chronological order, will be attempted.

Kroeber[2] in three early publications of his tabulated trait distributions for girls' puberty in California, and constructed maps and chronological schemes for this and related religious ceremonies. Later[3] he reviewed the Kuksu Cult system and its relation to male initiations in other parts of North America. In his three early works, girls' adolescence rites are attributed to

[1]The University of California project of the Works Progress Administration Official Project No. 665-08-3-30, Unit A-15 has contributed heavily to the computing, graph drafting, and typewriting of this study.

[2]1922, 311-314; 1923, 300-301; 1925, 861-865.

[3]1932, 391-420.

the earliest cultural stratum in western North America and boys' rites to later periods; in his later work, boys' rites in Central California, Southern California, Lower California, and the Pueblo Southwest are thought to have a common origin presumably at an early date because of the great amount of specific differentiation in historic times. In discussing girls' puberty rites, Kroeber did not draw a sharp distinction between private observances and highly publicized ones. I therefore agree with him to the extent that a number of girls' puberty traits seem to be very old, but disagree to the extent of believing that public recognition is late in most areas. We concur on the fundamentals of boys' rites, although my placing them in the second earliest period and my postulating from them the development of certain girls' rites is new.

Lowie[4] has pointed out that the Great Basin shares with California a considerable stress on girls' puberty observances in contrast to the Plains and Eastern Woodland where such customs are fewer and less important in the native mind. He also points out that Northern California has more in common with Basin Shoshoneans than Southern California in spite of the linguistic affinity of the two latter areas. This fact is partly substantiated by the present data, but the emphasis I have given the public aspect makes the major line of cleavage run north and south. The Basin and Plateau become a unit in contrast to either the North Pacific Coast or Northern California. Lowie suggests historic unity as an explanation of continuous distributions of a few traits, but he does not present an inclusive historical scheme. In a recent paper,[5] he explains that the wide distribution of the head scratcher is due to its probable association with an "extremely early layer of American culture." This is completely in accord with my opinion.

Loeb,[6] who was primarily concerned with boys' rites, believes that certain features of both boys' and girls' rites are very old and that public group initiations of girls are in some instances derived from boys' initiations. These beliefs agree with my general ideas. I do not follow him in detail, however.

Spier[7] has cited distributions over most of North America, especially west of the Rockies, from extant published literature. He was the first to show that tribes east of the Rockies do not have a public ceremony for a pubescent girl. Public rites west of the Rockies he divided into four types, which correspond rather closely to those of the present paper: 1, Northwest Coast; 2, Northern California and Oregon; 3, Central and Southern California; 4, Non-Pueblo Southwest. The chief difference is that he groups Central California with Southern California whereas I have grouped it with Northern California. As is characteristic of him, Spier was reticent about drawing historical inferences, but he does admit diffusion within restricted areas such as the four mentioned above. His one interareal clue to diffusion concerned the dance routines of the White Mountain Apache and Pima, which are "suspiciously like those of Northern California and Oregon." This hunch has been amply borne out by the present fuller data.

Cora Du Bois,[8] in an unpublished Ph.D. thesis in the University of California Library, did a more thorough job both extensively and intensively than any of her predecessors. She confirmed Spier's statement that tribes east of the Rockies have no definite publicization of girls' puberty. She followed Spier in grouping public rites of the west into four types, but joined Central California with Northern California instead of with Southern. She cited a number of distributions over all of North America but mostly for widespread traits with Old World analogues. For this reason her areal types cannot be derived empirically from her distributed evidence. They are intuitive, as with others previously offered. Du Bois was extremely chary about drawing historical inferences; she expressed doubt about there being any demonstrable historical relation between boys' and girls' rites. Similarly, in a chapter on physiological and psychological considerations, she concludes that there are no proven innate reactions by either males or females toward menstruation. In spite of the dearth of conclusions in her paper, I found it the most helpful single source and I developed the habit of checking my work against it for ideas as well as for bibliography.

Although I believe that the more rigid method I have used has contributed to the more definite results I have achieved, I admit that the additional material available to me was the chief factor. In other words, if I had to choose between new data and old method versus old data and new method I would choose the former for this puberty study.

I am grateful to a number of persons for assistance in the preparation of specific parts of this paper: Professor E.W. Gifford, Professor N.W. Shock, Dr. Philip Drucker, Dr. Homer Barnett, Dr. Omer Stewart, and Dr. Demitri Shimkin. I wish to thank the following persons for the loan of unpublished manuscripts: Dr. Bernard Aginsky, Dr. Homer Barnett, Dr. George Devereux, Dr. Philip Drucker, Mr. Frank Essene, Professor E.W. Gifford, Mr. Walter Goldschmidt, Dr. Erna Gunther, Dr. A.M. Halpern, Dr. John P. Harrington, Dr. Melville

[4] 1923, 145-147.

[5] 1936, 314-315.

[6] 1929, 285; 1931, 517.

[7] 1930, 314-325.

[8] 1932.

Jacobs, Dr. Isabel Kelly, Dr. Philleo Nash, Mrs. Gladys Nomland, Professor Ronald Olson, Professor M.E. Opler, Dr. Verne Ray, Dr. Julian Steward, Dr. Omer Stewart, Mrs. Erminie Voegelin. I am also indebted to Mrs. Gwendoline Block, Editorial Assistant in Anthropology, for the arrangement of the paper in its present form.

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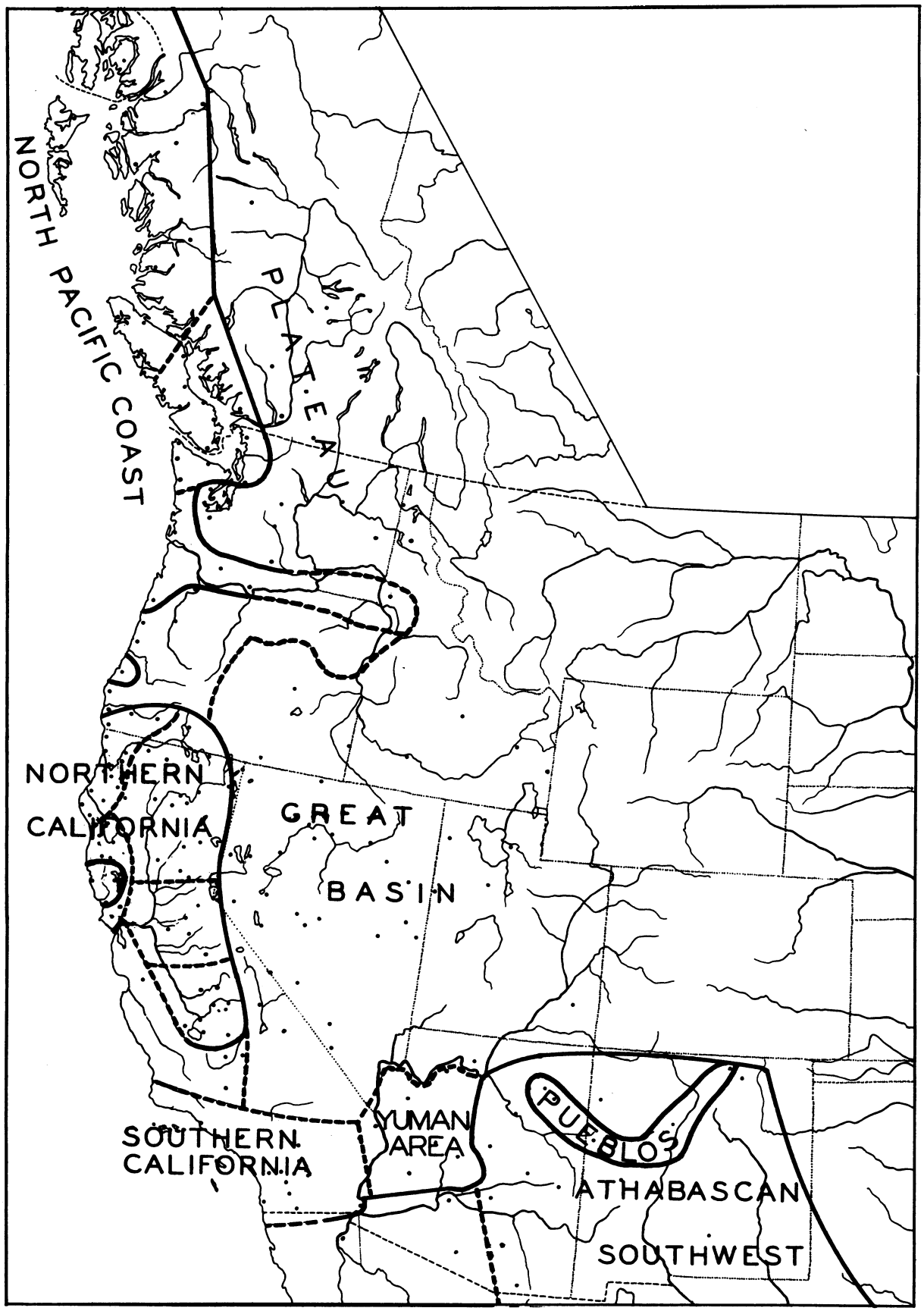

Map 2. Girls' puberty areas.

PART I. ETHNOGRAPHY

GIRLS' PUBERTY PATTERNS

This section consists of a series of sketches of girls' puberty rites in the areas shown in map 2. Four sketches are divided into two parts each: description and discussion; the rest consist only of discussion.

The purpose of the descriptions is to provide the reader with a convenient yet detailed picture of several patterns in order to preserve some of the integration of the elements as they occur in native cultures and also to give some idea of the enormous content of these rites. A trait list cannot do this. Because no two puberty rites are exactly alike, these descriptions are composite pictures to which no single tribe actually conforms. The other alternative would be to choose a typical tribe from each area and describe it in full exactly as in the primary source material. I have selected the composite sketch because the available information on single tribes is usually inadequate, probably in some instances not containing information on half the actual variants present. Unless otherwise stated, all features occurring in or reported for a single locality are localized in footnotes.

The part labeled discussion points out the distinctive features of each pattern, its typological relation to others in western North America, its relation to other rituals in the same area, and the social prominence of the puberty rite in the culture as a whole.

Tables 13 and 14 should be consulted for specific distributions.

North Pacific Coast Area

Description of the Middle North Pacific Coast rite.--The following is limited to the region around the Gulf of Georgia, Puget Sound, and the Straits of Juan de Fuca, as indicated on map 2. At first menstruation a girl is secluded continuously, day and night, from four to sixteen days behind a screen or in a wooden cubicle in the rear or corner of the plank dwelling house. The wooden cubicle is usually above the bed platform.[9] As elsewhere, this primary strict period of seclusion is usually followed by a longer and freer period of from several months to a year. While confined the girl is attended by an older female relative, an unrelated woman, or a group of women singers who may or may not be related. In any event the attendants are paid for their services, usually by being given the girl's clothes or the products of her weaving during seclusion. She sits facing the east day and night without sleep for the first few days, or if allowed to lie down must keep her legs bent lest she become pot-bellied.[10] While sitting, one tribe,[11] at least, requires her to keep her arms folded; and another[12] demands erect posture lest she become round-shouldered. The cubicle or screened-off part of the house is often kept dark because the rays of the sun are thought to cause weak eyes. The girl also avoids the house fire for the same reason or for fear of premature old age.[13]

She fasts completely for the first four days and later avoids fresh meat and fish lest she grow old quickly, spoil the luck of hunters and fishermen, or become a glutton.[14] She may eat dried fish, however. She must not eat berries lest the Thunderbird send a storm with thunder and lightning,[15] or cross a berry patch lest it become barren.[16] She must not take hot food or drink of any kind lest her teeth decay and fall out. She eats only at specified times, such as after each singing performance, after the others in the house have eaten, or before sunup and sunset. She uses special receptacles, which afterward are either destroyed or given to the women attendants, and she drinks through a bone tube or from a separate cup or both. After each meal her mouth is wiped with goat wool or with bark.

She may scratch herself only with a carved wooden comb, a stick, a piece of bone, or a yew wedge provided for the purpose. Touching the hair would cause baldness, and the face, wrinkles.

She wears a headband of mt. goat wool, cedar bark, or dentalium-decorated hide;[17] and bands of the same bark or wool on her ankles, wrists, and chest. These bands are hung on a bush at the conclusion of the seclusion. Sometimes she is naked except for these articles, but more often she wears a cedar-bark skirt and a wool blanket decorated usually with red paint. Her face, and in at least one case her body,[18] is painted red; and her eyebrows are trimmed, and blackened with charcoal. The hairline on her forehead is also plucked back. Her hair is dressed in two braids daily by an attendant; sometimes the braids hang full length with weights on the ends to make the hair grow long, sometimes (in other localities) they are rolled up to form two knobs on the sides of the head and tied with wool or bark cord. The part in the hair is painted red. Her head is covered, especially

[9] Even small girls of the better families were secluded much of the time, according to Barnett. The white skin which resulted from lack of sunshine, and the general delicateness of physique brought prestige. Thorstein Veblen's theory of the leisure class fits the situation exactly.

[10] Quinault.

[11] Alberni Nootka.

[12] Lummi.

[13] Quinault.

[14] Seshelt.

[15] Quinault.

[16] Lummi.

[17] Alberni Nootka.

[18] Lummi.

when going outside, with a basket hat, blanket, or bark cape[19] lest her hair come out,[20] the rays of the sun or moon shine upon her, or she see or be seen by people. If a hunter sees her he loses his luck.

During seclusion, except for the first few days among some tribes, she occupies herself in spinning and weaving, and, in one occurrence,[21] uselessly picks conifer needles from branches.

Among the Cowichan, the young man who wishes to marry the girl enters the house and sits beside her, sharing her fast and silence, and at the end of seclusion the couple are married.

The Nanaimo and Makah suitor might participate in singing or dancing but it is uncertain whether he observed similar restrictions or married the girl at once.

The girl bathes daily, or every few days, indoors or in a stream, but always in fresh water because salt water spoils the skin.[22] She scrubs herself with conifer branches or a bark towel[23] for the health of her skin. Using the bark towel instead of touching her hands to her face prevents premature wrinkles.[24] When not kept awake continually she still sleeps little in order to toughen herself to hardships[25] and to insure a long life.[26]

For the Klallam alone it is reported that the girl keeps track of the number of days in seclusion by tying a knot for each day in a string.

At the end of the period of seclusion she is bathed, her wrists and legs are tattooed, and she is dressed in woman's style for the feast or potlatch that may follow. The bathing is part of the public ceremony and will be described below.

There is considerable variation in regard to public recognition. These ceremonies are always sponsored and conducted by an older male relative of the girl, usually her father. The Alberni Nootka have three distinct ceremonies: (1) the ceremony given at the end of first menstruation; (2) the main potlatch, sometimes given at the same time as the ceremony of (1) but more often a month or so later; (3) the ceremony at the end of the period of taboo a few months to a year after puberty. A potlatch was certainly not given for all girls, but was limited to those of the more wealthy families. The following two paragraphs give a composite description of a type performance.

Each night of the first four days of seclusion, a group of paid women, and sometimes men also, sing over the girl to the accompaniment of sticks beaten against planks. Some of the songs are privately owned, inherited, and only sung by the owners. Others are sexually obscene, satirical, and improvised for the occasion.

On the fourth and last day of this primary short period of seclusion a purification ceremony for the girl is held. There is great variation in detail because the purifying group, which is called "washers" colloquially, is an hereditary group. Each family has specifically different songs, regalia, and dances. The same type of purification ceremony is also performed at birth, death, and other events, by the Salish at least.

Two examples of the purification follow below:

Alberni Nootka.--The torchbearers line up abreast outside the house facing the stream, with the girl standing in the center. There are as many torches as there are months of restriction to follow for the girl. Some of the performers wear costumes with masks representing animals or spirits such as the Thunderbird. These men dance while a few others go to the stream and get water and pour it on the girl or at her feet. This is repeated four times and the ceremony ends.

Lummi.--The first event is a race to get the stones used in warming the water for the girl's bath and the ferns with which to scrub her body. Certain young men race a distance of about one hundred yards, pick up the stones and ferns, and race back to the starting point. While the stones are being heated in the fire the attending women sing to the rhythm of stick-beating on planks and hollow wood rattles. After the stones are sufficiently hot, four performers dance toward them and back again three times, and on the fourth time they seize the stones with tongs and place them in baskets of water. The singing and dancing continues as the girl is bathed. The girl's hair is combed and she is dressed as described on page 25.

This ends the true puberty ceremony, but later a potlatch is given for the girl. It is similar to other potlatches and need not be discussed here other than to say that the guests usually are not obligated to return later the equivalent of the property received from the host, certainly not with 100 per cent interest.

Discussion of the Middle North Pacific Coast rite.--The purification ceremonies described are peculiar to this area, but the great emphasis on social prestige in the potlatch is the outstanding characteristic. The puberty potlatch is the girl's social debut, and its tone and ostentation are correlated with the rank of her family, the rank of her future husband, and the amount of the bride price. Compared to other potlatches, that for a girl's puberty is not a large and pretentious affair, and compared to winter shamanistic ceremonies, it is still less important as a social gathering.

The restrictions imposed upon the girl are shared by many other facets of the culture, as shown in Northeastern California area.[27] The

[19] Nootka.
[20] Nootka.
[21] Seshelt.
[22] Klallam.
[23] Songish.
[24] Quinault.
[25] Klallam.
[26] Alberni Nootka.
[27] Table 1.

masked dancers and "washers" perform in other potlatches and in secret-society ceremonies and crisis rites. There is certainly no trait of any importance that is associated exclusively with girls' puberty.

Discussion of the Northern North Pacific Coast rite.--There are a number of traits lacking here which occur immediately to the south. These can be found in tables 13 and 14. Two of the most important are the Sängerfest over the girl during seclusion and the purification ceremony at the end. There does not seem to be a single element that is present here but absent in the Middle North Pacific Coast. A potlatch is given for the girl but it is not outstanding as potlatches go. On the whole, girls' puberty is less emphasized in this area than in the Middle North Pacific Coast.

Northern California Area

Northern California is occupied by many diverse local groups; their puberty observances shade off from tribe to tribe in a tantalizing manner, making a single description of the whole difficult. Therefore I describe in detail only the Northeastern sector. However, there follows a discussion of the entire Northern California area. In general, puberty rites are most rigidly observed and most highly publicized in the north, gradually thinning out southward to the minimum of ritual expression in the southern San Joaquin Valley.

Description of Northeastern California rite.--This sketch is limited to the Northeastern sector, which includes the Klamath, Modoc, Shasta, Wintu, Atsugewi, Achomawi, Maidu, and Nisenan (see map 2). At first menstruation a girl is secluded alone in a menstrual hut for from three days to a year, most commonly for from five to ten days. Less frequently she goes to an isolated place outdoors or runs and walks almost continually. She sits or lies as she likes on a bed of mats or pine needles. When reclining she usually lies on her side facing east because the dead go to the west and it would be bad luck to face in their direction. She is attended by her mother or an older kinswoman, such as a grandmother. Such services are usually given without pay but sometimes the girl digs roots for, or gives beads, clothing, or a basket to the attendant. Sometimes there are two or more attendants who apparently relieve each other.

The girl eats sparingly for a period of from three days to three years, most commonly for a period of from five to ten days. Her meals are limited to two daily, after sunrise and before sunset. Meat of all kinds, including dried fish, is forbidden lest she ruin the luck or health of the hunter or fisherman who caught the game, or deer hair grow in her stomach from eating fresh venison,[28] or her teeth fall out,[29] or she get consumption.[30] Hot food is forbidden for fear of losing her teeth.[31] She must avoid cold water;[32] she must not drink from or cross a stream where salmon abound for fear of spoiling fishing. She eats and drinks inside the menstrual hut from separate baskets alone or with the attendant. In some instances the attendant feeds her acorn mush with a forked stick, holds the basket of water to her lips to drink, and, after the meal, cleans her teeth with a twig and wipes her mouth with a towel of shredded bark, grass, or buckskin. The girl chews on pine gum, kinnikinnick leaves or berries, or sunflower roots. Aromatic-plant products are sometimes stuffed in her nostrils to prevent her smelling meat that is cooking, tobacco smoke,[33] or perspiration from her armpits.[34] Charcoal is likewise put in her ears to prevent bad dreams.

She sleeps little, apparently to avoid bad dreams, but if they occur she must tell a special doctor, who gives her counter treatment. She talks little and softly, lest she become garrulous,[35] and must not laugh aloud for fear of showing her teeth.[36] She avoids men, especially hunters, but old women may visit her. They instruct her in housekeeping and in conduct befitting a woman.

She must not gaze at fire, or at the sun lest her eyes become weak or she see an evil spirit,[37] or at the moon lest it rain,[38] or at wild crops lest they fail.

She uses a bone or wood scratcher lest her fingers cause her hair to turn gray or her face to wrinkle.[39] She is deloused by the attendant.

Especially when outside she covers her head with a basket hat, hopper basket, carrying basket, feather visor, or deer hide. She also sleeps with a basket hopper or carrying basket over her head. She wears a braided-bark headband, and anklets, wristlets and belt of the same material or sometimes of buckskin. Her main article of clothing is an old skirt of buckskin, bark, tule, or grass. Moccasins are worn as preferred, especially in the north. For a menstrual napkin she uses a pad of buckskin or shredded bark.

---

[28] West Achomawi.

[29] Atsugewi.

[30] Wintu.

[31] Klamath.

[32] This apparent contradiction is resolved by the fact that "hot" seems to have meant sufficiently hot to burn the mouth or make the teeth ache. Warm food was apparently permitted.

[33] Atsugewi.

[34] Atsugewi.

[35] Modoc.

[36] McCloud Wintu.

[37] Trinity Wintu.

[38] Atsugewi.

[39] Klamath.

Her hair is dressed by the attendant, only on the first day in the north, daily in the south. Coiffures varied: two braids in front of the shoulders, one braid down the back, or two clubs in front of the shoulders. The attendant paints red and black lines[40] and dots on the girl's face.

During the period of seclusion she is generally forbidden to prepare food or make baskets lest her hand become paralyzed[41] or she become a poor basket maker.[42] Among the more southern tribes she does not work at all, but the more northern tribes require her to work during the period of seclusion lest in the future she be lazy.[43] She gathers wood, carries water, and digs roots. She runs or races daily, or once at the end of the rite, either to develop strength of body[44] or to catch a "shadow" and gain supernatural power.[45, 46]

At the end of menstruation or the period of seclusion[47] she bathes indoors or in a stream, alone or with the help of the attendant. Among the Klamath, Modoc, and East Shasta, she takes a vapor sweat bath and plunges into a stream. After the bath she dons new clothing, and either saves the old clothes for future menses or disposes of them by burning, throwing away, giving away, or trading for the new garments. The bands around limbs and body are kept, burned, or hung on a tree.

Beginning the first night of menstruation a public dance is held to keep the girl awake and prevent her from having dreams of the dead or of thunder and lightning that later may strike her.[48] The Achomawi alone say the dance is given so that the girl will get power from her dreams. It is theoretically given for all girls, although the wealth of the family must have determined the pretentiousness and duration of the ceremony. It lasts for from three to twelve nights, most commonly for five, and the majority of tribes repeat the performance in progressively attenuated form at the next several menstruations. The singing and dancing usually takes place outdoors, but in a minority of instances are held indoors, especially in winter. The ceremony is sponsored by the girl's family, the actual direction being in the hands of male relatives, singers, or shamans. The girl's sisters or friends carry the news to everyone in the community and to neighboring localities as well. Youths and maidens, men and women all attend and join together in the singing, dancing, and feasting.

The dance routines vary in detail but are fundamentally of two types: a circular arrangement with dancers facing inward, holding hands and moving around first in one direction and then in the other; a linear formation with the dancers abreast facing east away from the fire, holding hands or locking arms and moving forward and backward or from side to side. In the north the menstruating girl dances alone or with the support of one or two persons of either sex when tired; in the south as a member of the circular or linear group. When she dances alone it is usually in the center of the circle, or in front of the line of dancers. She faces east continually with her back to the fire. The dancing either stops at midnight when the entire assemblage is feasted, or continues after the feast until dawn when the girl runs east with a deerhoof rattle in her hand. The dance always lasts all night on the final night.

The costumes of male dancers consist of eagle-down plumes, fur or woodpecker-scalp or yellow-hammer headbands, head nets, bead necklaces, and red and white face paint. Women wear basket caps, yellowhammer headbands, flower crowns; some carry branches in the hands; their faces are painted red. The girl wears the clothing already described (p. 27).

The chief musical instrument is the deerhoof rattle used either by the singers or the girl or both; only one tribe[49] reports a multiple-split-stick rattle, apparently of Hupa type, two others beat sticks against planks, and another two blow whistles. Songs seem to refer mainly to sex and love, each sex singing about the opposite sex, and the singing is punctuated with obscene jokes. The ceremony begins with an evening song and ends with a morning song, the purpose of which is to ward off the ghosts of the dead that are likely to harm the girl. Everyone joins in some songs; other songs are sung or led by professionals of both sexes who receive pay;[50] still others are sung by women only.

In the day minor dances, in which the girl usually participates, are held. These are most frequently given outdoors, by women alone, and last a few hours at most.

The East Achomawi and Sacramento Wintu, at least, require the girl's betrothed to observe the same food restrictions, run alone each morning, bathe daily, use a scratching stick, and run

[40] Solid black for the Klamath.

[41] Atsugewi.

[42] West Achomawi.

[43] Klamath.

[44] Atsugewi.

[45] Atsugewi.

[46] West Achomawi.

[47] Where seclusion of some kind is said to last a year or more she probably bathes after each menstruation or at the end of theoretical short periods of about five days.

[48] This is the native rationalization. Since one or two persons would be a sufficient number to keep the girl awake, the more real motive is obviously a social one.

[49] McCloud Wintu.

[50] A horse, blanket, or beads for the Klamath.

errands during the day. He dances with the girl at night.

Sexual license is condoned by a few tribes on the final night of the dance.

Discussion of Northern California rite.--Ideologically, the most unique trait is the great fear that ghosts of the dead will harm the girl. The Foothill Nisenan believed a big "buzzard" may try to carry the girl (her soul?) up to the sky. The Sacramento Wintu passed the girl through the fire to burn off the evil effects of bad dreams. Dixon's reference to the burning of the girl alive by the Shasta and to the requirement by one of the Maidu groups that the girl run out of a circle of fire certainly refers to the same practice and belief. That the harm inflicted on the girl is the theft of her soul is substantiated by the belief of the Shasta, Achomawi, and Wintu, at least, that if a person dreams of a whirlwind his soul will be taken away. The whirlwind, of course, is thought to contain a ghost. This is most likely to happen to mourners, menstruants, and women in labor.

In great contrast to this feeling of fear of ghosts on the part of the girl and her family is the spirit of merriment enjoyed by the crowd. For example, the West Shasta state that it is the "most popular and well attended of all the dances."[51] In fact the puberty dance was the most important social gathering of several tribes. It seems to have been of definitely secondary position only in Northwestern California and in the Kuksu area of Central California.[52] The white deerskin and jump dances of the Karok and Hupa[53] were the biggest social occasions of those tribes, each lasting eight or ten days and being attended by neighboring tribes. Among the Maidu, Miwok, Patwin, and Pomo, the Kuksu cycle, the central core of which was male initiations, was the dominant ceremonial pattern. It included a number of social ("common") dances, in which women as well as men participated.

Even in absolute terms, the Northern California puberty rite was a large affair. Not only did some of the dances last ten days, but they were repeated, usually in progressively attenuating form, on as many as five subsequent menstruations. The Hill (Central) Wintun state that the first dance continued a solid month. Judging by the fact that they were usually held outdoors, and that in Northwestern California the side boards of the dwelling were removed so the crowd could see the performance inside, these ceremonies were also well attended.

It may be pointed out further that purely social gatherings were held over much of Northern California for no other reason than pleasure. They were most frequently given during the season of plenty, summer or fall, often when communal food-getting or trade drew together a larger number of people than would otherwise congregate at one locality. The most common form of social dance was the round dance, exactly as described for girls' puberty. From the average participant's point of view, the puberty rite was little more than a social "big time."

There are no traits listed in the distribution tables that are present for the majority of Northern California tribes and absent elsewhere. Northern California specialties are of more localized occurrence.

It is perhaps worth noting that the maximum duration of restrictions is greater than any area except the North Pacific Coast and the Plateau.

Discussion of Northwestern California versus Northeastern California rites.--There are a number of traits mainly of North-Pacific Coast and Plateau provenience which occur more often in Northwestern than in Northeastern California:

18. Seclusion in dwelling, screened-off or separate room.
23. Girl must sit or squat in seclusion.
40. Complete fast.
50. Some dried meat or fish permitted.
70. Girl's hair cut.
134, 135, 136. Girl must bathe daily in stream during menstruation.

It may be significant that these all refer to the individual treatment or behavior of the girl, not to public aspects of the rite, and that they occur in both the North Pacific Coast and the Plateau areas.

Predominantly North Pacific Coast and Plateau traits that appear more often in Northeastern than in Northwestern California are fewer:

145. Vision quest at time of actual menstruation.
198. Hoof rattle.

These two items are mainly Plateau rather than North Pacific Coast, as would be expected.

At first blush there would seem to be considerable similarity between training of female shamans and girls' puberty rites in Northwestern California. But "doctor-making" dances for female

[51] Voegelin, MS.

[52] The Yokuts-Mono area is hardly in Northern California. It is discussed below.

[53] The Yurok and most of the Wiyot had no puberty dance of any kind and technically they fall outside what I have labeled the Northwestern California puberty pattern. As is well known, the white deerskin dance is a world-renewal ceremony, more literally a purification rite for the world. According to Walter Goldschmidt, among the Hupa the chief thing that contaminates the world is menstrual blood. This belief in the contaminating influence of menstrual blood is a fundamental concept running through much of Hupa religion, and it is probably more common among other Indian tribes than is generally known.

TABLE 1

Relation of Girls' Puberty Traits to Ritual Situations in Northeastern California†
(+, present for 2 or more tribes; *+, present or reported for only 1 tribe;
-, absent for all tribes.)

Girls' puberty traits	Ritual situations in N. California											
	Girls' puberty	General menstruation	Child at birth	Mother at birth	Father at birth	Undertaker(s) at death	Relatives at death	Mourning ceremony	Vision quest	Shaman acquiring power	Shaman curing	War
1. Ceremonial number 3 or multiple of 3	+			+			+			*+		
2. Ceremonial number 3	+						+			*+		
3. Ceremonial number 6	+						+					
4. Ceremonial number 4 or multiple of 4	+					+	-			*+		
5. Ceremonial number 4	+					+	-					
8. Ceremonial number 5 or multiple of 5	+	+	+	+	+	+	+	+	+	+	+	*+
9. Ceremonial number 5	+	+	+	+	+	+	+	+	+	*+	*+	
10. Ceremonial number 10	+			-		-	+		-	*+	*+	
12. Seclusion or isolation	+	+		+	+		+		+	+		+
17. Seclusion in dwelling	+	+		+	+		+		-	-		-
19. Seclusion in separate hut	+	+		+	+				-	-		-
22. Seclusion outdoors, no enclosure	+			-	-				+	+		+
23. Sitting or squatting in seclusion	+											
24. Lying in seclusion	+			+	-							
27. Lying on heated spot	+			+	-							
28. Lying in definite pit	+			-	-							
30. Hot stone on belly				+	-							
31. Principal massaged	-		+	+								
32. Attendant or proctor	+	+		+								
33. Attendant kinswoman	+			+								
36. Attendant a professional woman, normally not kin	+			+								
37. Attendant paid or given gifts	+			+								
39. Restriction on food	+	+		+	+	+	+		+	+	+	+
40. Complete fast	-	-		-	-				+	+		
41. Separate eating or drinking receptacles	+	+		+	+	+						
42. Eating alone or with other restricted persons	+	+		+	+	+						
43. Hot food taboo	+										*+	+
49. Meat taboo	+	+		+	+	+	+		+	+		+
52. Berries taboo	+											
53. Salt taboo	+	+		+	+				+	*+		
54. Restriction on drinking water	+	+		+	*+		*+			*+		
55. Cold water taboo	+	+		+	*+		*+					
56. Water as such taboo	+			-					+			
57. Drinking tube	*+			-	-							
60. Scratching or touching self with hands taboo	+	+		+	+	+	+		+			+
61. Scratcher	+	+		+	+		+		+			+
67. Towel for face	+						+					
70. Principal's hair cut	-		*+				+					
72. Hair dressed by attendant	+											
74. Delousing rite	+											
77. Head or eyes covered	+	-					+			*+		
84. Gazing at people taboo	+											
85. Gazing at sun, moon, sky taboo	+	+										
86. Gazing at wild crops taboo	+											
87. Avoidance of fire	+	+							-	-		
89. Avoidance of men	+			+								
91. Avoidance of hunters and fishermen	+	+										
92. Avoidance of gamblers	+											
93. Avoidance of the sick		+										

†Traits taken from basic list (Appendix 1). The sources for this table are: Dixon, 1905, 1907; Du Bois, 1935; Spier, 1930a; Voegelin, MS. The area is shown on map 2.

Table 1 (Continued)

Girls' puberty traits	Ritual situations in N. California											
	Girls' puberty	General menstruation	Child at birth	Mother at birth	Father at birth	Undertaker(s) at death	Relatives at death	Mourning ceremony	Vision quest	Shaman acquiring power	Shaman curing	War
94. Headband worn	+						+*					+
95. Belt worn	+		+*	+	+		+				+*	
96. Bands worn around arms and legs	+						+			+*	+*	
97. Painting	+						+*			+	+	+
98. Red	+						+*			+*	+*	+
99. Black	+						+			+*	+*	+
100. White	+									+*		+
101. Face	+										+*	+
102. Limb or body	−										+*	+
108. Mutilation	+		+	−	−							
109. Tattooed	−		−	−	−							
110. Ears pierced	+		+	−	−				+	+*		
111. Nose pierced	−		−	−	−							
114. Restriction on sleep	+				+		+					+
115. Restriction on talking or laughing	+											
117. Running	+			+	+				+*	+*		
118. Running daily	+									+*		
120. Running early in morning	+											
121. Running east	+											
122. Racing or running with others	+											
124. Work in period of restrictions	+			+	+		+		+			
126. Wood carried	+			+	+		+		+			
127. Water carried	+											
128. Plant food gathered	+											
131. Weaving or spinning	−	−		−			+*					
132. Digging (often for roots)	+											
134. Bathing in period of restrictions	+	−		+	+	+			+	+		+
135. Daily	+	−				+			+			
136. In natural body of water	+	−		+	+				+	+		+
137. Sponge bath or warm water	−	−		+					−			
138. Bathing at end of restrictions	+	+		+	+	+	+	+		+		+
142. Vapor bath	+	+	+	+		+*	+*					+
144. Clothes changed at end of rite	+				+			+				
145. Vision quest	+				+		+		+	+		
146. Rock painting	+				+							
147. Name or new name given	−		+									
150. Scarification or bleeding	−					+	+		+	+		*+
151. Whistle used	+										+*	
152. East or dawn religiously significant	+										+*	
154. Public recognition	+	−	−	−	−	−	*+	+	−	+	−	+
165. In dwelling	+	−	−	−	−	−	−	+	−	+	−	−
169. Outdoors	+	−	−	−	−	−	*+	+	−	+	−	+
178. Singing	+	−	−	−	−	−	*+	+	−	+	−	+
186. Singers paid or given gifts	+	−	−	−	−	−	−		−		−	
187. Principal dances	+	−	−	*+	*+	−	−	−	−	+	+	
188. 1 or 2 persons support principal	+	−	−	−	−	−	−	−	−	+	−	
189. Group dancing	+	−	−	−	−	−	*+	+	−	+	−	+
190. Men dance	+	−	−	−	−	−	*+	+	−	+	−	+
191. Women dance	+	−	−	−	−	−	*+	+	−	+	−	+
192. Each sex separately	+	−	−	−	−	−	−		−		−	+
193. Both sexes together	+	−	−	−	−	−	*+	*+	−	+	−	+
195. Dancers in circle	+	−	−	−	−	−	*+	*+	−	*+	−	+
196. Dancers abreast in line	+	−	−	−	−	−	−		−		−	+
198. Hoof rattle	+	−	−	−	−	−	−				*+	
202. Split-stick rattle	+	−	−	−	−	−	−					
205. Cocoon rattle	−	−	−	−	−	−	−			+	+	
212. Feast for all	+	−	−	−	−	−	−	+	−	+	−	+
214. Sexual license	+	−	−	−	−	−	−		−		−	

shamans are distributed almost solidly across the northern quarter of California. The Northwestern California variety is somewhat unique merely because shamans in that area were almost all women. In general, training of female shamans is much more similar to other shamanistic routines than to girls' puberty rites.

The relation of first menstruation to other ritual routines in Northeastern California is shown in table 1. Traits totally absent in Northeastern California are not included in the table, and a few seemingly minor variants are eliminated in order to simplify the picture. The purpose is to give some idea of the amount of ritual content shared by a number of different cultural situations in a small area. If localized for each tribe, the number of traits shared by two or more cultural contexts, such as birth and death, would be less. Because negative evidence is rather scanty, and because the list includes only girls' puberty traits, it is impossible to decide exactly which topic is most similar to girls' puberty. But the obvious point is that a great number of elements are shared by three or four of the major topical divisions and a fair number by all five. If any traits are confined to girls' puberty alone, they must be insignificant or of local occurrence.

Discussion of the Kuksu area rite.--The girls' "school" of the North Pomo, North Yukians, and Kato is not actually a puberty rite because none of the girls were actually menstruating at the time it was in session. The majority seem to have been of prepuberty age. If a girl menstruated for the first time while attending the "school" she was taken home and subjected to the individual observances of the area. Normally, public recognition for one girl at a time in the form of singing, dancing, and feasting was the procedure. The "school" was really a form of group initiation. Informants never confuse it with puberty. I have included it in the puberty distribution schedules because it has important relations to Southern California girls' puberty rites, which were also initiations but differ in that one girl was supposed to be menstruating.

The close relation of the girls' to the boys' "school" of this same little area is obvious. Both sexes were subjected to the same food restrictions, confined lying down in the same permanent ceremonial house, used the scratching stick, covered the head when going outside, sometimes had their noses and ears pierced, were instructed in mythology and religion, songs, and morals by a chief or shaman, and witnessed the dancing of spirit impersonators.

In the rest of the Kuksu area, relations between boys' and girls' rites are loose. Only about half the tribes have any public recognition of girls' puberty, and the ceremony is held at the actual period of first menstruation, for one girl at a time, as in the rest of Northern California. Typologically, the true girls' puberty ceremony of the Kuksu area is much more similar to the girls' puberty ceremonies of the rest of Northern California than to boys' rites in the Kuksu area.

Although periodic mourning ceremonies occur among the Maidu, they are of shorter duration and apparently culturally less important than farther south. They are certainly of secondary or tertiary rank as social gatherings.

Discussion of Yokuts-Mono area rite.--Public recognition of girls' puberty occurred in attenuated form as far south as Tulare Lake and Tule River, where sometimes it amounted to no more than an informal feast for a few neighbors. The most important public gathering in this area is without doubt the periodic mourning ceremony, which lasted a week and was attended by neighboring tribes. There was also a bear ceremony in the fall, which lasted a week, a rattlesnake ceremony, of the same duration, in the spring, and Datura drinking also in the spring. These all dwarfed girls' puberty.

Because Datura drinking is superficially similar to girls' puberty rites and tribal initiations, it has theoretical significance and will be briefly described. Among most tribes it was an annual affair of only a few days' duration. A group of eight or ten young persons, eighteen or twenty years of age, took the drug together. They were of both sexes, but women and men were usually kept or housed in separate locations when going through the ceremony at the same time. The drinkers fasted from meat for a period of from one to six months before the drinking, and for six days after. The purpose, as in Southern California, was to get supernatural power while under the influence of the drug. The public did not participate by singing and dancing. This was not a puberty rite or tribal initiation because the participants were past puberty age, there was no compulsion in the matter, and their tribal status was not changed. Many persons never drank Datura. On the whole, the routine of the ceremony is more similar to the Datura drinking of males in Southern California than to any girls' puberty rite.

Athabascan Southwest Area

Description of Athabascan Southwest rite.[54]--At first menstruation a girl is confined in her family's dwelling most of the time for four days and nights. Her confinement is interrupted, however, by periods of ritual activity outdoors and dancing at night in a special structure. She is attended by an older woman chosen for her physical

[54] This account is most dependent on Opler's excellent descriptions of the Mescalero and Chiricahua. Most other Apache groups are very similar, but the Navaho differ on a number of points, some of which are cited.

strength, good fortune, and goodness of character. This woman, who may or may not be a relative of the girl, receives compensation for her services in the form of a gift such as a horse, buckskin, or buffalo robe. She instructs the girl in the proper conduct during menstruation, and in her future duties as a wife and head of a household; serves her food; dresses and grooms her for the public rite; instructs her in the routine and meaning of the ceremony; and performs certain ritual acts in the ceremony to be described later.

Restrictions on food and drink during the four days of the rite and sometimes for a few days after are limited. Only the Eastern Navaho, Jicarilla, and Tonto require abstention from meat, which the first-named group believes will cause the girl to be ugly and lazy. Salt is tabooed by the Eastern Navaho for the same reason, and also by the Apache.[55] The Tonto forbid the girl to eat warm food lest her hair come out. She may drink only through a cane or elderwood tube. Should her lips touch the surface of the water, a rainstorm would come and spoil the public celebration.[56]

She may scratch herself only with a wooden scratcher lest her nails scar her flesh[57] or her hair come out.[58] Her hair is combed by the attendant. She must not look at the sky lest it rain,[59] nor wash or come in contact with water for the same reason.[60] She must not laugh lest her face become prematurely wrinkled.[61] Apparently only the Eastern Navaho require her to cover her face, specifically with her hair. She sleeps little, participating in the public ceremony at night and working part of the day.

She wears three special articles of clothing: a buckskin belt; one or two eagle feathers in the hair; and a piece of haliotis hanging from a forelock. For the Mescalero, Lipan, and Chiricahua, at least, she wears a fancy buckskin costume generically of Plains type. Her face or limbs are painted red[62] and (or) white and her head marked with pollen. During the entire ceremony she impersonates a culture heroine in the hope that she will become as virtuous and successful.

Part of the day, particularly in the morning, the girl must work: grind corn; carry water and wood. This will make her strong and industrious throughout life.

A public ceremony, lasting from one to four days and nights, begins as soon after the first menstruation as arrangements can be made.[63] Ideologically it coincides with the time of actual menstruation. It was formerly performed for all girls, there being a separate ceremony for each.[64] At present it is the major social occasion of the Mescalero and Chiricahua. The relatives of the girl are hosts to all comers, providing food and entertainment for them. The entertainment consists of social dancing by both sexes and secular dancing[65] by masked men impersonating mountain-dwelling spirits at night, and of games and races in the daytime.

There are two principal ritual roles: a male shaman-singer, who directs the construction of the tipi-shaped structure in which the girl dances, and who sings to accompany her; a woman attendant, referred to above (p. 32). The singer is paid a horse or the equivalent for his services.

The entire ceremony is divided into two parts, a morning ceremony and a night ceremony. The morning ceremony is performed either on the first morning only, or on the first and fifth mornings; the night ceremony is given either on the first night only, or on every night, lasting all night on the fourth and final night. A description of these ceremonies follows.

Before sunrise on the morning of the first day the woman attendant dresses and grooms the girl and instructs her in menstrual taboos and conduct throughout the entire ceremony. Meanwhile the singer and helpers are erecting the tipi-shaped structure, which has a four-pole foundation, an entrance facing east, and a covering of brush. When this "tipi" is finished the girl and her attendant either go inside or kneel immediately in front on a buckskin and face each other. The attendant marks the girl's face with pollen and is marked similarly by the girl. A line composed of persons of both sexes and all ages, particularly the sick and the crippled, files past the girl to mark her and be marked by her in turn. This is supposed to cure and prevent infirmities. As soon as the painting ritual is finished, the girl lies prone on the buckskin and the attendant rubs and massages every part of her body to insure good health. The girl then rises and takes four slow steps in moccasin prints marked on a buckskin, singing for each step, after which she runs four times to the east a short distance, around a

[55] Apache reference unlocalized; from Curtis.

[56] Mescalero.

[57] Eastern Navaho.

[58] Chiracahua.

[59] Mescalero.

[60] Chiricahua.

[61] Mescalero, Chiricahua.

[62] To prevent premature wrinkles; Eastern Navaho.

[63] It may take several months for the girl's relatives to acquire sufficient food for the occasion; Opler. It may be held at the second menstruation or, as in one instance, ten months later; Gifford.

[64] Recently the Mescalero have reduced the individual rite to a mere family affair, and have instituted a group rite from July first to fifth for all girls who have menstruated during the previous year; Opler.

[65] There is no dancing for the Navaho and Tonto.

basket of ritual paraphernalia, and back again. The attendant utters a high-pitched cry of reverent applause as she runs. Children and adults of both sexes sometimes run or race with her for health and endurance. This is the end of the rite of the first morning.

The rite of the fifth morning is generically similar. This time it is the singer-shaman who paints the girl. He first marks his own face with red paint and then does the same to the girl. Just as the first rays of the sun enter the "tipi," he paints a symbol of the sun on his palm with pollen and red and white pigments, and makes a negative impression of it on the girl's head by pressing his hand against it. He next paints the arms and legs of the girl white. Then the people file past the singer to be marked by him from the same containers of paint. Moccasin tracks are marked on buckskin as before, and she walks through them one step at a time, but, contrary to the procedure of the first morning, all those seeking health follow in her tracks. She then runs four times around the basket placed a short distance to the east and finally runs a considerable distance in that same direction. The ceremonial "tipi" is pushed down, more food distributed, fruits and sweets scrambled among the crowd, and the entire ceremony ends. The girl bathes now, or four days later, with yucca suds and resumes normal activity.

The night ceremony consists of two parts going on simultaneously: the performance of the masked dancers and the social dancing of the crowd outdoors; the individual dancing of the girl to the singing of the shaman inside the sacred "tipi" before a few friends, relatives, or religious-minded persons. The masked dancers acquire the privilege of giving such performances through supernatural experience with the spirits they impersonate. On other occasions their dancing serves as a curative right, but this function is entirely lacking at girls' puberty and the purpose is solely to entertain. There are two kinds of social dances participated in by both sexes; one in which two abreast lines face each other and dance alternately forward and backward, either both lines in the same direction or alternately backing away from each other and coming together again; another in which all form a circle and dance around.

While these dances are going on outside, the girl dances alone inside the sacred "tipi" to the singing of the shaman and the shaking of his deer-hoof rattle. This goes on continually except for occasional rest periods, until midnight. On the fourth night it lasts till dawn, when the rite of the fifth morning follows and the entire ceremony comes to an end.

The religious part of the ceremony is a prayer for the health, prosperity, and long life of the girl. The Apache conceive of a woman's life as divided into four parts: girlhood, young womanhood, middle age, and old age. Most of the songs symbolically portray the passage of the girl through these stages of life. Girlhood is symbolized by flowers, young womanhood or middle age by the maturing of fruits, old age by the old-age staff and peaceful sleep.

Discussion of Athabascan Southwest rite.--Apache puberty rites are most similar to those of the Maricopa and Papago immediately to the west, with Northern California a close second. Their similarity to the North Pacific Coast is as close as that to Southern California. Ideologically the most distinct feature seems to be the curing power which the girl is thought to have at this time and which she administers to all who wish to file past her and be sprinkled with pollen. This belief is present on the North Pacific Coast but is much less obtrusive there. Fear of menstruation seems to be more prominent in areas to the north than here. A few Plains or Rocky Mountain elements, particularly the ceremonial "tipi," set off the Apache from other areas of western North America. There seem to be no puberty traits shared by both Athabascans and Pueblos but absent everywhere else. The nearest is the grinding of maize by the girl, but this is also shared with the Papago, at least.

The Apache adolescent rite has no strikingly close resemblance to any other single ritual situation so far as available information goes. Boys are whipped, made to rise before dawn, and to run to develop strength of body and character, but this is an individual observance, not an initiation or social event. According to Opler, the four-day girls' puberty rite of the Mescalero and Chiricahua Apache is the most rigidly maintained ceremony and the greatest social gathering of the tribe. But this is not true of the Navaho, among whom "chants" for the curing of disease seem to be attended by greater numbers and last longer. For the Southwest Athabascans in general, however, the girls' puberty ceremony is an integral part of the culture, indispensable for both the girl and the community.

Southern California Area

Description of Southern California rite.--There seem to have been two chief kinds of puberty rites in Southern California: a small affair for a single girl at the time of actual first menstruation; a large ceremony for a group of girls, usually held in the late summer when food was plentiful. Most sources refer to the second type. From some accounts a ceremony for a group of girls was held at the first menstruation of one member. If a group ceremony were given for all girls at first menstruation it would be necessary for most girls to go through the rite several times. Because this was not so and the group ceremony was given only once a year, the time must have been determined

by the season or by the arrival at puberty of a girl of a prominent family. In the latter event, other girls of about the same age who had not yet participated in the rite would join her. The following description refers primarily to the group ceremony.

When a girl menstruates for the first time her father notifies the ceremonial leader or chief of the local group, lineage, or "clan" to which she belongs, and the leader invites an affiliated "clan" or group of neighboring "clans" to come in a body and join in the ceremony. It is always the ceremonial leader or a lesser official of another "clan" (of the opposite moiety, in groups where moieties exist) who conducts the ceremony. When the rite is planned in advance irrespective of the actual menstruation of any of the girls, the ceremonial leader initiates the ceremony directly by inviting neighboring "clans." When the rite is initiated by the father of a pubescent girl, he provides the food to be consumed and the gifts[66] for the guests; other times, the families of all the girl initiates, or perhaps the entire "clan," contribute jointly. The girls are always of the same "clan."

The pit is dug by the host "clan," or with the aid of the guests if they arrive in time, in the floor of a permanent ceremonial structure, or outdoors in a brush enclosure, or outdoors in the open. The girls are carried from their homes wrapped in blankets, with faces covered, and placed beside the pit. The ceremonial leader feeds each a ball of tobacco followed by a drink of water, or a concoction of tobacco already mixed. Those who have done wrong are supposed to vomit, thus purging themselves of their sins. After this the girls become drowsy, are placed in the pit, and their bodies covered with mats, blankets, or brush, their faces with baskets,[67] basketry caps, or brush visors. A warmed stone is placed against the abdomen of each girl part of the time, supposedly to make future motherhood easier. If a girl moves about restlessly she will be nervous and discontented in future life.[68] Loud talk and laughter seem also to have been discountenanced. The girls must not be seen by anyone (except attendants), especially by men. Each girl is attended by an older kinswoman, sometimes her mother, who feeds her, combs her hair, instructs her in menstrual taboos, and bathes her at the end of the rite. The girls are kept in the pit for from one day to a week, most frequently for three days.

During the period of the ceremony, a girl must not eat meat lest she die before her time,[69] have cramps,[70] or granulated eyes,[71] or become a glutton.[72] She is fed acorn gruel in the pit by an attendant or ceremonial official. She must also avoid salted food lest her blood dry up;[73] and cold water lest it stop the flow and cause cramps[74] or retard future deliveries.[75]

She may scratch herself only with a stick or piece of bone or shell provided for the purpose;[76] otherwise she will become bald, get dandruff, or break out with a skin disease. Some of these taboos, particularly those on food, may last a year or be voluntarily continued even longer.

Sometimes at the beginning, but more often toward the end of the rite, special articles of dress are put on the girls: crowns of herbs or flowers; "hunger" belts of woven plant fiber; and woven bands of human hair or plant fiber about their arms and legs. At the same time they are painted on the face and body with red, black, and white paint, in moiety patterns where moieties exist. There is often a sequence of facial designs, changed on successive days or months. Sometimes the girls are tattooed at the rite.

Work of any kind and bathing[77] are forbidden during the period of confinement.

Each day and night of the pit-roasting, singing and dancing take place around the pit. Men and women dance separately, usually the women in the day and the men at night. The women dancers are painted red, black, and white, wear crowns of plants, and carry branches in their hands. They usually dance sunwise around the pit to special songs, which are sometimes sung by men. The men dance more often at night, sometimes giving the toloache[78] dance with toloache regalia. The toloache dance is obviously borrowed from the boys' rite, because girls are not given the plant. The men shake turtle-shell, gourd, or deer-hoof rattles.

Information on songs is scanty. They seem mainly to have described the various acts of the puberty ceremony itself, including the mythical origin of menstruation, and the puberty ceremony

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[66] Baskets, strings of shell beads, and the flint or crystal-inlaid paviut stick; Luiseño. The articles are not symbolic; the beads are money, and the baskets and the ceremonial stick objects of value. The Cupeño hosts throw presents to the guests, who scramble for them.

[67] To keep away the flies; Luiseño.

[68] Diegueño.

[69] Diegueño.

[70] Cahuilla.

[71] Luiseño.

[72] Diegueño.

[73] Cahuilla.

[74] Cahuilla.

[75] Luiseño.

[76] Two scratchers are sometimes used.

[77] One Diegueño group required the girls to take a bath daily during the ceremony. Waterman, page 293, says the Luiseño word "to menstruate the first time" means "to bathe."

[78] Datura meteloides.

as first performed by mythical characters. One class of songs is distinct: the so-called "bad" or "enemy" songs. The purpose of these songs is to ridicule other "clans" with derogatory phrases and mention of the names of their recently deceased. One Diegueño song speaks of a people as having "no sense" because they once came unbidden to a festival. The derided "clan" always replies with similar songs about the first "clan." The function of such songs seems to be entirely that of amusement. They are sung at many other ceremonies. Other songs, such as that of the Luiseño concerning Deer's trying to escape death, seem neither to be amusing nor to have any connection with puberty. Probably the collections of puberty songs include whatever the informants could think of in the way of a native song to satisfy the ethnographer, or else the puberty rite had already degenerated into a hopeless composite by the latter part of the last century.

At the conclusion of the rite a sand painting, similar to that used in the boys' rite, is made and the girls are instructed in its meaning. This instruction often takes the form of a moral lecture, the gist of which is to observe faithfully menstrual and other taboos, and to be kind and generous to everyone, especially the aged. The girls are told how and by which spiritual character they will be punished if they do not follow this advice. Then each girl in turn is given a small lump of meat or salted meal[79] by the leader and, kneeling before the sand painting, she attempts to spit the food into a hole in the center. If she succeeds she will live long, but if she fails she is cautioned to mend her ways lest she die before her time. When the last girl has finished, the sand painting is obliterated by the leader or by old men, who push the pigments into the center hole.

Another act that is done on the final day by the Diegueño is the massage. The girls lie prone and women walk on their backs "to make them straight."

Among the Cupeño, immediately after the girls have left the pit the ritualist brushes the leaves from their hair, puts them in a hollow arrowweed tube and buries the tube in the mud of a spring.

As the final act of the public ceremony, the girls run or race with each other over a prescribed course to some rocks. Here each girl, or her attendant, paints a design on a rock corresponding to the one on her face. The bracelets, anklets, and belts worn by the girls are left on the rocks.

Discussion of Southern California rite.--Both in individual observances by the girl and in public recognition, this elaborate Southern California pattern is the most distinctive in North America. It differs more from the Athabascan Southwest, Northern California, and the North Pacific Coast than these three differ from each other. One of the most important points of difference is the collective aspect. A group of girls are periodically put through the ceremony together. Every girl in the tribe, or certainly the vast majority, was subjected to this "tribal initiation" at some time in her adolescent years. Apparently the only other area in which anything like this occurs is Northern California, specifically among the North Pomo, North Yukians, and the Athabascan Kato.[80] The other aspect of the rite which has attracted most attention is the "pit-roasting." For several days the girls lie motionless and silent in the pit. The heat is supposed to have direct therapeutic value for menstruation and childbirth. Compared to other areas, fear of menstruation is not obtrusive.

The girls' puberty rite is more similar to the treatment of the mother at birth and to boys' rites than to any other ceremony. Some of the features shared with boys' rites and not occurring in any other ceremony are: the sand painting with the eating of a sage-meal pellet and the spitting of it into the center hole; specific instruction in mythology, songs, and morality; racing; rock painting; taking a narcotic drink, Datura for boys, tobacco for girls; and the more generic idea of a group of neophytes going through an initiation together. The roasting pit and the warmed stone against the abdomen, at least, are shared exclusively with birth rites. The bulk of restrictions, such as the meat taboo, are common to all ritual situations.

The most important social occasion in Southern California in terms of duration and numbers in attendance is the periodic mourning ceremony, which lasted a week in recent times and to which peoples from a number of neighboring localities were invited. In recent years it has served as a catch-all for almost every fragment of remaining ritual. The next most important occasion was the boys' puberty rite, with the girls' rite a close third. In native ideology the boys' rite probably outranked the girls' because the bias of the culture was patrilineal, and the boys acquired supernatural power necessary to maintain the religion and to fill religious and social offices that were always in the hands of males. The boys' rite seems also to have been a more spectacular show than the girls'. Other group ceremonies, such as the naming ceremony and the tattooing and ear and nose-piercing rite for children, the eagle-killing rite, the feather or whirling dance, and funeral rites, are all of briefer duration, smaller attendance, or more sporadic in distribution.

The chief purpose of the girls' puberty rite seems to have been to prepare the girl for her

[79] Apparently symbolic of the breaking of the fast.

[80] Discussed in the section, "Northern California Area," p. 32.

future life as wife, mother, and member of the community. Her bodily well-being was insured by the "pit-roasting," her mental and spiritual success by instruction and exhortation in religion and ethics. Ulterior motives, such as the enhancement of social prestige of the family or the assurance of a high bride price for the girl, seem to have been submerged.

Discussion of Other Areas

Plateau rite.--The salient feature of this area is the great emphasis on strenuous physical activity. Although some of this may be due to the unusual fullness of Teit's accounts, the whole distribution of the work complex[81] in western North America seems to indicate that it is strongest in this area. Teit mentions many details not reported for other areas, but it is difficult to determine whether these are actually absent elsewhere or merely not reported.

On the whole, girls' puberty rites seem to be more similar to boys' puberty rites than to any other ritual, although, as elsewhere, most of the content is shared by several departments of culture. Both boys and girls observe the same food restrictions, seek supernatural power alone on mountains, and wear similar articles of dress.

Public gatherings were solely for social purposes and centered about feasting. Between 1800 and 1850 the potlatch was introduced in the Fraser River area from the coast. It was not given in connection with a crisis rite or other change in the status of an individual, but remained a purely social affair that was held at the pleasure of a wealthy man. This is an instance of absence of publicization of girls' puberty associated with very weak development of public ceremonies in general.

Great Basin rite.--There is not a single Great Basin element which is not shared with some other area, at least according to available data. Broadly speaking, the Great Basin is most similar to the Plateau, but with a sprinkling of a few southern traits, such as the salt taboo and the hot bed. There also seems to be no unifying idea or interest which distinguishes the Great Basin from other areas.

Because of the absence of public recognition, girls' puberty is not definitely set off from other crisis rites, vision quests, and shamanism. For the same reason, the social importance of girls' puberty is nil. It is significant that social gatherings of any kind were rare and of no more than a few days' duration. They were usually associated with the food quest. Individual changes of status, such as life crises, were not occasions for public celebration in the Great Basin.

Yuman rite.--This is the area in western Arizona between the Gila and Colorado rivers. It does not include the Yuma tribe. Because of absence of public recognition, the Yuman area affiliates most strongly with the Great Basin, and to a lesser extent with the Pueblo Southwest. The number of predominantly North Pacific Coast and Plateau features is surprising. These are: legs bent in seclusion; kneeling erect (when eating); drinking tube; bark towel; uselessly picking leaves from branches; and smoking the girl over a smudge for purification. It is noteworthy that these traits are of more sporadic occurrence in the south than in the north.

Except for the Mohave, large social gatherings were few. They were mainly purely for social reasons, but also in connection with war. Only the Mohave had a public mourning ceremony. The Yuman area generally agrees with the Great Basin in weak development of all public ceremonies.

Pueblo Southwest rite.--None of the Pueblos have a public ceremony at the time of a girl's first menstruation. The nearest approach is an informal feast for the women of a girl's family, clan, or neighborhood when she breaks her four-day fast. Individual observances, where reported, seem to be most similar to those practiced in the Great Basin and Yuman areas, only less detailed and severe. Nevertheless there are a number of predominantly North Pacific Coast and Plateau features present, particularly among the Shoshonean Hopi: the two-pronged or forked scratcher; the taboo on the rays of the sun or moon shining on the girl or the darkening of the room of seclusion; the cutting of the ends of the hair; the giving of a new name. Among the western Pueblo, the girl goes to the house of her father's sister and grinds corn in a separate room for from one to four days, observing the usual food restriction the while.

Although the absolute attention given girls' puberty is low, it becomes much less significant when compared to the extremely elaborate ritualization of most phases of Pueblo life. Pueblo ceremonialism centers around the initiation of boys into god-impersonating cults, and the admission of adults of both sexes into various societies such as the curing fraternities. In a tabulation of data from eight Pueblo groups, Cora Du Bois found that all eight initiated boys into god-impersonating cults, all six (on which information existed) had societies including both sexes, five out of six (on which information existed) had societies for men only, six out of eight admitted some females to god-impersonating cults, and only two out of five (on which information existed) had societies for women only. As Du Bois plausibly states: "There is no indication that the participation of women in other forms of

[81] See next section, "Girls' Puberty Trait-Complexes."

ceremonial life has displaced the girls' puberty rite or in any way compensates for its absence." The definite preponderance of male societies inclines me to believe strongly that women's participation is modeled after men's and is a later development. This will be discussed in more detail under "Historical Speculations."

Puberty ritual in the rest of North America.--According to Spier and Cora Du Bois, definite public recognition of girls' puberty is absent in the rest of North America. It is therefore a Pacific Coast phenomenon.

GIRLS' PUBERTY TRAIT-COMPLEXES

There are a number of groups of traits whose distributions are internally similar and externally dissimilar from those of other groups of traits. Such a group of highly intercorrelated traits is here labeled a trait-complex.[82] The more compact of these complexes are set off by Roman numerals in table 13, but broader and looser ones may also be distinguished. Although it is possible to define such complexes quantitatively, according to the amount of correlation among the constituent elements, I do not believe such rigid definition has much value ethnographically. For a mechanical operation such as the pooling of traits to facilitate the grouping in table 13, specific definition is necessary and has been given under "Statistical Methods."

There are a number of broad complexes easily distinguishable. In the lower middle section of table 13 there are some dozen traits which are universal or nearly so. Immediately above there is a group of traits virtually universal among those tribes having public recognition (complex X; see maps 11, 12, 13). Above this there is another group of traits that is associated with public recognition, but which occurs in Northern California and to the south, and is absent on the North Pacific Coast (complexes XIII and XIV; see map 13). Next there is a rather loose cluster of traits occurring mainly in Northern California (see maps 11, 14); then a group shared mainly by the Plateau, Northern California, and the Great Basin (complex XVI; see maps 3, 4, 10); then still another group of traits that is North Pacific Coast, Plateau, Northern California, and doubtfully Great Basin (complexes II, III; see map 5); and finally a group of exclusively North Pacific Coast traits. Below the universals there comes first a somewhat vague group mainly Plateau, Northern California, and Great Basin (complex XII; see map 8); then a rather well-defined nexus occurring in Southern California and the Southwest (complex V; see map 8); then a rather vague group, mainly Southern and Central Californian (complex IV); then a definite cluster present only in Southern California (complex I); and finally a few traits confined to the Athabascan Southwest (complex IX).

The great majority of high correlations are of the "accidental" variety, the only explanation for which is an historical one. An example is the correlation of the sand painting and the turtle-shell rattle in Southern California. These two items are not a unit in native ideology, they both occur in other cultural contexts, they are not made of the same materials or with the same techniques, and their roles in girls' puberty rites are very different. However, there are a number of trait associations which can be explained by factors other than historical "accident." Relatively high correlations, such as for those traits set off by Roman numerals in table 13, will be discussed from this point of view first.

Complex VII.--The carved wooden comb used as a scratcher, the carved hollow-wood rattle, and the carved wooden masks worn by male dancers are all examples of North Pacific Coast wood-carving technique. Although the mere presence of a wood-carving technique is not sufficient to explain the use of these three articles in a puberty ceremony, its absence would limit the distribution of the objects, partly determining their correlation in that manner.

Complexes II and III.--There are four traits here which are concerned with light or with seeing or being seen: the taboo on gazing at the sun, moon, or sky, or of the sun or moon shining on the girl; the avoidance of fire, including often the taboo on looking at fire; the taboo on gazing at people; and the seclusion of the girl in a screened-off portion or separate compartment of the dwelling house. Avoidance of the sun or moon and fire are close in native conceptualization because both are most frequently explained by the same rationalization, namely, that weak eyes or blindness would result. The other two traits, however, do not seem to be functionally related to this concept or to any other idea.

Complex XII.--Compulsory running and wood gathering are logical correlatives because both are relatively strenuous outdoor activities.

Complex I.--Moiety paint patterns, the girls in the group ceremony being of the same "clan" or moiety, and the direction of the ceremony being in the hands of a leader of a reciprocal "clan" or moiety all reflect the social organization of Southern California.

There are two other trait-complexes, each of which is loosely intracorrelated in space but which reflects a single dominating idea. These I term the work complex and the rest complex.

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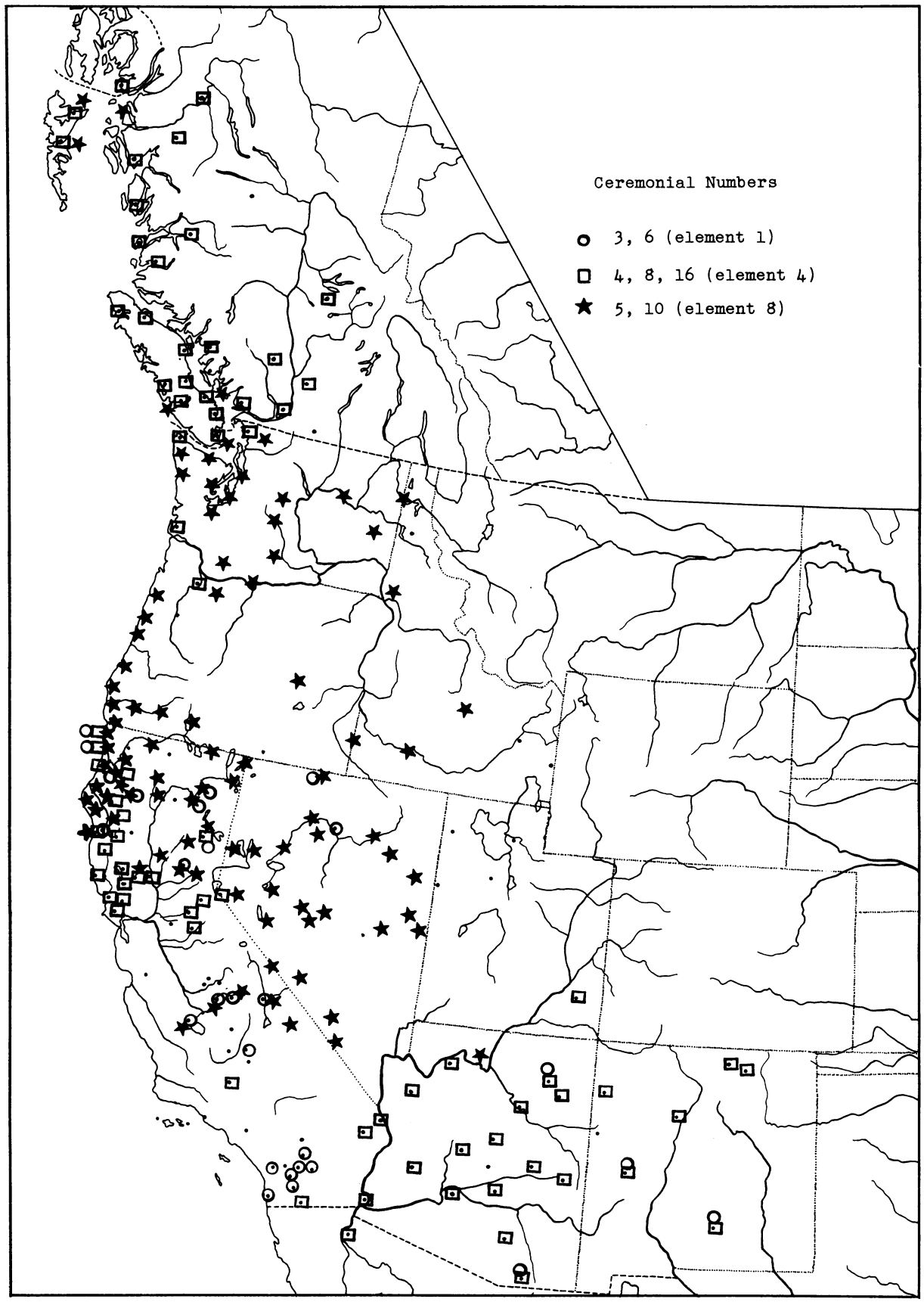
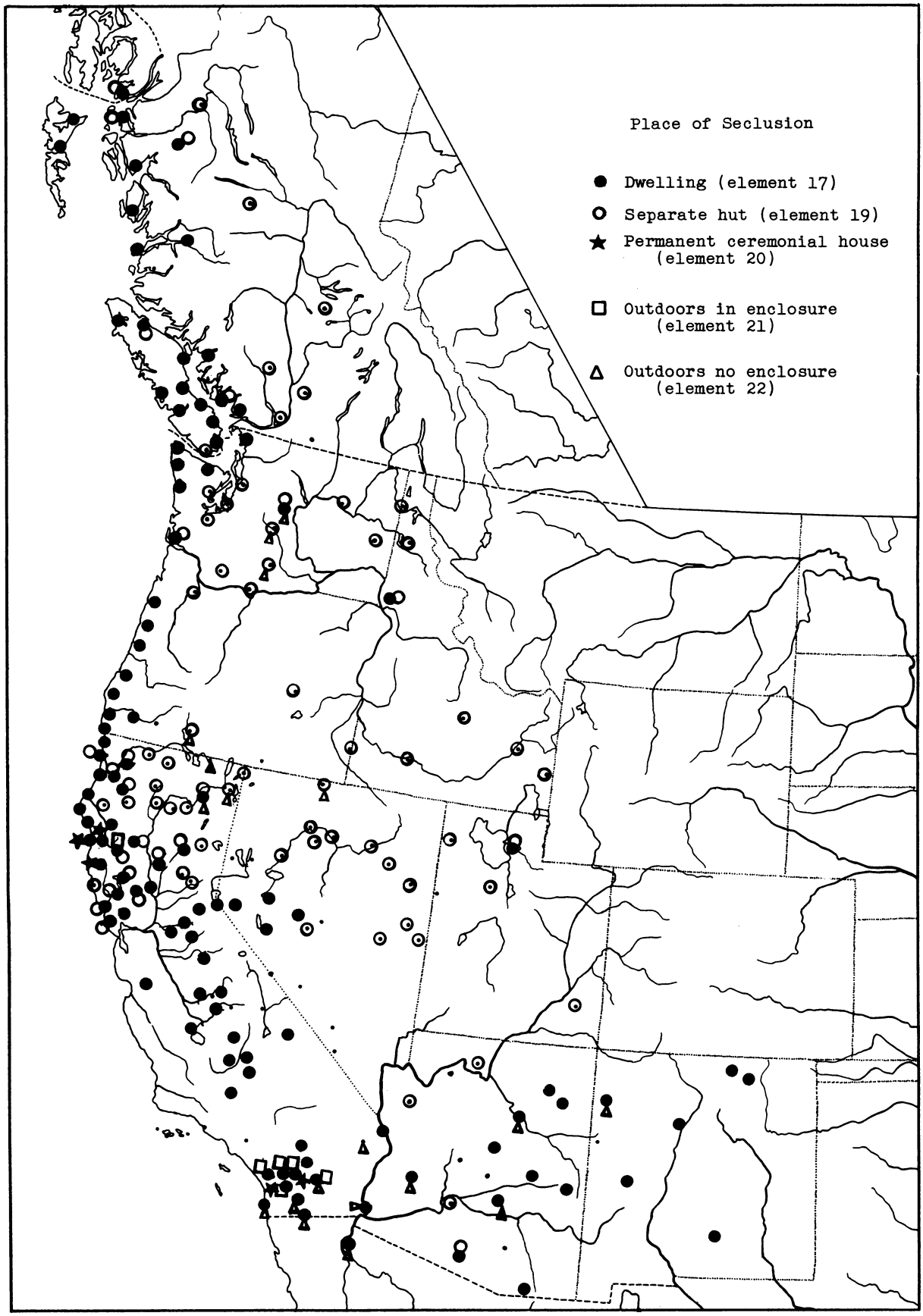
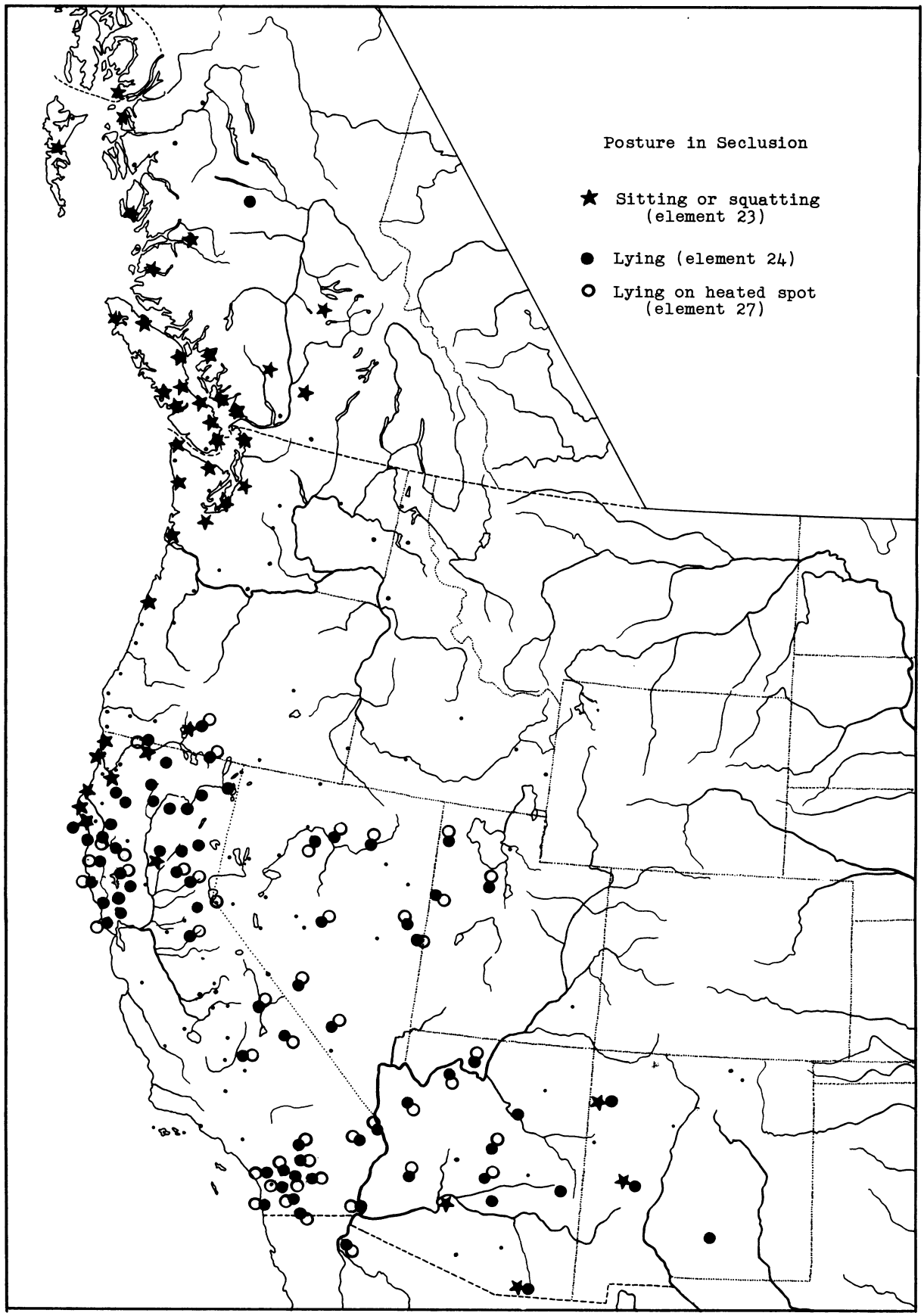
[82] This is the same as Klimek's stratum, but I am avoiding the term stratum here because it implies history.



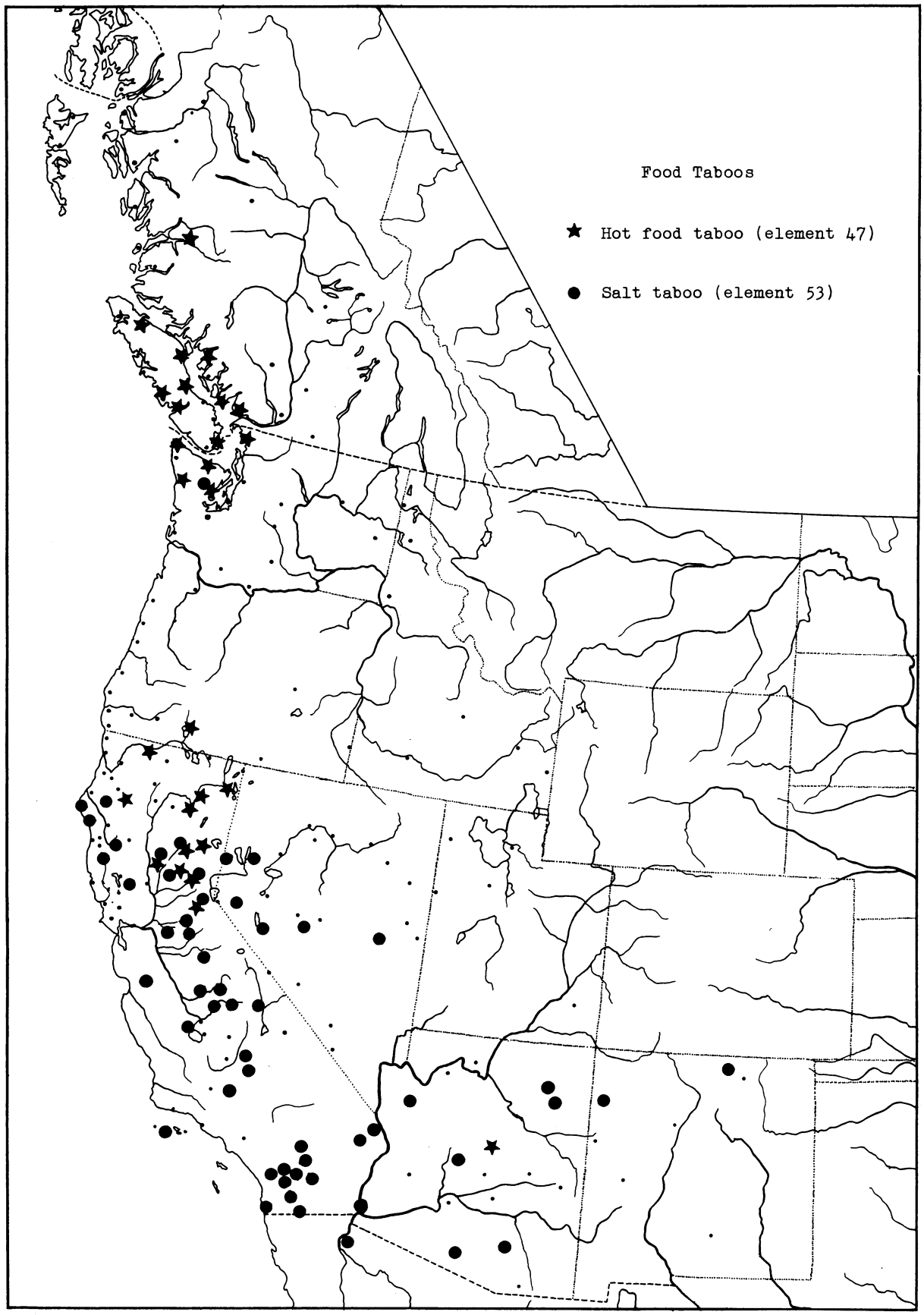
Map 3. Ceremonial numbers.



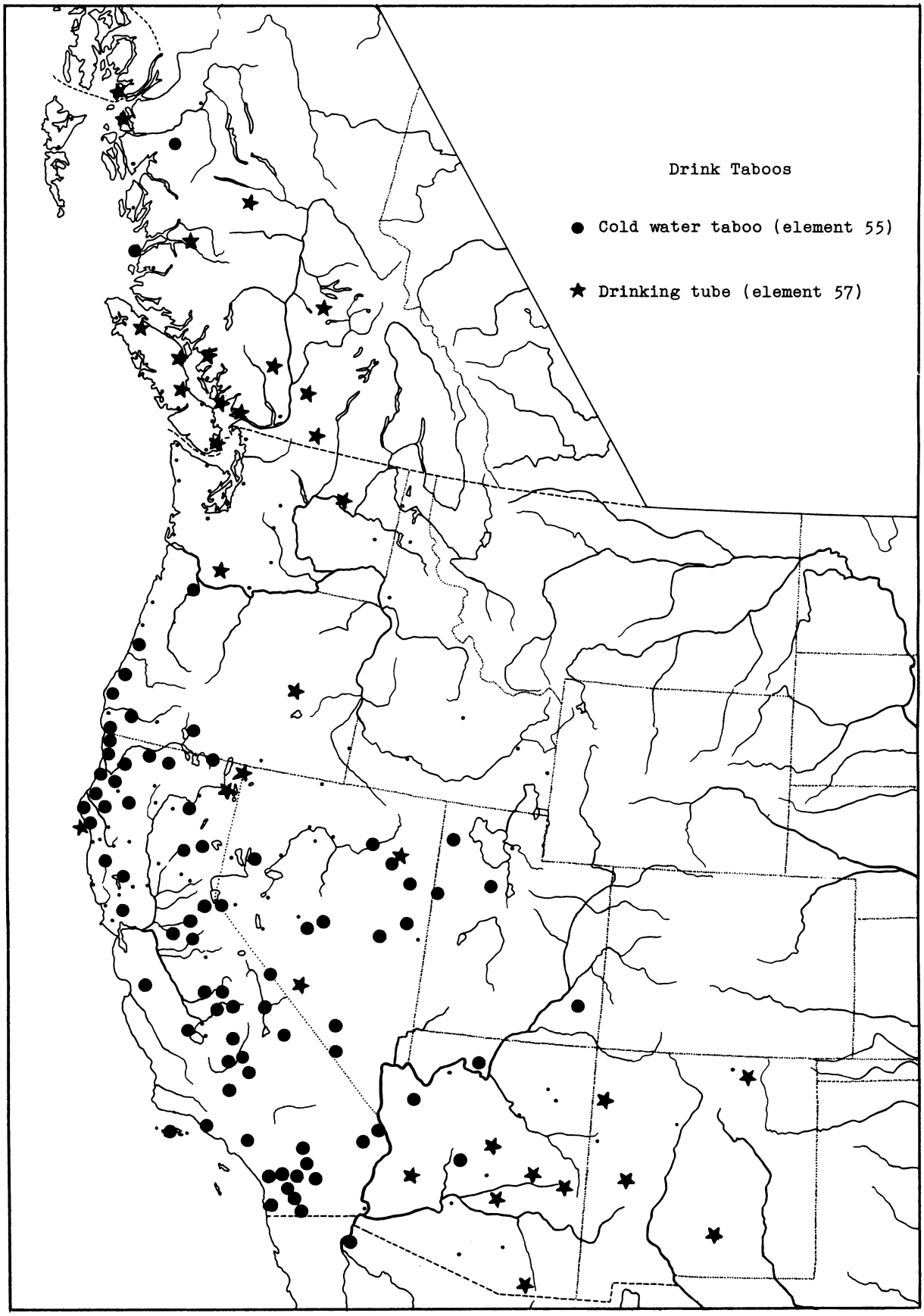
Map 4. Place of seclusion.



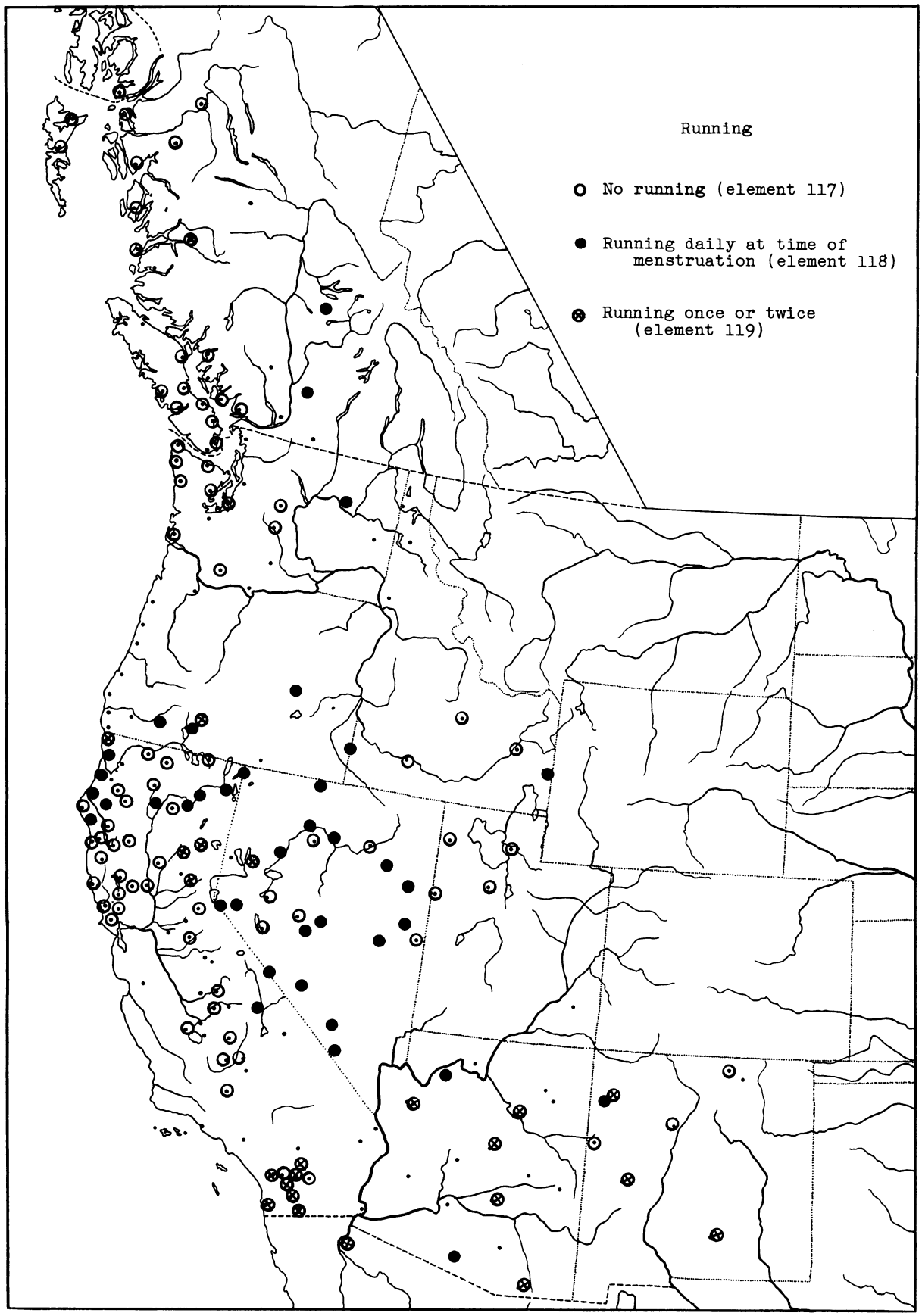
Map 5. Posture in seclusion.



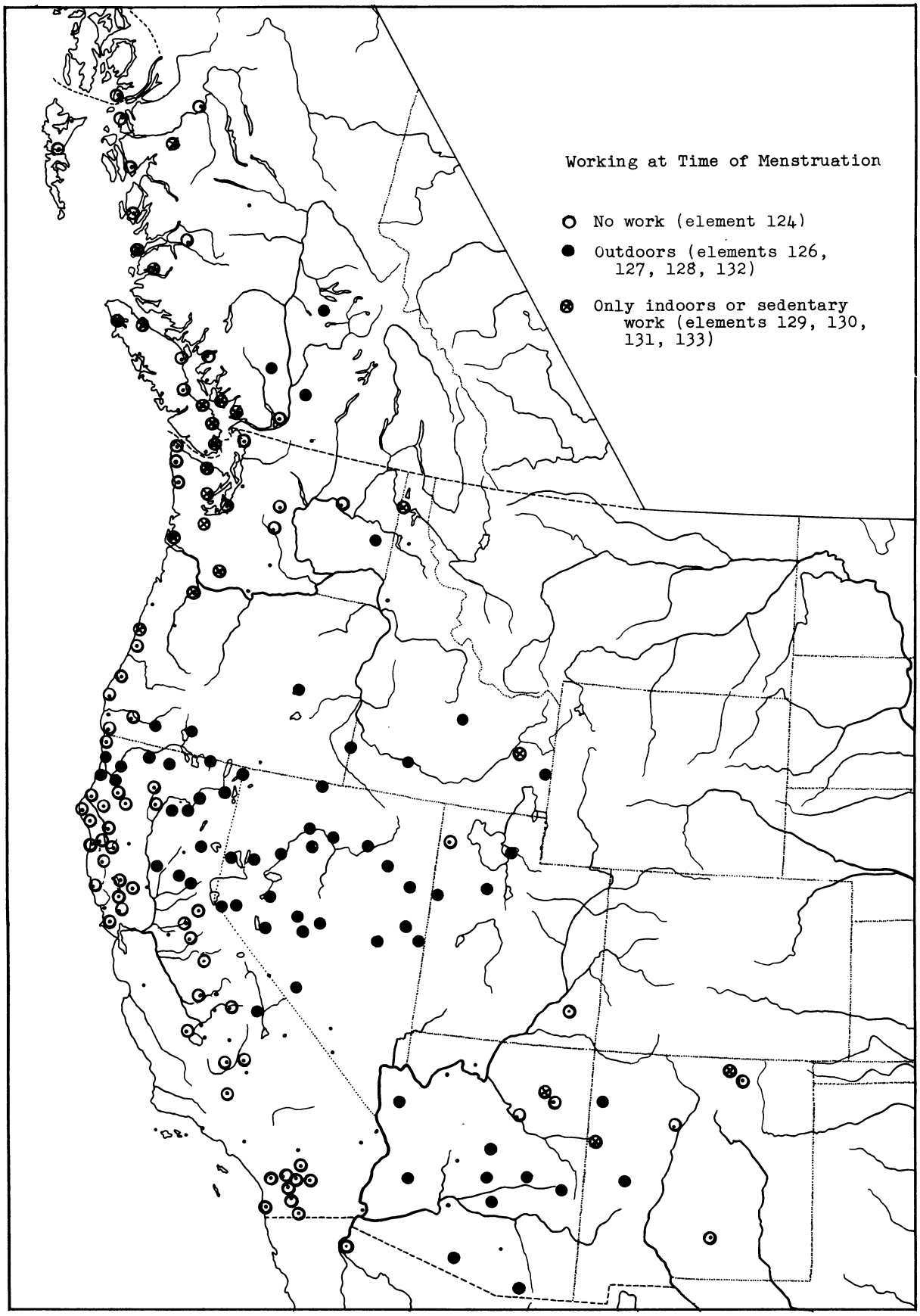
Map 6. Food taboos.



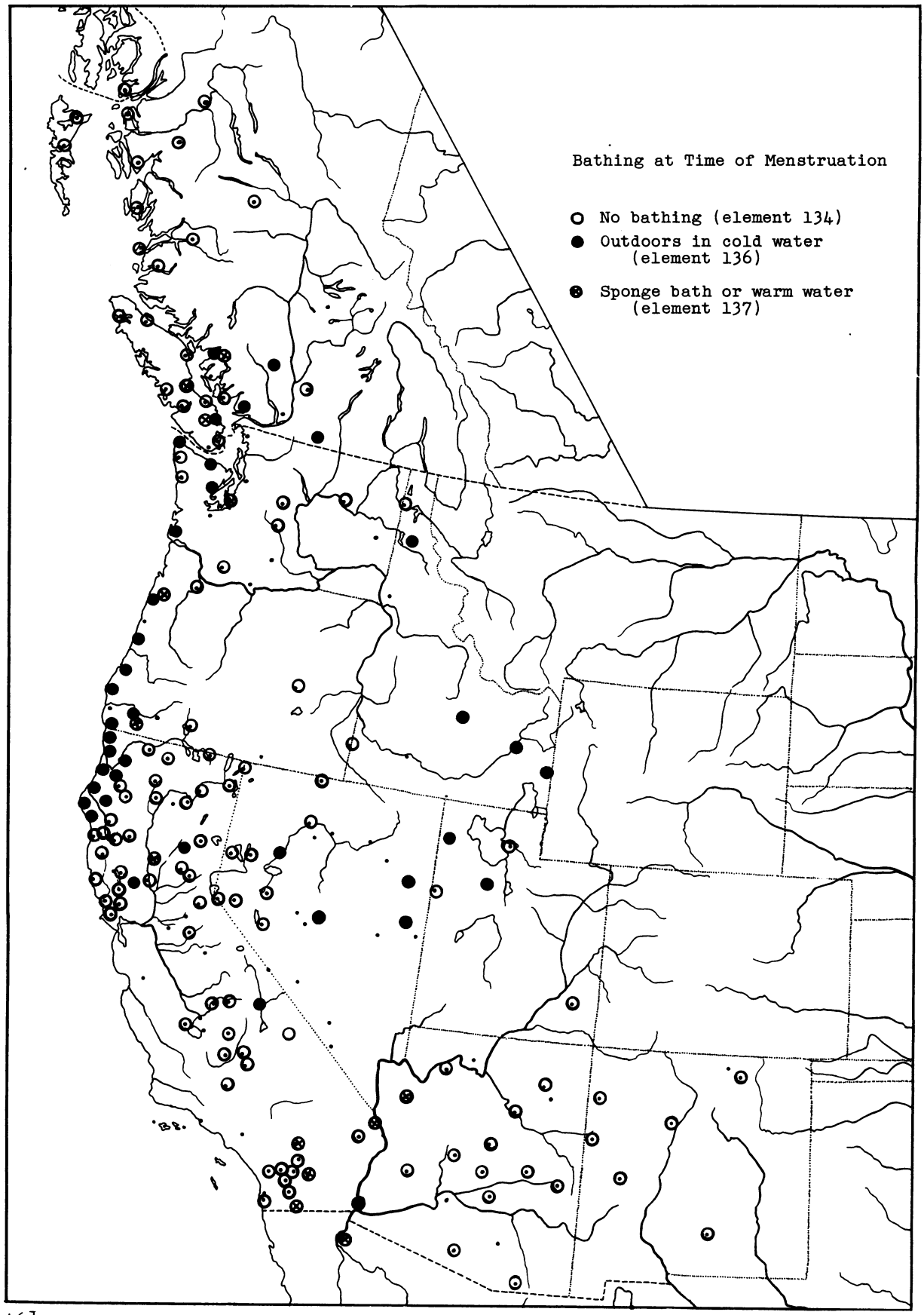
Map 7. Drink taboos.



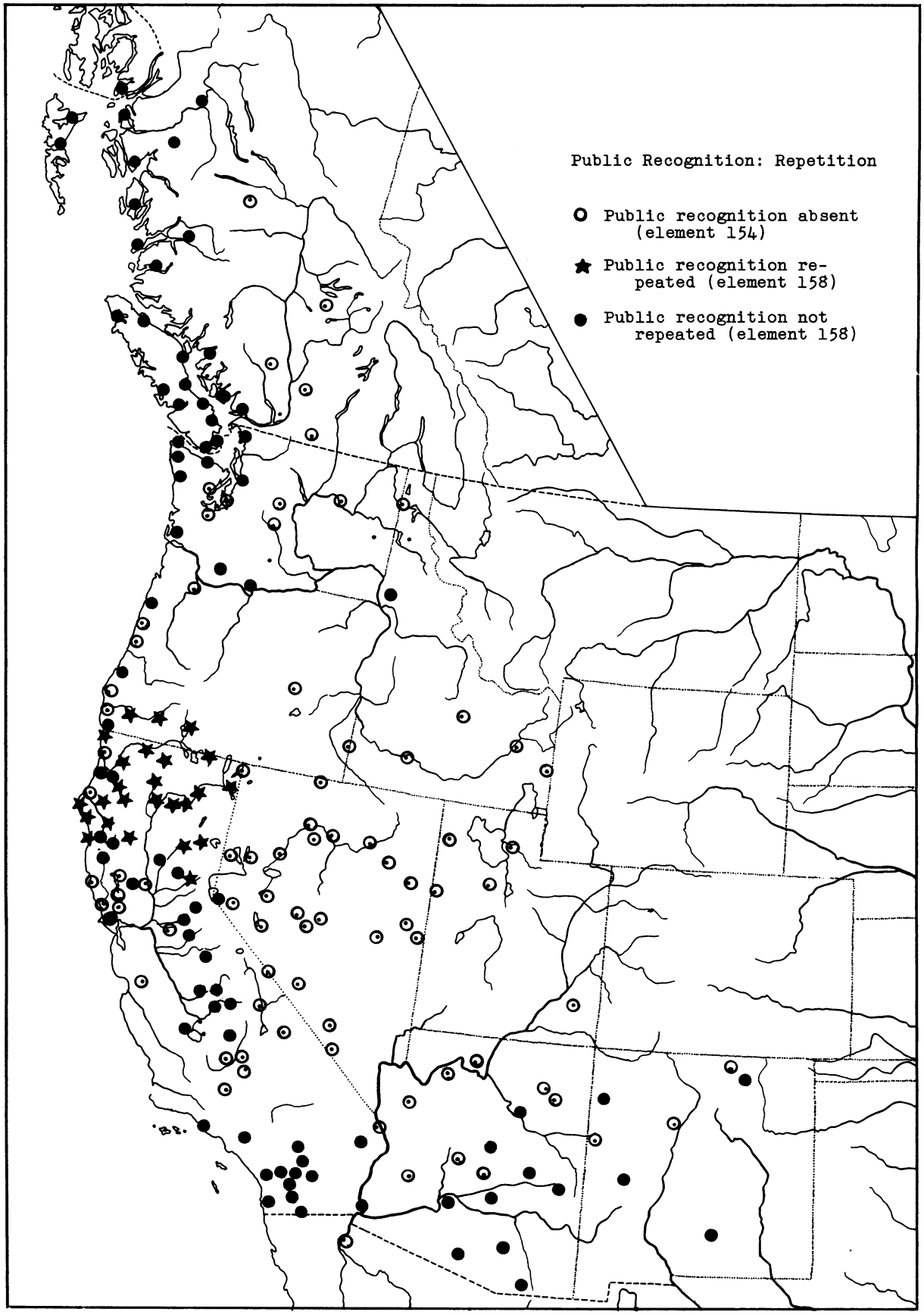
Map 8. Running.



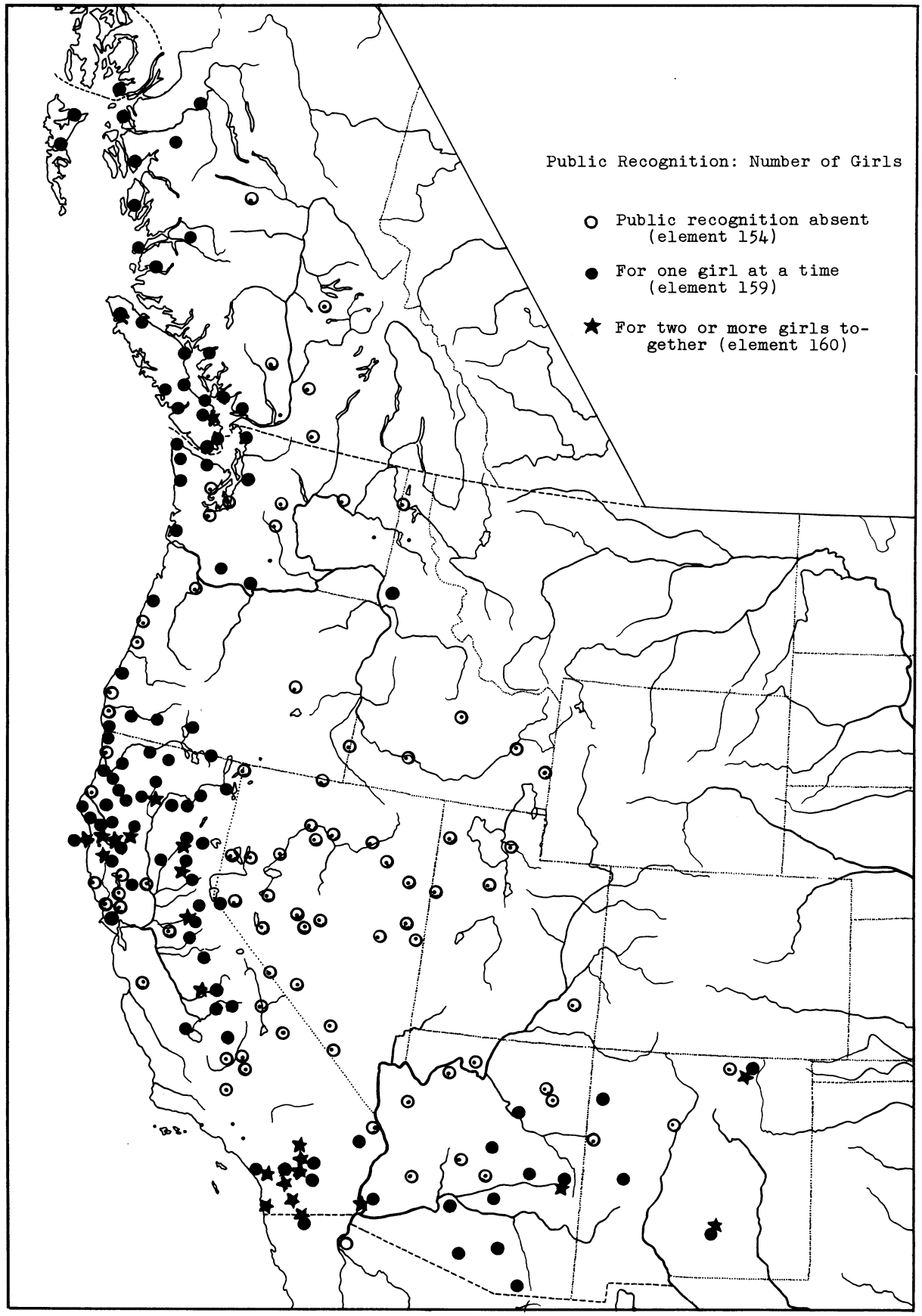
Map 9. Working at time of menstruation.



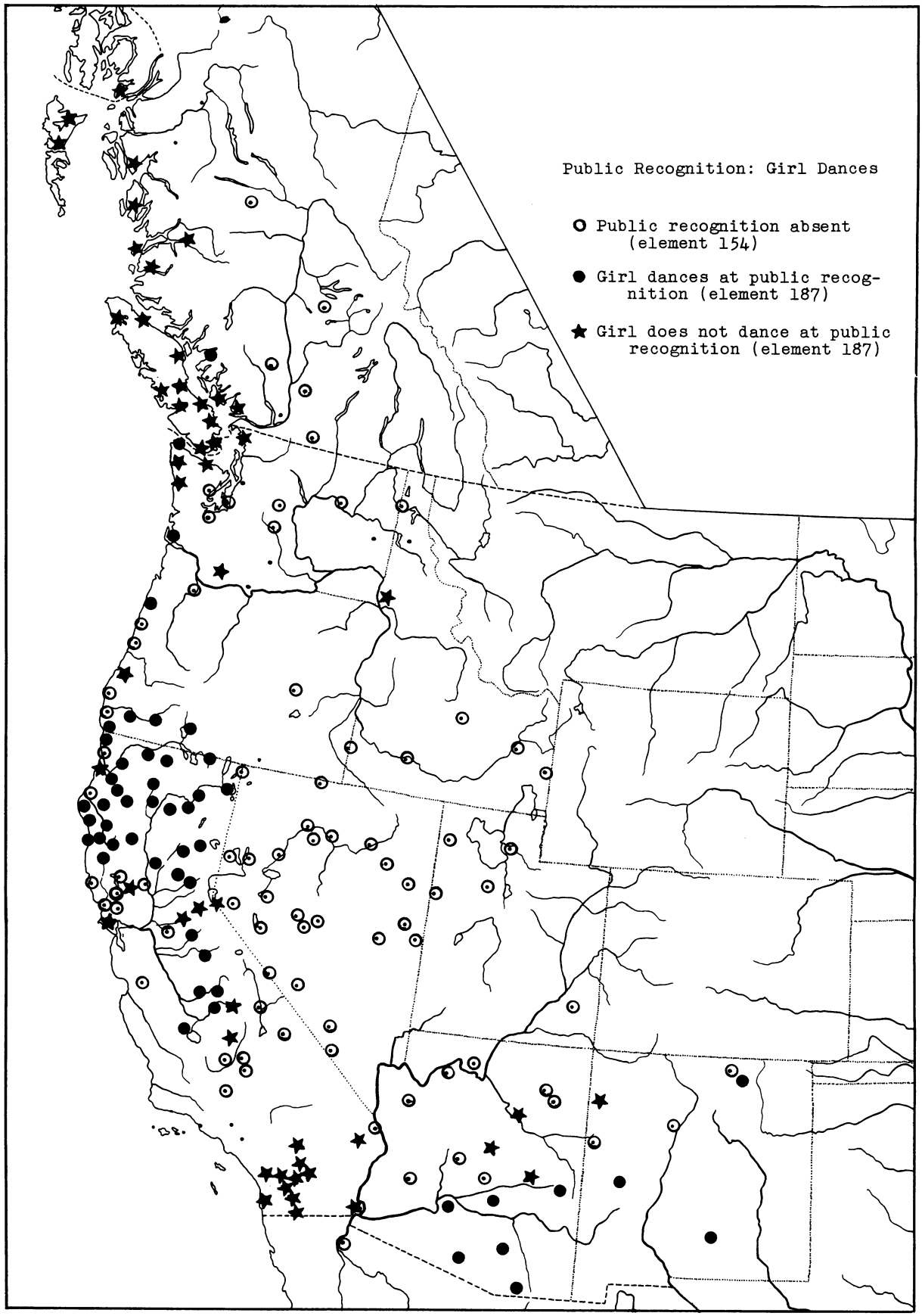
Map 10. Bathing at time of menstruation.



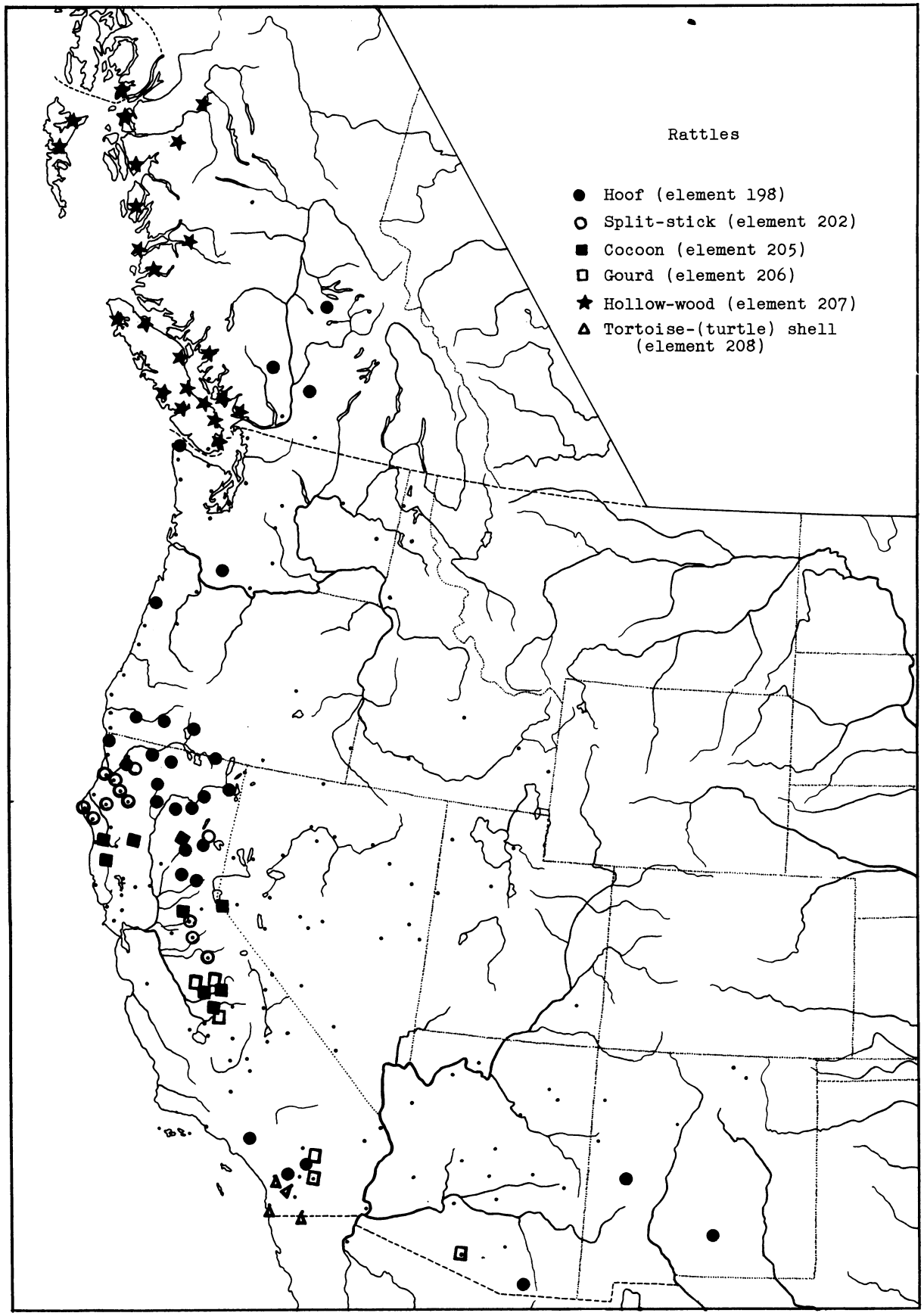
Map 11. Public recognition: repetition.



Map 12. Public recognition: number of girls.



Map 13. Public recognition: girl dances.



Map 14. Rattles.

The work complex.--The most obtrusive elements of this complex are: the sitting or squatting posture in seclusion (map 5); the taboo on hot food (map 6); running at time of menstruation (map 8); working at time of menstruation, especially outdoors (map 9); and bathing outdoors at time of menstruation (map 10). Somewhat more doubtful members of this complex are: the complete fast for a few days; seclusion in a separate hut; the vision quest; perhaps the scrubbing with boughs at bathing; and scarification or bleeding of the girl. These traits refer to strenuous physical activity and severe bodily deprivation. They occur mainly on the Plateau, in the Great Basin, and on the middle section of the North Pacific Coast from Vancouver Island to northern California. Other crisis rites and the seeking of supernatural power in this area seem to follow the same fundamental pattern.

The rest complex.--This includes: lying in seclusion on a hot bed; no physical exertion of any kind during menstruation; and the taboo on drinking or bathing in cold water. Seclusion was in the dwelling or in a special structure or enclosure where the total inactivity of the girl could be enforced. These traits occur to some extent in the Great Basin and in the Southwest, but are most characteristic of California. They seem closer to the treatment of the mother at birth than to any other phase of culture there.

While the distributions of these two complexes are far from mutually exclusive, they are sufficiently distinct to be significant. Conceptually the two ideas are direct opposites. However, in areas where the girl's inactivity is strictly enforced she often does initiatory work immediately after menstruation. Nevertheless I believe the rest and work complexes represent two fundamentally different kinds of religious behavior and belief which are shared by other departments of culture in the same areas.

Universals.--There are a number of traits which are virtually universal in western North America. Briefly these are: seclusion; attendant; restrictions on food and drink; scratching taboo; work at time of menstruation or after; bathing and changing clothes at the end of seclusion or menstruation; instruction; and probably avoidance of hunters, fishermen, gamblers, or men generally. The majority of these traits, and probably all, occur in South America and the Old World as well. All are widespread over the whole of North America. Therefore they represent no unifying complex which distinguishes western North America from other areas. The only material object included in this group is the scratching stick; all other items refer to behavior or beliefs. Thus material objects show more areal variation than do beliefs or behavior.

To these universals should be added several generic beliefs which were considered too obvious and broad to be included in the trait list. These are the following: (1) that the girl is unclean and may harm other people or nature; (2) that she is especially susceptible to harm if she does not strictly observe the various taboos; (3) that her actions at first menstruation predetermine her behavior throughout life. Every individual observance of the girl in every area fits one or more of these explanations. To the native, the puberty rite represents a logical procedure because he relates specific observances to such integrating concepts.

This raises an interesting theoretical point. How much of the form and content of girls' puberty rites is consistent with the concept of functional wholes, and how much with the idea that culture is a randomly associated conglomerate? From the viewpoint of a single tribe at a single point in its history, no doubt every element of its puberty rite is believed or felt to be an integral part of a unified whole. Any good informant, if pressed hard, would probably construct enough rationalizations to make any ceremony appear to have functional unity. In the girls' puberty rite, the obscene songs sung by the crowd might be explained as a part of the spirit of merriment and rejoicing over the maturity of the girl. To cite an actual example: in Northern California the most widespread native reason for public recognition is to keep the girl awake. As pointed out previously, however, a few women would be sufficient to keep the girl awake. Furthermore, this explanation fails to account for particular dance forms or regalia. My own opinion in regard to Northern California is that the first menstruation of a girl was little more than a catalytic agent which initiated a social good time.

The broader the comparative universe in either space or time, the looser the integration of single parts of single cultures at a single point in history will appear to be. The reason is that the elements which constitute a small spatial and temporal unit of culture are almost invariably found to have wider distributions and different associations in a broader spatial and temporal frame. Natives have less comparative knowledge than ethnologists and consequently they would be expected to believe or feel the presence of a relatively small number of integrating impulses in their cultures which to them produce or maintain the harmonious whole. An ethnologist cannot really believe or feel such unity unless he suddenly develops a state of mind in which he eliminates his comparative knowledge. The description of relationships within single folk cultures as seen by native participants is an important task for ethnology, but it will never be complete description or a substitute for the broader relationships that are revealed by comparative studies.

CORRELATIONS WITH GEOGRAPHICAL ENVIRONMENT

In any large group of culture elements, certain ones are bound to correlate with elements of geographical environment. By distributing various geographical elements among tribal territories one could determine numerical correlations between geography and culture. In the present study, exact distributions of geographical features have not been determined and no numerical correlations have been computed. The purpose of this section is to cite the obvious rather than to exhaust the problem.

Only those correlations with geography that are readily explained in terms of geography will be discussed here. There are, of course, many correlations between culture and geography that are fortuitous from the point of view of geography: for example, the correlation between the presence of salmon and sitting or squatting in seclusion.

Drumming on a plank (element 209) at girls' puberty is found on the North Pacific Coast. It has a high correlation with heavy rainfall and a certain species of cedar from which almost all North Pacific Coast planks are split. Planks cannot be conveniently split from other kinds of wood with native tools. Thus the limit of the climate and the correlated flora determine the limit of drumming on a plank.

The gourd rattle (element 206) is limited to Southern California and the Southwest because gourds grow only in these areas. I believe the three occurrences of gourd rattles in the San Joaquin Valley, California, are errors, or at best, importations of the manufactured article in Spanish times. Nevertheless the general southern provenience holds.

The absence of suitable cocoons for cocoon rattles (element 205) on the North Pacific Coast may have served as a limiting factor for that area. I do not know the distribution of cocoons in the Great Basin and the Southwest.

The taboo on fresh meat only, or the allowance of dried meat or fish in the menstruant's diet (element 50) occurs only in the North Pacific Coast (including Northern California) and in the Plateau. These are the areas where meat and fish constituted the staple diet. In areas to the south, vegetable foods constituted a greater part of the diet than meats. The reason for permitting menstruants to eat dried-meat products in the north seems to be one of expediency, there being little else to eat much of the time. In the south vegetable foods were an ever-ready substitute.

The seclusion of the girl outdoors or in a roofless enclosure (elements 20, 21) would only be practical in a warm dry climate. Except in association with vision seeking in the southern Plateau and in Northeastern California, these elements are of extreme southern provenience. Some tribes in the north specify that vision seeking outdoors was confined to the summer season. This confirms the suggested interpretation.

Similarly, the holding of the public recognition ceremony outdoors (element 169) or in a roofless enclosure (element 168) occur in the southern half of the area, where there is less rainfall. In the North Pacific Coast the use of the plank house for large gatherings was a social necessity. Although individuals would have survived the rain physically, the degree of comfort necessary for social intercourse would have been lacking.

The use of bone in the north and wood or plant products in the south for scratching sticks and drinking tubes may somehow be determined by geographical environment. As already mentioned, subsistence in the north was more dependent on animals; presumably then the presence of a greater quantity and variety of bones around habitation sites encouraged the greater use of bones for implements.

The distribution of public recognition seems to have been limited by geography. With the exception of the Southwest, public recognition occurs in the areas of greatest population, of most sedentary population, and of most favorable environment from a subsistence outlook. Inland on the Plateau and in the Great Basin it was much more difficult to get sufficient food, and the population wandered about in small bands over large stretches of territory. Under such conditions it would have been difficult if not impossible to assemble and feed a large group every time a girl menstruated for the first time. Assuming that the idea of publicly celebrating first menstruation originated on the Pacific Coast, these less favorable environments would check its diffusion eastward. The Southwest does not fit this simple interpretation because there it is the economically lowest tribes which celebrate girls' puberty publicly. For ceremonialism as a whole in the Southwest, however, the economically most advanced peoples--the Pueblo--far surpass their poorer neighbors. We may therefore say that there is a definite correlation in western North America between economic well-being and elaboration of ritual. Where girls' puberty rites follow the general trend (North Pacific Coast, Plateau, California, Great Basin) this generalization holds for them. Where they do not follow the general trend of ritual (Southwest), it does not hold. The difference between the Southwest and the rest of western North America with respect to puberty can be explained only in terms of historical factors, which will be discussed under "Historical Speculations."

There is some tendency for the girls' puberty areas of map 2 to fit geographical areas. Because these areas are determined mainly by the presence or absence of public recognition, the economic interpretation offered above would apply to puberty material as a whole. The Southwest is again anomalous.

In spite of the general conformity between puberty and geographical areas, only about ten per cent of the specific traits seem to be determined by specific geographical factors.

CORRELATIONS WITH LANGUAGE

In any large group of culture elements, some are almost certain to have a high correlation with some linguistic unit. This is not equivalent to saying that culture in general has a high correlation with language or that one can be inferred from the other. Such is certainly not so.

The method of this section differs from that of Klimek[83] in one important respect. Klimek correlated only the broadest linguistic units with culture: Athabascan, Hokan, Penutian, Shoshonean, and the like. I have used in addition subdivisions when those subdivisions were represented by sufficient tribes to make the result significant. Thus in addition to Hokan, I add Northern Hokan and Yuman. It may be suspected that in the long run the highest correlations between language and culture will be among compact and relatively recent linguistic groups, such as the Southwest Athabascan, rather than among broad, loose, and old groups, such as the Na-Dene.

The linguistic classification used is that of Sapir,[84] with more detailed subdivisions in California from Dixon and Kroeber.[85] Linguistic classes represented by less than three local groups are omitted. Table 2 gives the facts. Correlations are based on the universe of table 11. All correlations were not computed because of limitations of time. A group of presumably high correlations were selected by inspection, computations made, and those above 0.3 entered in the table. The value 0.3 is an arbitrary choice but it is about the middle of the range of intertrait correlations (tables 9 and 11).

With the exception of Hokan and Hokan-Siouan, all correlations above 0.3 between puberty and language involve linguistic units of continuous or nearly continuous geographical distribution. The Southwest Athabascans and the Southern California Shoshoneans form two generally recognized types of culture. North Pacific Coast culture as a whole does not fit the entire Algonkin-Wakashan group, nor even Wakashan, very neatly. Of the 118 traits given in table 13, only 26 (or 22 per cent) correlate above 0.3 with language. Therefore,

TABLE 2

Correlations (r_{hk}) of Puberty with Language

(Blanks are values of 0.3 or less)

Language	Girls' puberty elements							
	VII	III	147	131	202	IV	I	IX
I. Algonkin-Wakashan	0.7	0.6	0.5	0.5				
A. Wakashan								
B. Salish	0.5							
II. Penutian								
A. California Penutian								
B. Oregon Penutian								
C. Plateau Penutian								
III. Hokan-Siouan						0.4		
A. Hokan						0.4		
1. Northern Hokan								
2. Yuman								
IV. Athabascan								
A. Pacific Coast Athabascan					0.4			
B. Southern Athabascan								0.7
V. Shoshonean								
A. Basin Shoshonean								
1. Mono-Bannock (N Paiute)								
2. Shoshoni-Comanche (Shoshoni)								
3. Ute-Chemehuevi (S Paiute)								
B. Southern California Shoshonean							0.7	

*Roman and Arabic numbers heading columns are those of table 13.

[83] Klimek, 1935.

[84] Sapir, 1929.

[85] Dixon and Kroeber, 1919.

language itself, or the historical relationships inferred from language, determine or partly determine only a small percentage of puberty distributions. As with geography, language explains only a small part of the facts. Historical implications are discussed in more detail under "Historical Speculations."

NATIVE EXPLANATIONS OF OBSERVANCES

Native explanations of observances are catalogued by tribe in Part II, and correlated with each other and with various elements of behavior in table 3 below. This table makes no attempt to distinguish areal differences because this cannot be done reliably from so small a sample. The elongated appearance of the table is an exaggeration of the true facts because the thirteen elements are telescoped summaries of behavior, whereas the detailed list of rationalizations is much closer to the original source material. The frequencies within a single section, such as the section headed "Sickness," often do not add up to the figure that is entered for the head for two reasons: the same tribe may have two or more specific variants; the source material may only give the information in generic form, in which instance it can be entered only for the heading.

Several generalizations obtrude. First, the sanction of the taboos and prescribed acts is

TABLE 3

Frequency Distribution of Native Rationalizations Connected with the Thirteen Traits Most Often Rationalized
(Frequencies refer to tribes).

Rationalizations	Girls' puberty elements												
	49. Meat taboo	53. Salt taboo	55. Cold water taboo	57. Must use drinking tube	60. Scratching or touching self with hands taboo	77. Head or eyes covered	84. Gazing at people taboo	85. Gazing at sun, moon, sky taboo	87. Avoidance of fire	114. Restriction on sleep	115. Restriction on talking or laughing	116. Physical exertion or work by girl	154. Public recognition of girls' puberty
If taboos are broken:													
Harm to girl	25	7	5	3	34	1	11	19	12		21	30	16
Bodily harm	23	7	5	3	34	1		17	10		7	1	
Sickness	12	4	4	2	10			15	7			1	
Consumption	3												
Cough, cold, throat disease	1		1	1									
Blood dries up or cakes		1	1										
Cramps or flow stops	2		3									1	
Body swells up		1					1						
Muscular weakness	1	2											
Stomach trouble				1									
Skin disease					6								
Dandruff					2								
Sore or weak eyes: blindness					3		2	15	7				
Malformation or disfigurement	7		1		29		1		2		7		
Loss of teeth	2		1		1				1		2		
Loss of hair					21		1						
Hair ends split					2								
Hair stands up or curls					2								
Hair grows on lips				1	1								
Hair growth on stomach	1												
Too much hair on body					1								
Mouth turns into beak	1												
Growth in belly	1												
Ugliness	2	2			1								
Red face									1				
Wrinkles on skin	1				2						5		

TABLE 3 (Continued)

Rationalizations	Girls' puberty elements												
	49. Meat taboo	53. Salt taboo	55. Cold water taboo	57. Must use drinking tube	60. Scratching or touching self with hands taboo	77. Head or eyes covered	84. Gazing at people taboo	85. Gazing at sun, moon, sky taboo	87. Avoidance of fire	114. Restriction on sleep	115. Restriction on talking or laughing	116. Physical exertion or work by girl	154. Public recognition of girls' puberty
Scars, streaks, spots on skin					9								
Gray hair	1				4								
Premature old age	3	1			1				1				
Difficulty in childbirth			1										
Insanity	2												
Sterility	2	1			1								
Parasites: lice					3								
Death							1	2					
Religious, moral, or social harm	5					11		3	1	19	14	29	16
Slow												4	
Lazy	1	1								4		28	
Gluttonous	3										14		
See ghosts or dream of dead (soul loss)						3	1	3		14			
Bad luck	1												
Unlady-like conduct						8							
Social disgrace								1	1				
Harm to others	3	1					13	1	1				
To girl's family	3	1						1	1				
Sickness	1	1							1				
Her future children harmed	2												
To nonrelatives								1					
Sickness							1						
Death							1	1					
People turn to trees							1						
Harm to nature	25			1		1							
Spring dries up				1									
Girl's glance "blasts" world						1							
Spoils hunting luck	25												
If taboos are observed faithfully:													
Good to girl				1						2		17	33
Bodily good				1						2		16	
Small mouth				1									
Strong body												16	
Good runner												1	
Long life										1			
Religious, moral, or social good	1									1		1	31
Purification													5
To accustom girl to hardship	1									1			
So girl will get power from dreams													2
Social prestige													30
Various													
Storm, thunder, and lightning will come				1				5			1		1
Keeps flies away						1							
Prevents girl's seeing sun, moon, sky, fire						13							
Sun						7							
Moon						4							
Sky						4							
Fire						1							
Prevents girl's seeing people or being seen						6							

mainly fear. Almost always the native explanation is in terms of what will happen to the girl if she does not obey the rules. This is, of course, partly a matter of expression: thus living a long life and not experiencing premature old age or death are the same thing. But the consistent negative form of the statement of the rationalization reflects, I believe, a fundamental characteristic of primitive religion, at least of beliefs concerning menstruation. Furthermore, it is certain that in most instances the harm that may come to the girl is concrete bodily harm, which is easily comprehended by anyone under taboo. Even soul loss, which at first blush strikes one as a sophisticated abstraction, expresses itself overtly in sickness or even in death for the unfortunate person whose soul has been stolen.

Perhaps the next most striking result of table 3 is the scattered appearance of the frequencies. No element of behavior is explained by a single belief, and only the most specific and least frequently reported beliefs are confined to a single element of behavior. If fairly complete distributions of native explanations were obtainable, it would be possible to determine whether behavior or beliefs were distributed more widely or more continuously and perhaps to throw some light on the relative stability of these two kinds of culture. This cannot be done from the meager evidence at hand.

The great bulk of explanations are, of course, fictions of native mentality; but a few possess grains of efficacy, and still others reflect more general types of native belief. The efficacy, or lack of it, of the various observances is discussed in detail under "Physiological and Psychological Aspects."

The meat taboo is rationalized in two chief ways: that the girl will be harmed; that the luck of hunters will be spoiled. These explanations do not seem to be confined to separate areas. The latter reason is a specific variant of the generic belief that menstruation, and probably everything to do with sex, is unclean. Should the girl eat meat, animal spirits would be offended and would not permit their bodies to be killed.

Rationalizations for the scratching taboo consistently center around afflictions of the hair and skin. Although the hands, and especially the nails, might easily infect the body in scratching, it is difficult to see that a stick used for the purpose would be more sterile, unless it was changed often, which does not seem to have been done. In Northern California, at least, many women wore the scratching stick all the time on a cord around the neck, and used it when their hands were soiled from preparing food or were otherwise unfit for scratching.

The fundamental reasons for covering the head or eyes, and probably for seclusion itself, are to prevent the girl's seeing people or being seen by them, and to prevent her from seeing the sun, moon, or fire. Seeing people or being seen by them may harm both the girl and the people. Seeing the sun, moon, and fire is most frequently thought to cause blindness. There may be a germ of truth in the last belief, because too much exposure to the smoke and heat of a fire could cause eye troubles.

The chief explanation of the restriction on sleep is to prevent the girl from dreaming of the dead and having her soul stolen by a ghost. This is reported only for Northern California but I suspect it occurs in the North Pacific Coast, the Plateau, and the Athabascan and Yuman Southwest. Thus, for the Maricopa tribe, Spier reports that everyone regularly arose at dawn to avoid bad dreams and the resulting sickness, and that children were told stories to keep them awake late at night.

Under the taboo on talking or laughing, garrulousness refers to talking, wrinkles to laughing.

Physical exertion or work is prescribed more often for the good of the girl's character than to strengthen her body, although both are common reasons. There is good reason to believe that the instruction and practice in women's tasks at this time actually does help to make the girl a more accomplished woman. This is the nearest approach to formal education among many tribes.

The statement from Northern California that public singing and dancing is held to keep the girl awake and prevent her from dreaming of the dead is a nice instance of the assignment of a noble motive to a pleasurable task.

Summary.--Although a few native reasons seem to be based on fact, most are scientific fictions.

PHYSIOLOGICAL AND PSYCHOLOGICAL ASPECTS

This section attempts to determine how much of Indian puberty observance can be explained in terms of innate feminine physiology and psychology. It is not concerned with the physiology of menstruation itself, but rather with the effect menstruation has on the physiology of the body as a whole and particularly on mental or emotional characteristics. This subject is very controversial and there is little knowledge concerning it, due more to the prudery still surrounding it than to any inherent difficulty. Most studies deal with such small numbers of cases that it is impossible to derive any valid generalization from the results. Rather than to labor through literature of such limitation, I have chosen to summarize a few of the best sources.

The first is a critical review by Seward of a wide range of literature. Because Seward's opinion is worth more than mine, I have done little more than restate her conclusions in the following paragraphs.

1. There are no consistent cardiovascular changes accompanying menstruation.
2. Temperature shows a significant premenstrual rise followed by a menstrual fall.
3. Metabolic rate also shows a significant premenstrual rise followed by a menstrual fall.
4. For sensory functions, range of vision is narrowed prior to menstruation and widens to normality during menstruation. Cutaneous sensitivity is apparently increased in the premenstrual period.
5. A single study revealed a reduction of activity of the sympathetic nervous system in 19 out of 30 cases. Pharmacological methods have revealed a menstrual diminution in "neurovegetative tone."
6. Reflexes show no definite menstrual changes.
7. The best studies of muscular strength reveal an increase from the beginning of the intermenstrual period to a maximum just before menstruation, followed by a decrease during menstruation.
8. The evidence on motor coördination is conflicting but results are probably negative.
9. Results from psychomotor efficiency tests are conflicting.
10. On the assumption that definite tests encouraged subjects to exert themselves more when menstruating to overcome impaired efficiency, one investigator assigned his subjects a complex task and instructed them to stop when they had had enough. The quality of performance was not impaired by menstruation but the quantity significantly diminished.
11. Increased introversion during menstruation was the general reaction observed through a questionnaire method.

By far the best study of emotional concomitants is that of McCance, Luff, and Widdowson. They constructed a detailed questionnaire, which was filled in daily over a period of from four to six months by one hundred and sixty-seven English women, mostly unmarried and engaged in professions such as teaching, nursing, and the like. Also, they give rather adequate physical facts, which I present here in the first three items:

1. Length of menstrual cycle: mean 27.5 days; sigma 3.4 days.
2. Duration of menstrual flow: mean 5.3 days; sigma 1.2 days; range 1-10 days; mode 5 days. From 1091 menstrual periods.
3. Onset of menstruation most frequently at 8 or 9 A.M.
4. Factors which show significantly greater frequency during menstruation or immediately before are these: fatigue; abdominal pain; pain in the back; headache; breast changes; depression; crying; irritability; increased effort required for intellectual work.
5. Sexual desire and intercourse reach their maximum on the 8th day after the onset of menstruation.

It is significant that most of the frequency figures of the items under number 4 do not rise above 10 per cent during menstruation. The most frequent single symptom, abdominal pain, occurs among only 35 per cent at the onset of menstruation.

Psychiatric facts are given by Chadwick. No definite idea is given of the frequency of the various symptoms but all are supposed to be common. I suspect they are much more frequent among the mentally diseased than among a representative sample of a normal population.

1. Children may be influenced emotionally by the menstruation of women in charge of them. Menstruating women show increased hostility toward children.
2. Boys notice the odor of a menstruant more often than do girls, and this odor seems to result in bad temper in the boys.
3. The smell and sight of blood seems to awaken primitive fear and horror in most children and in many adults.
4. A naïve girl is afraid and ashamed at her first menses, often believing she has injured herself, or has contracted a disease, or is receiving supernatural punishment for former sins. The menstrual flow is often associated with the other excretory functions and it may recall an early childhood feeling of guilt or inferiority due to failure to control excretions well enough to satisfy adults. Also, a girl is often disappointed because the attitude of her family toward her does not change as much as she would like. She wants to be treated as an adult, to know more about sex, and would even seem to welcome a ceremony to publicize her status.
5. Both boys and girls often show an interest in self-torture at puberty: often associated with masturbation.
6. At menstruation women often experience feelings of contamination, unhappiness, loneliness, and a desire for suicide: in general the symptoms of melancholia. These may be accompanied by a desire for companionship, love, and sympathy, or a reverse feeling of hostility and aggression toward others.

Is there any proof that the correlatives of menstruation summarized above are innate? The proof is certainly far from conclusive. Psychiatrists have known for some time that profound physiological changes can be brought about solely by cultural (mental) factors. In other words, granting the validity of the foregoing observations, it is still possible that popular beliefs concerning menstruation are powerful enough to cause emotional conditions which in turn cause physiological changes. But one fact points to the innate character of at least some of the results. Some of the physiological traits reviewed show continuous variation throughout the entire monthly cycle. Popular notions of illness and uncleanliness are almost always associated only with the few days of flow. It is therefore difficult for me to see how purely cultural factors

could produce continuous monthly variations. While I am not prepared to state specifically the symptoms that are innate and those that are cultural, nevertheless I believe that there are innate physiological changes correlated with the menstrual cycle which in turn cause emotional or mental changes. These changes are too slight to be validly observed in normal individual women, but they show up in carefully controlled statistics on populations of normal women and in individual records of neurotics or psychotics. Without any specific evidence, I assume that the same is true among Indian women.

It has been suggested that ceremonial numbers may have originated from the number of days that menstruation lasts. Thus the number four would be derived from four days of menstrual flow. A theory such as that could only be tolerated by a mind unaware of the definite individual differences that populations show with respect to any biological phenomenon. McCance, Luff, and Widdowson found great individual differences in duration of flow. In lieu of specific data from Indian women, it is safer to assume individual differences than uniformity. The fact that Indian women over widespread areas report an integral number such as four or five days for the menstrual period is best interpreted as evidence that they are influenced by their culture patterns, not that biological uniformity exists.

The belief that menstrual fluid is contaminating probably owes its origin or maintenance partly to innate factors. Chadwick's citations of emotional disturbances arising from the smell or sight of blood seem to indicate this. In fact most mammals react to blood in this same way. This does not explain why menstrual "blood" should be thought more contaminating than other blood. But if feelings of shame and fear felt by pubescent girls with no knowledge whatsoever of menstruation have any innate basis, the combination of these emotions would be sufficient to explain much of Indian attitude.

The belief that the girl is especially susceptible to harm at puberty is also probably connected with her emotions at the time.

The seclusion of the pubescent girl is consistent with her feeling of shame at the time and the native notion that she may contaminate others. The origin of this trait may thus be partly biological.

The reader may legitimately ask how emotional factors that seem to be present among only a small fraction of a population can contribute to the origin of beliefs shared by the great majority. We have only to turn to messianic cults or to truly aboriginal shamanism to see this mechanism at work. Nearly every tribe in the area of this study had a small class of shamans who obtained their power to cure from supernatural experiences. While perhaps ninety per cent of a tribal population never had such experiences or had them only occasionally, they nevertheless believed in the reality of the shaman's divine rapport and were content to pay him to cure their own ills. Although we know much less about the mechanism of the spread of menstrual beliefs, it is easily possible that a very small percentage of neurotic or psychotic women could be responsible for the origin and maintenance of this tradition.

In order to answer more directly the problem of the efficacy of Indian treatment of menstruation, I abstracted the nine traits listed below and I asked Dr. Lois Brock, the chief gynecologist of Cowell Memorial Hospital (the University of California infirmary in Berkeley), to fill in her opinion. These are the results:

	Beneficial	Harmful	Neutral
Increase of physical exercise	x		
Decrease of physical exercise			x
Vegetable diet			x
Nonresidue diet			x
Salt-free diet			x
Complete fast		x	
Reduced liquid in diet			x
Bathing in cold water			x
Application of heat to abdomen	x		

Food restrictions seem to be entirely cultural. However, one could probably show that in instances where menstrual neuroses affect the gastrointestinal tract a light and warm diet, such as the acorn gruel of California, would be beneficial.

Increase in physical exercise is apparently beneficial for the modern American girl. But there is still some doubt as to whether an increase over the amount of exercise taken normally by an Indian girl in her daily tasks would benefit her.

Application of heat to the abdomen is beneficial because heat tends to soothe the sympathetic nerves allowing normal menstrual physiology to proceed.

Bathing of course has the practical function of making the girl physically clean. It seems strange that Dr. Brock considers bathing in cold water neutral when application of heat to abdomen is rated beneficial.

The extreme physical hardships which girls endure on the plateau must certainly do them physical harm, although it is conceivable that some emerge mentally tougher and therefore better able to stand future hardship.

Summary.--Only a small percentage, certainly not more than ten per cent of the two hundred and fourteen traits given in the basic list, seem to have an innate basis. The great majority of items can be treated purely as culture traits.

HISTORICAL FACTS

The following are direct statements of ethnographers or informants and refer to changes within the last fifty or sixty years unless otherwise stated. They are so few that a listing by tribe is practical. Prodigious combing of old sources would no doubt reveal a much larger array of this kind of evidence, but the return per unit of effort would still be small. Puberty rites are practically nonexistent in most of western North America at the present time. It is unfortunate that ethnographers have recorded so little concerning this process of cultural decay or of substitution of new beliefs and materials for old.

Tahltan.--Formerly the girl was secluded alone in a separate hut. Recently she has been screened off in a corner of the dwelling. This may be an imitation of coast practice, or a diminishing of the severity of observances, or both.

Alberni Nootka.--A one-headed drum or tambourine has recently replaced the hollow-wood rattle. According to Philip Drucker, the tambourine has probably arrived late to the Middle North Pacific Coast, where it is most often connected with the hand-game. The source is more northern. Sapir is impressed with the fact that the Nootka "still cling tenaciously to the observances of girl's puberty ceremonies," although the individual restrictions are shorter and less severe than formerly. This is also true of the Apache.

Eastern Navaho.--Sugar is now taboo during menstruation, apparently in imitation of the salt taboo.

Mescalero Apache.--At present, puberty rites at or near the time of first menstruation are mere family affairs. But annually, from the first to the fifth of July, a group rite is held for all girls who have menstruated for the first time within the past year. This development is certainly independent of Southern California or any other locality where a rite for a group of girls is held. Reasons or causes of this change seem to be several. First, the individual girl's puberty rite was the most important single ceremony of the Mescalero. It probably tended to be given more often in summer than in winter because of the available food supply and clement weather. In imitation of Americans, most Indians make a holiday out of the fourth of July anyway, so what could be simpler than to give the girls' puberty ceremony then? Because there is only one fourth of July and several girls to make their débuts, a group rite was the logical solution. Perhaps also the sharing of the expense by several families provided an added incentive.

San Carlos Apache.--In recent times the girl grinds wheat instead of corn for initiatory work. This is an instance of substitution of a product of similar use.

Yuma.--The Yuma were visited in 1775 by Eixarch,[86] in 1889 by Trippel, in 1931 by Forde, and in 1936 by Halpern. The following differences are noted. Eixarch: (a) The hotbed consisted only of warmed sand under and over the girl, no mention of arrowweed or other plants. (b) The girl was tossed in the air three times and let fall the last time, apparently to insure future good health. Forde: (a) On the hotbed the girl lies on arrowweed, over sand and stones. (b) She is not tossed in the air, but a man of fine physique steps on her back to make her "grow straight." Halpern: A woman walks on the girl's back.

Whether the use of plants or sand for the hotbed represents a local or family variation that might occur at any period in history, or a true temporal difference, is difficult to say. But the substitution of the back-stepping for the tossing of the girl does seem to be a true historical change. Forde apparently inquired concerning the tossing, but obtained only denials of it. Since the tossing is not reported for any other tribe, it is difficult to construct reasons for the change.

Diegueño.--Formerly two shell scratchers were used, recently two sticks. This seems to be an instance of degeneration. The shell material and the manufacturer may not have been available in recent times. The sticks are a substitute.

Luiseño.--"In very ancient times" scratchers consisted of oblong pieces of stone or of haliotis, perforated at one end and fastened with a string to the wrist. Recently two sticks have been used. This is a parallel to the stick substitution among the Diegueño.

Walapai.--Recently sugar has been tabooed during menstruation. It is thought to cause loss of teeth. This seems to be an extension of the salt taboo, and it is a parallel to the sugar taboo among the Eastern Navaho and to the substitution of wheat for maize among the San Carlos Apache.

HISTORICAL SPECULATIONS

The paucity of historical facts in the preceding section explains in part why most ethnologists indulge in historical speculations. In the present study we have seen that the distributions of the bulk of girls' puberty facts cannot be satisfactorily explained in terms of native ideology or function, feminine physiology, geography, or

[86] See Bolton.

language. The present section offers some historical inferences which are thought to explain further the distributional facts. Although the author believes these inferences are more likely to be correct than not, he knows no way of determining their correctness. Past history is not automatically resurrected by correlation techniques, as Klimek seems to argue.[87] However, correlations do facilitate an organization of data, which is a desirable prelude to historical speculations. Table 4 gives an outline of the speculations in this section.

TABLE 4

Historical Speculations

(Reading from the bottom up)

North Pacific Coast	Northern California	Southern California	Plateau	Great Basin	Southwest
					Individual public puberty ceremony of the non-Pueblo
Individual public puberty ceremony	Individual public puberty ceremony				
Work complex	Work complex			Work complex	Work complex
	Female initiations	Female initiations	Work complex		Female initiations
	Male initiations	Male initiations			Male initiations
Rest complex	Rest complex	Rest complex		Rest complex	Rest complex
Universals					

The oldest traits are believed to be those which are universal, or nearly so, in western North America. The sporadically world-wide distribution of these traits is probably a better indication of their great age than universality in a single area. Another indication of great antiquity is the fact that certain traits, at least food and drink restrictions, scratching taboo, and seclusion, are prominent in many departments of single cultures.[88] The universal traits, already listed in the section on "Girls' Puberty Trait-Complexes" under the side heading "Universals," are: the beliefs that the girl is unclean, that she is especially susceptible to harm, that her actions at puberty predetermine her behavior throughout life; seclusion; attendant; food and drink restrictions; scratching taboo; initiatory work; bathing and changing clothes at end of menstruation or seclusion; instruction; avoidance of men. Because these traits are sporadically world-wide in distribution they do not indicate any migration or diffusion within western North America. They could have been brought to this area by several different waves of immigrants, or have been diffused at various times from Asia, or from more easterly North America. In general, however, I believe they were brought to North America by the first immigrants. There

[87] Klimek, 1935, p. 61.

[88] See table 1, p. 30.

is no evidence of these concepts spreading rapidly over a large area as did the 1890 Ghost Dance in North America.

The next oldest group of traits are thought to be those whose nucleus is the rest complex: lying on a hot bed usually in a pit; no physical exertion of any kind during actual menstruation; and the taboo on drinking or bathing in cold water. To this list may be added the salt taboo, ceremonial numbers 3 and 6, and possibly the covering of the girl's head with a utilitarian basket. The distributional evidence for the unity of this list is not very satisfactory. However these items occur mainly in the southern half of the area, especially California.

Male initiations of Central California, Southern California, Lower California,[89] and among the Pueblo are believed, along with Kroeber, to have a common origin in a very early period. These have been included in the historical scheme because I believe female initiations in California and among the Pueblo were derived from them. Some evidence (the similarity in ritual content) has already been given in the discussions of puberty patterns for the respective areas. The astounding ritual parallels in Tierra del Fuego and even the Old World compel me to be sympathetic toward the view that these rituals were brought into America by immigrants at a very early time, that they have been supplanted in most areas by later ceremonies and beliefs, and now survive only in marginal areas. The increasing evidence for Australoid or Oceanoid physical types in the Americas seems to lend support to this view.

At a later period another type of puberty rite arrived from Asia or developed in the northern interior of North America. The nucleus of this is the work complex: the sitting or squatting in seclusion; the hot-food taboo; running, working, and bathing outdoors during first menstruation; and perhaps the complete food fast, seclusion in a separate hut, the vision quest, and scarification and bleeding of the girl.[90]

The work complex presumably moved southward from the northern Plateau, spreading westward to the Pacific coast from Vancouver Island to Northern California, and southward through the Great Basin into the Southwest. The mechanism of spread must have been chiefly migration, although diffusion no doubt also played a part. The direction was mainly north to south although some traits may have traveled in other directions.[91]

Public recognition of the pubescence of a single girl at the time it occurred probably originated on the North Pacific Coast whence it spread south into Northern California and into the Athabascan Southwest. The total trait distributions (tables 13, 14), the intertribal correlations (tables 10, 12), and the inferred linguistic history of the Southwest Athabascans lend themselves to this interpretation.[92] The great emphasis on publicization of individual crises or changes of social status on the North Pacific Coast, as exemplified specifically in the potlatch, seems to me to be further presumptive evidence of the northern origin of these girls' puberty rites. Other relevant evidence has already been given in the discussions of puberty patterns; and the section, "Residual Distributions," gives a few items highly suggestive of north to south contact. Traits shared by the Athabascan Southwest with both Northern California and the North Pacific Coast are thought to be the oldest stage of this development, those common only to Southwest Athabascans and Northern Californians a later stage, and finally those exclusively Southwest Athabascan or shared with neighboring southern tribes the latest. These have already been cited in the discussions of individual areas and plotted in distribution tables and need not be repeated here.

There are a few Southern California features which seem to me to have been derived from the north via the Great Basin. These are: the race at the conclusion of the rite; the wearing of bands around arms and legs; rock painting; and the delousing ceremony of the Cupeño. Kroeber long ago pointed out certain parallels between northern and southern California which were lack-

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[89] Cited by Kroeber, 1932:414-415.

[90] These items may have been brought southward by Penutians or Aztec-Tanoans. The physical type of these peoples is thought to have been definitely Mongoloid.

[91] It is worth stating perhaps that such inferences are not based on puberty material alone, but on all of the modest knowledge I have of aboriginal America. All the evidence from linguistics, ethnology, physical anthropology, and archaeology seems to me to indicate many movements of peoples, most of them from north to south, because the bulk of Indians, if not all, certainly came from Asia via Alaska. Although certain traits, such as maize agriculture, obviously originated in Middle America and diffused outward in both directions, I believe this theory of diffusion has been overdone. For North America we have relied too much on diffusion from the south and too little on migration from the north. For the two Americas, Nordenskiöld has shown that the most striking similarities are found between western North America, especially California, and South America from the Chaco to Tierra del Fuego. These traits seem best explained as marginal survivals of an Urkultur. The higher cultural developments of Middle America, and migrations from north to south over the eastern parts of the two continents, plus probable diffusions in other directions, seem to have obliterated most if not all of the connecting links.

[92] If much of the material had been explainable in terms of innate physiology it would have been advisable to eliminate such traits from the group used to infer history, because independent origin would have to be taken into account. To a lesser extent this would apply to geographical correlatives.

ing in central California: for example, the basket hat and the basket mortar. From the results of the culture-element survey, we now know these distributions to be nearly continuous through the western edge of the Great Basin. Therefore, the girls' puberty items cited above seem to be only a small part of an important block of traits indicative of north to south contact via the Great Basin. Predominantly northern elements found in the Yuman area and the Pueblo Southwest have been given in the discussions of these areas. These items strengthen the thesis of this paragraph.

Without laboring through the entire remaining list of items, I believe that continuous distributions most often represent historical contact, whether diffusion or migration. Diffusion within the major areas shown on map 2 is too obvious to need more than bare mention.

Conclusion.--Broadly speaking, we seem to have here an example of convergence. The Southern California public rite seems to have developed independently of those of other areas.[93] It seems at present to be a sort of survival of a very old and formerly more widespread type of rite. The predominant type of public puberty ceremony originated on the Northwest Coast and spread southward mainly by migration, perhaps entirely in the custody of Athabascans. Subsequent diffusion took place in both Northern California and the Southwest. Although the intruders seemed to have been rather successful in imposing their new ideas on the earlier occupants of these areas, they also seem to have absorbed a great deal from the latter. The unfavorable environment of the Great Basin, and to a lesser extent of the Plateau, seems to have checked the diffusion of public recognition eastward.

[93] Excepting the limited occurrences of girls' "schools" in Northern California, which, I assume, have a derivation from boys' initiations as do Southern California girls' rites.

SUMMARY

Table 13 and map 1 constitute a summary of the distributional facts. The traits are not randomly distributed with respect to each other but fall into two kinds of groupings: tribe and trait. Mostly the boundaries of these groups are not sharp but shade into one another. Statistics were used to construct table 13. Although possibly it could be done intuitively, statistics greatly facilitate the linear arrangements of tribes and traits which show the best classification of the material.

Only about ten per cent of the traits listed in table 13 correlate with geographical environment and actually seem to have been determined (at least partly) by geography.

About twenty per cent of the traits in the same table show significant correlations with language. In most instances the correlative linguistic units are of continuous or near continuous geographical distribution.

From a compilation of native explanations of observances it was found that no element of behavior is explained by a single element of belief and conversely that few beliefs are confined to a single element of behavior. The sanction of taboos and prescribed acts is chiefly fear. Most native explanations are rationalizations from the point of view of modern science.

Not more than ten per cent of the entire list of traits have any innate basis. At least ninety per cent are purely cultural in contrast to biological.

Historical facts are too few to yield any important generalization.

Historical speculations are summarized in table 4 and under "Conclusion" of the preceding section.

PART II. STATISTICS

STATISTICAL METHODS

The statistical methods used here are mainly those of Klimek.[94] Klimek correlated (using Q_6) tribes with tribes, traits with traits, and trait-complexes with tribes. All tribes were intercorrelated, but because there were some 425 elements, it was practically impossible to correlate each of these with every other one. For this reason Klimek broke up the total number of elements into five sections. Interelement correlations were determined within each of these five sections and the "strata" in each defined and shown graphically in tables.[95] In the discussion of the results he intuitively equated certain "strata" in one table with those of another.

The present technique differs in certain respects. Instead of Q_6, I have used r_{hk} as a measure of correlation.

$$r_{hk} = \frac{ad-bc}{\sqrt{(a+c)\ (b+d)\ (a+b)\ (c+d)}}$$, where "a" is the number of cases in which both phenomena compared are present, "b" the number of cases in which the first is present and the second absent, "c" the number of cases in which the second is present and the first absent, "d" the number of cases in which both are absent. Q_6 and r_{hk} are true mathematical functions and will always give parallel results. I prefer r_{hk} merely because it can be computed on a slide rule with one step less than Q_6.[96] The time required is less than one minute.

Because the statistics in the present study are based on 159 tribes and 118 traits, it was impractical to compute all the intercorrelations between either type of unit. Dual divisions of both the tribes and traits would have resulted in four different statistical universes. The intuitive equating of certain trait-complexes or tribal-complexes in each of the four universes would have been difficult and unconvincing. Therefore I have used a method of pooling similarly distributed groups of traits and similarly distributed tribal inventories into larger units, of constructing a single composite distribution to represent the group, and of intercorrelating each group with every other group. The correlations within both trait and tribe pools are given in tables 5 and 6. The final result is shown in tables 11-13 (at end). This method eliminates one intuitive step from Klimek's routine. I have not computed correlations between traits or trait-complexes and individual tribes or tribal pools. These relationships seem obvious enough from inspection of table 13.

Because the pooling technique has not been used before in ethnology, it will be described in detail. The first step is to tabulate the data on two sets of data sheets, each of which is a cross-file of the other. The first data sheet is headed with a culture element and the presence or absence among tribes of each element is entered. The second sheet is headed with a tribe and the presence or absence of each trait is entered. One of each type of data sheet is illustrated in the samples on page 67.

It does not matter whether tribes or traits are intercorrelated first. Therefore let us arbitrarily begin by correlating tribes.

(1) Choose any tribe from the second type of data sheets and compare its trait inventory with that of every other tribe. (2) Select all those tribes with which you think it will correlate above some arbitrary level, such as 0.50, and make a list of those tribes. (3) Then choose a second tribe and likewise compare it by inspection with every other tribe, listing other probable high correlatives. (4) Continue this process until all presumably high correlations have been abstracted from the total number. In practice this is not as mechanical as it may seem because geographically neighboring tribes most often show highest correlations. (5) Compute all correlations thus selected. If the selection is made cautiously and conservatively there should be a fair number of coefficients that fall ten or twenty points below the arbitrary dead line. In this situation there should be some values in the 0.40's and 0.30's. This is necessary in order to make sure that none above 0.50 have been overlooked. If some values within the desired range are overlooked, it is not serious. It simply means that certain tribes will not be grouped into pools but will remain separate variables. Ultimately their correlations with other tribes or pools of tribes will be determined and the overlooked values will automatically appear in the final intercorrelation table. Incomplete pooling merely increases the amount of mechanical labor. Nothing of importance is lost. (6) Group together in a pool all tribes whose correlations with each other average higher than the arbitrary level set.

There is no rule for determining the arbitrary lower limit of average correlation within a pool. This is purely a practical matter. The point is to boil down the total number of variables to be

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[94] Klimek, 1935.

[95] Ibid., tables 2-6.

[96] The steps in the computation are these: (1) Compute the numerator in the most convenient way, with tables, calculating machine, or slide rule; and write it down. (2) Take the slide rule and multiply the four values in the denominator on the A and B scales of a Keuffel and Esser rule. The square root of their product automatically appears on the D scale. (3) Put the numerator on the C scale and divide it by the value on the D scale. (4) Read r_{hk} from the C scale.

TABLE 5

Correlations within Trait Pools*
(Decimal points have been omitted)

I

	2	21	82	104	144	148	163	173	208
2		5	5	5	7	7	7	7	5
21	5		4	8	7	6	6	6	3
82	5	4		4	9	8	7	7	6
104	5	8	4		8	6	7	6	2
144	7	7	9	8		9	9	10	7
148	7	6	8	6	9		9	10	7
163	7	6	7	7	9	9		10	8
173	7	6	7	6	10	10	10		9
208	5	3	6	2	7	7	8	9	

II

	18	87	85
18		7	4
87	7		7
85	4	7	

III

	23	50	84	40
23		7	5	5
50	7		6	5
84	5	6		8
40	5	5	8	

IV

	28	80	168
28		5	6
80	5		5
168	6	5	

V

	31	119	121	130
31		7	5	5
119	7		6	4
121	5	6		8
130	5	4	8	

VI

	32	39	49
32		7	5
39	7		9
49	5	9	

VII

	66	207	209	210
66		7	6	5
207	7		8	7
209	6	8		6
210	5	7	6	

VIII

	97	98	101
97		8	9
98	8		7
101	9	7	

IX

	106	107	197
106		7	5
107	7		5
197	5	5	

X

	114	115	154	159	165	172	176	177	178	180	212
114		7	5	5	4	6	5	5	5	5	5
115	7		5	5	3	5	4	5	5	5	5
154	5	5		10	6	9	10	10	10	8	9
159	5	5	10		7	8	9	9	9	8	9
165	4	3	6	7		6	6	6	6	7	6
172	6	5	9	8	6		8	8	9	9	8
176	5	4	10	9	6	8		9	9	8	9
177	5	5	10	9	6	8	9		10	8	9
178	5	5	10	9	6	9	9	10		9	9
180	5	5	8	8	7	9	8	8	9		8
212	5	5	9	9	6	8	9	9	9	8	

XI

	116	123	124
116		7	5
123	7		8
124	5	8	

XII

	117	118	120	126
117		6	8	5
118	6		6	6
120	8	6		6
126	5	6	6	

XIII

	157	169	171	193	195
157		7	6	6	8
169	7		6	7	7
171	6	6		4	6
193	6	7	4		8
195	8	7	6	8	

XIV

	174	179	187	189	190	191	192
174		7	5	6	6	6	6
179	7		6	7	7	7	4
187	5	6		7	7	7	3
189	6	7	7		9	9	7
190	6	7	7	9		9	5
191	6	7	7	9	9		5
192	6	4	3	7	5	5	

XV

	198	200	201
198		7	8
200	7		4
201	8	4	

XVI

	134	135	136
134		9	9
135	9		9
136	9	9	

*Underlined figures are those computed from distributions skewed more than 0.80:0.20 or 0.20:0.80.

TABLE 6

Correlations within Tribal Pools*

A

	BlCl	BlBl	Kwak	CNoo	ANoo
BlCl		7	8	8	6
BlBl	7		9	6	6
Kwak	8	9		8	7
CNoo	8	6	8		7
ANoo	6	6	7	7	

B

	Pent	Cmx	Klah	Sesh	Squa	Sane	Cow	Nan	Lum	Mak	Klal
Pent		10	9	7	8	9	7	8	7	6	6
Cmx	10		9	7	9	9	7	8	7	7	6
Klah	9	9		7	9	8	8	8	7	8	7
Sesh	7	7	7		7	7	6	6	6	4	7
Squa	8	9	9	7		9	8	8	7	7	7
Sane	9	9	8	7	9		9	10	8	7	7
Cow	7	7	8	6	8	9		9	7	7	7
Nan	8	8	8	6	8	10	9		7	7	7
Lum	7	7	7	6	7	8	7	7		7	8
Mak	6	7	8	4	7	7	7	7	7		7
Klal	6	6	7	7	7	7	7	7	8	7	

C

	Coos	Gal	Chet	Tol
Coos		7	7	7
Gal	7		8	8
Chet	7	8		7
Tol	7	8	7	

D

	Kar	Hupa	Chil
Kar		7	6
Hupa	7		8
Chil	6	8	

E

	VanD	Matt	Sin
VanD		7	7
Matt	7		8
Sin	7	8	

F

	Kato	Wail	CYHu	Yuki	NPo	CoMi	HWin
Kato		7	6	8	8	8	7
Wail	7		8	8	8	7	7
CYHu	6	8		7	7	6	7
Yuki	8	8	7		8	8	8
NPo	8	8	7	8		8	7
CoMi	8	7	6	8	8		7
HWin	7	7	7	8	7	7	

G

		Klam	Mod	ESha	WSha
Klam	....		7	6	7
Mod	....	7		7	6
ESha	....	6	7		8
WSha	....	7	6	8	

H

	Atsu	Yana	WAch	EAch
Atsu		8	8	7
Yana	8		7	7
WAch	8	7		8
EAch	7	7	8	

I

	TWin	MWin	SWin
TWin		7	8
MWin	7		7
SWin	8	7	

J

	MMai	FMai	MNis
MMai		7	7
FMai	7		6
MNis	7	6	

K

	NMi	CeMi	SMi	KiYo
NMi		6	8	7
CeMi	6		7	5
SMi	8	7		8
KiYo	7	5	8	

L

	ENav	WNav	JicA	LipA	MesA	WSA	HuA	TonA	CiA	WMA	SCA
ENav		8	6	7	4	5	5	8	8	7	6
WNav	8		5	7	5	6	6	9	8	7	7
JicA	6	5		7	7	6	6	6	6	8	7
LipA	7	7	7		8	7	7	6	6	6	6
MesA	4	5	7	8		9	9	4	5	7	7
WSA	5	6	6	7	9		10	6	6	8	8
HuA	5	6	6	7	9	10		5	6	8	8
TonA	8	9	6	6	4	6	5		8	7	7
CiA	8	8	6	6	5	6	6	8		8	7
WMA	7	7	8	6	7	8	8	7	8		9
SCA	6	7	7	6	7	8	8	7	7	9	

M

	DDie	WDie	MDie	Luis	SSer	Cup	MCah	PCah	DCah
DDie		8	7	7	6	6	6	5	6
WDie	8		9	8	5	8	8	6	6
MDie	7	9		8	5	8	8	6	6
Luis	7	8	8		6	9	8	7	6
SSer	6	5	5	6		6	7	6	7
Cup	6	8	8	9	6		8	7	6
MCah	6	8	8	8	7	8		8	6
PCah	5	6	6	7	6	7	8		7
DCah	6	6	6	6	7	6	6	7	

*Underlined figures are those computed from distributions skewed more than 0.80:0.20 or 0.20:0.80.

TABLE 6 (Continued)

N

	Shus	Lill	Thom
Shus		10	9
Lill	10		9
Thom	9	9	

O

	Sanp	Kali	Pcwa	Wen
Sanp		7	7	7
Kali	7		6	6
Pcwa	7	6		10
Wen	7	6	10	

P

	Als	Sius	SixR	Yur	Wiy
Als		9	9	7	8
Sius	9		9	7	8
SixR	9	9		7	8
Yur	7	7	7		8
Wiy	8	8	8	8	

Q

	CCPa	LkPo	Wap	LkNi
CCpa		9	8	9
LkPo	9		9	9
Wap	8	9		10
LkNi	9	9	10	

R

	Kit	Tub	Kaw
Kit		8	8
Tub	8		7
Kaw	8	7	

S

	Pana	Owen	FLK	Ash	Bty	Lida	GSmV	SmCr	RsRi	Hmlt	Ely	SprV	Elko	Egan	RubV	BtlM	NPMC
Pana		8	7	8	9	9	8	8	6	8	6	8	7	6	6	6	6
Owen	8		7	8	8	8	8	8	8	8	8	7	7	7	5	7	5
FLK	7	7		10	8	8	8	6	8	8	7	6	7	7	7	5	4
Ash	8	8	10		9	8	9	6	8	8	7	6	7	8	7	6	7
Bty	9	8	8	9		9	9	7	8	8	8	8	8	7	7	7	6
Lida	9	8	8	8	9		9	7	7	8	8	8	8	7	8	7	6
GSmV	8	8	8	8	9	9		6	8	9	9	8	8	8	7	7	6
SmCr	8	8	6	6	6	7	6		7	7	6	7	7	6	5	6	5
RsRi	6	8	8	8	7	7	8	7		9	9	8	8	9	8	7	5
Hmlt	8	8	8	8	8	8	9	7	9		9	8	8	8	8	7	6
Ely	6	8	7	7	8	8	9	6	9	9		9	9	9	8	8	7
SprV	8	7	6	6	8	8	8	7	8	8	9		10	8	7	8	7
Elko	7	7	7	6	8	7	8	7	8	8	9	10		7	7	8	7
Egan	6	7	7	8	7	7	8	6	9	8	9	8	7		8	8	4
RubV	6	5	7	7	7	8	7	5	8	8	8	7	7	8		6	4
BtlM	6	7	5	6	7	7	7	6	7	7	8	7	8	6	6		7
NPMC	6	5	4	7	6	6	6	5	5	6	7	7	7	4	4	7	

U

	SnRi	LeSh	BoSh	Ban	GCSh	PrSh	Skul	DeCr
SnRi		8	8	8	6	9	8	7
LeSh	8		9	7	7	7	9	8
BoSh	8	9		7	7	7	9	8
Ban	8	8	7		6	8	8	8
GCSh	6	7	7	6		8	10	9
PrSh	9	9	7	8	8		9	9
Skul	8	9	8	8	10	9		9
DeCr	7	8	6	8	9	9	9	

V

	Tasi	Kuyu	Kupa	Toe	Tov	Pak	Atsa	Sawa	Tago	Wada
Tasi		8	7	8	8	7	8	7	8	7
Kuyu	8		6	7	7	6	7	7	8	7
Kupa	7	6		6	7	7	8	7	8	8
Toe	8	7	6		9	9	8	8	7	8
Tov	8	7	7	9		8	8	9	8	8
Pak	7	6	7	9	8		6	9	9	8
Atsa	8	7	8	8	8	6		9	10	8
Sawa	7	7	7	8	8	9	9		9	8
Tago	8	8	8	7	8	6	10	9		9
Wada	7	6	9	6	7	6	9	8	9	

W

	Mes 2	Mes 1
Mes 2 ...		9
Mes 1 ...	9	

X

	Moha	Hava	Wala	WYa	Coco
Moha		7	9	7	8
Hava	7		7	8	7
Wala	9	7		8	9
WYa	7	8	8		8
Coco	8	7	9	8	

Sample: Tribal Distribution of a Trait

Element 17. Seclusion in dwelling.

Tahl +	Lill -	Til +	Wap +	NMi +	Elko -	Kaib -	SEYa
Tlin -	Thom -	Als +	CoMi +	PlMi	Egan -	SUte -	WYa +
Haid +	Okan	Sius +	LkMi +	CeMi +	RubV -	Mes2 +	Mari -
Tsim +	Ste	Coos +	HWin +	SMi +	SnRi -	Mesl +	Coco +
Hais +	Sanp -	SixR +	HPat +	SJYo +	BtlM -	Zuni -	Yuma +
Xai +	Kali -	Tutu	RPat	SJMo +	NPMC -	Taos	DDie +
BlCl +	Cd'L	Gal +	Cost	KiMo -	LeSh -	SAna +	WDie +
BlBl +	Spok	Chet +		KiYo +	BoSh -	SIld -	MDie +
Wik +	NezP	Tol +	Klam -	LkYo +	Ban -	ENav +	Luis +
Kwak +	Yak	Chim +	Mod -	WYYo	GCSh -	WNav +	SSer +
Kosk +	Pcwa -	Kar +	ESha -	Kit +	PrSh -	Jic +	Cup +
CNoo +	Wen -	Yur +	WSha -	BaPa +	Skul -	LipA +	MCah +
ANoo +	Wish	Wiy +	Atsu -	Tub +	DeCr -	MesA +	PCah +
Pent +		Hupa +	Yana -	Kaw +		WSA +	DCah +
Cmx +	Mak +	Chil +	WAch +	Pana +	Tasi -	HuA +	Serr +
Klah +	Klal +	VanD -	EAch -	Owen +	Kuyu -	TonA +	Gab
Sesh +	Quil +	Matt +	TWin -	FLk -	Kupa -	CiA +	Vent
Squa +	Quin +	Sin +	MWin -	Ash -	Toe +	WMa +	IChu
Sane +	Skok -	Kato +	SWin -	Bty -	Tov +	SCA +	
Cow +	Snoh	Wail +	NMai -	Lida -	Pak +	Pap +	
Nan +	Duwa -	CYHu +	FMai +	GSmV -	Wash +	Pima	
Lum +	Nisq -	Yuki +	VMai +	SmCr +	Atsa -	Chem --	
Song	Chin +	NPo +	FNis -	RsRi -	Sawa -	Moha +	
	Klik -	CCPo -	MNis -	Hmlt -	Tago -	Hava -	
Car	Ktu -	SPo	SNis +	Ely -	Wada -	Wala -	
Shus -		LkPo +		SprV -	Kidu -	NEYa	

Sample: Trait Distribution for a Tribe

Tribe: Pentlatch

1 -	28 -	55	82 -	109 x	136 -	163 -	190 -
2 -	29 -	56 x	83	110 -	137 x	164	191 -
3 -	30 -	57 x	84 x	111 -	138	165 x	192 -
4 x	31 -	58 x	85 x	112 x	139 x	166 -	193 -
5 x	32 x	59 -	86	113 x	140 -	167 -	194 -
6 -	33 -	60 x	87 x	114 x	141	168 -	195 -
7 x	34 -	61 x	88 -	115 x	142 -	169 -	196 -
8 -	35 -	62 -	89	116 -	143 x	170	197 -
9 -	36 -	63	90	117 -	144 -	171 -	198 -
10 -	37 x	64 -	91	118 -	145 -	172 x	199 -
11	38	65 -	92	119 -	146 -	173 -	200 -
12 x	39 x	66 x	93	120 -	147 x	174 -	201 -
13 16	40 x	67 x	94	121 -	148 -	175	202 -
14 x	41 x	68	95 x	122 -	149 -	176 x	203 -
15 -	42	69	96 x	123 -	150	177 x	204 -
16 -	43	70 x	97 x	124 -	151	178 x	205 -
17 x	44	71 x	98 x	125 -	152 -	179 -	206 -
18 x	45 -	72 x	99 -	126 -	153	180 x	207 x
19 -	46 x	73	100 -	127 -	154 x	181	208 -
20 -	47 x	74	101 x	128 -	155 1	182	209 x
21 -	48	75	102 -	129 -	156 x	183	210 x
22 -	49 x	76	103 -	130 -	157 -	184	211 x
23 x	50 x	77 x	104 -	131 -	158 -	185	212 x
24 -	51	78 -	105 x	132 -	159 x	186 x	213 x
25 -	52 x	79 x	106 -	133 -	160 -	187 -	214 -
26	53 -	80 -	107 -	134 -	161	188 -	
27 -	54 x	81 -	108 x	135 -	162 x	189 -	

ultimately intercorrelated to some convenient number such as 50, certainly not more than 80 because Hollerith type punched cards have only 80 columns. In the present study, I chose 0.65 for the tribal pools, and 0.50 for the trait pools. This yielded 50 tribal variables (table 12) and 62 trait variables (table 11). A certain amount of trial and error is necessary in making the preliminary selection of presumably high correlations. The results of the application of this technique to the present data will be described below.

Now construct a composite tribal inventory for each pool of tribes. This could be done by simply recording plus for each trait present among the majority of tribes and minus for those present among a minority or no tribes. However, a more refined technique is the following:[97] (a) count the total number of presences for all tribes in the pool; (b) divide this figure by the total number of entries, both presences and absences, for all tribes in the pool. This decimal represents the relative frequency of presences in the pool, or the mean ratio of presences in all tribes. When a trait is more frequent in the pool than this mean, record it present; when less frequent, record it absent. Thus the mean ratio of presences in a certain pool of ten tribes might be 0.35. In this case, when a trait is present for four or more of the ten tribes, record it present for the pool, because 0.40 is greater than 0.35. When present for less than four tribes, record it absent. Repeat this for every trait. The result is a composite tribal inventory for the pool. Such composite tribal inventories may be ultimately correlated with each other or with individual tribal inventories (table 12). The pooling of traits is exactly the same in principle. The final result of both is table 13.

The justification for the use of the mean ratio of presences instead of the simpler majority-minority principles need not be gone into in detail here; suffice it to say that the mean concept is mathematically more correct and can be used in many ways, such as in Milke's variability formula. Actually what happened is this. In constructing tribal pools for the Great Basin, the mean ratio of presences was 0.20. A trait occurring in barely more than one-fifth of the tribes in such a pool is recorded present for the pool. For other areas this ratio ran as high as 0.50. For these a trait had to be present for more than half the tribes before it was marked present for the pool.

The following facts concerning the application of pooling techniques to the present data give some idea of the actual amount of labor saved. The 159 tribes yield 12,561 interrelationships.[98] In the construction of the tribal pools, 1703 correlations were computed; and in computing table 12, 1225 more; total 2928. This last figure is 23 per cent of the first; the saving is 77 per cent. For the trait pools the facts are similar: 6903 interrelationships among the original 118 traits; 429 correlations computed in constructing trait pools; 1891 for table 11; total 2320, which is 34 per cent of the first; saving 66 per cent. Combining these two sets of figures, we get the following results:

Total number of interrelationships . . .	19,464
Number of correlations computed in constructing pools	2,132
Number of correlations computed after pooling	3,116
Total number of correlations computed. .	5,248
Saving, number of correlations	14,216

In per cent the saving is 73. However, additional time is consumed in inspecting slips, constructing composite distributions, and other tasks. Probably the present job was done in about one-third the time required to have computed every intercorrelation.

For most bodies of data I do not believe it is practical to compute two sets of correlations as done here. A briefer compromise method will be described. Let us assume that we have 500 traits distributed among 50 tribes. First intercorrelate the 50 tribes to determine the most ideal linear order of tribes. Then tabulate the distribution of each trait on a thin strip of paper with the tribes in this predetermined order. Finally, sort these strips by inspection into groups with similar distributions and construct a table such as table 13 or a condensed equivalent. In the present study, the arrangement of traits in table 14 was done in this manner in two days. These distributions in table 14 are too imperfectly known to establish the validity of such an inspection method; however, the technique is far more rapid than the most efficient brand of numerical computation. Without the previous determination of the order of tribes by intercorrelating them, the grouping of traits by inspection would be an extremely difficult task. Where the data are such that the number of traits is less than the number of tribes, it is obviously more practical to compute intercorrelations for traits, then to group tribes by inspection.

[97] I am indebted to W. Milke for this point. It is one step in his formula for measuring variability of distribution within a pool. Information from a personal communication from Milke to A. L. Kroeber.

[98] The formula for combinations of n things taken 2 at a time is: $_nC_2 = \frac{n(n-1)}{2}$. Substituting the 159 tribes for n, $\frac{159 \times 158}{2} = 12{,}561$.

The Hollerith type electric punched card sorter is the only practical way to make the counts from which correlation coefficients are computed.[99] When tribes are to be compared with tribes, use a card for each trait. Assign each tribe to a column of the card and punch presence or absence[100] in each of the columns according to the distribution of the trait. To compare tribes 1 and 2, set the sorter on column one. It automatically sorts the cards into two piles, presence and absence for tribe 1, and counts the frequency of each. Then take the pile of presences for tribe 1 and sort them for tribe 2 in column two. Again two piles appear. Because all the cards in both of these latter piles were present for tribe 1, they represent the number of traits present for both tribes (a), and the number present for tribe 1 and absent for tribe 2 (b). This gives half the fourfold table. Continue sorting the traits present in tribe 1 for presence and absence in all the other tribes, recording frequencies on a data sheet. After this, take the pile of absences for tribe 1, and sort them in the same manner for presence and absence in all the other tribes. This gives the other two cells (c and d) of all the fourfold tables in which tribe 1 is compared. Then split tribe 2, and sort each of its divisions in turn for presence and absence among tribes 3, 4, and so on to the end. Continue in this manner until each tribe has been compared with all other tribes.

When traits are to be compared with traits, use a card for each tribe. Sort as described above. When more than 80 phenomena are to be compared, the method becomes clumsy because there are only 80 columns on a card. For most purposes, however, 80 variables are plenty. If more than 80 occur, select by inspection those variables likely to be highly correlated and punch them on the same set of cards. Group them into pools so that there are no more than 80 variables left for the final intercorrelation.

All correlations in this paper are carried to only one decimal place. The reasons are: the standard errors (table 7) average about one unit in the first decimal place; the observational errors are large (see "Reliability and Validity of Data," below); the incomparability of some of the data produces more errors (see "Comparability of Data," p. 76); the intercorrelation tables are large and confusing as it is, and two places would make them more difficult to read.

TABLE 7

Standard Error of r_{hk} for Symmetrical Distributions*

	r_{hk}									
N	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90
20	0.22	0.22	0.22	0.21	0.21	0.19	0.18	0.16	0.13	0.10
40	0.16	0.16	0.15	0.15	0.14	0.14	0.13	0.11	0.09	0.07
60	0.13	0.13	0.13	0.12	0.12	0.11	0.10	0.09	0.08	0.06
80	0.11	0.11	0.11	0.11	0.10	0.10	0.09	0.08	0.07	0.05
100	0.10	0.10	0.10	0.10	0.09	0.09	0.08	0.07	0.06	0.04
120	0.09	00.09	0.09	0.09	0.08	0.08	0.07	0.07	0.05	0.04
140	0.08	0.08	0.08	0.08	0.08	0.07	0.07	0.06	0.05	0.04
160	0.08	0.08	0.08	0.08	0.07	0.07	0.06	0.06	0.05	0.03

*These errors increase at an increasing rate as skewness increases. When skewness is 90:10 for both variables, these values are approximately doubled. Computed from formula given by Yule, p. 604.

RELIABILITY AND VALIDITY OF DATA

This section is concerned with errors of observation as distinguished from sampling errors. The latter are mentioned under "Statistical Methods" and, with reference to the formula r_{hk}, are given in table 7.

Following the distinction made by psychologists, reliability refers to the consistency of response, that is, the amount of agreement of a single informant on two occasions or of two informants of the same local group; validity refers to the truth of the testimony in either instance. Most of the material in this section is concerned with reliability. The paragraph labeled "Validity" is an attempt to get at the truth or falsity of responses. If errors of two informants of the same tribe are equal in number but uncorrelated, it can be shown that the validity of the testimony of either is higher than the reliability coefficient obtained by comparing the testimony of

[99] The Works Progress Administration employees are a temporary solution, and they have been of great assistance in this paper. Small jobs of course can be done by hand. But we already have here at the University of California sufficient data on western North America to keep about five hand-sorters going ten years. If ever the area is expanded, more efficient methods will become an absolute necessity.

[100] In each column there are ten spaces to punch. Arbitrarily assign one space to presence and another to absence.

the two. Under the same conditions, elimination of the elements on which the two informants disagree raises the validity figure much higher than the reliability figure. However, at present we know too little about reliability and validity to utilize such corrections.

The problem of reliability and validity has recently been discussed by Kroeber[101] and the author.[102] Kroeber's findings are based on relatively indirect evidence. Nowhere does he use the report of more than one informant for each local group. His results are inferred from several kinds of evidence: occurrence of unique elements; ratio of positive to negative responses; total number of responses; dialectic affiliations; cultural positions with respect to neighboring tribes. Although the cumulative effect of all these criteria, handled with caution, does give results of some significance, the method is too subjective to be recommended as a general procedure. Furthermore, the method makes certain a priori generalizations regarding primitive cultures which are the very ones ethnology should be trying to prove a posteriori: for example, that geographically neighboring tribes are more similar in culture than geographically separated tribes. If exceptions to this rule are eliminated because the data are thought to be invalid, the chain of reasoning becomes entirely circular and sterile. In this instance, however, Kroeber has not pushed the method that far. Nevertheless, I disagree with him that "The ultimate test of reliability [validity] of any list of course is its degree of fit into the totality of the picture." I believe the only satisfactory test of reliability and validity is the testimony of two or more informants from each local group in which there are that many fairly well-informed survivors left. What the majority or at least what all agree on can then be accepted as true regardless of its "degree of fit" to any intuitive scheme.

Although reliability coefficients give the total amount of error, they do not tell which of two contradictory entries is true. In areas in which informants are too few to make it possible to check all information, such as that of the Pomo, the criteria used by Kroeber to determine the correctness of individual elements and total lists are of value.

Because reliability and validity are always relative to the size of the area, the particular topic, and the broadness or fineness of the trait analysis, they should always be determined anew for each numerical study. This is the procedure long employed by other sciences.

Tables 8 and 9 summarize the relevant facts for the present study. The counts were all made from the universe of table 13. Reliability coefficients (r_{hk}) were computed only for those tribes or traits for which there were 50 or more duplications. When three or more entries were available for a single trait of a single tribe, I usually chose the two which were from the two fullest sources. Exceptions to this rule were made only when the two fullest sources were the work of a single ethnographer. In that event it seemed more desirable to choose the work of a second ethnographer, providing the total amount of his information was nearly as great as that of the first. Most of the pairs of entries used to determine reliability are from two ethnographers. Correlations are carried only to one place because the statistical universes average only about sixty cases.

Only rarely are the sources compared truly independent. Most later essay-type sources seem to have taken considerable information from earlier sources without giving specific references to them. Only where a point is doubtful are we sure to find reference to the earlier source. Also, the ethnographer seldom separates the testimony of his various informants. Presumably, completely independent sources would yield lower reliability correlations.

Reliability of elements.--The reliabilities of elements are spread rather evenly over the range from 1.0 to 0.0. Correlations involving the least reliable traits are presumably worthless.[103] The average reliability coefficient is 0.6. This may be interpreted as meaning that most values above this figure are very high or perfect correlations. In general, differences in true distributions can be assumed to exist only when the correlation is less than this figure. If reliability coefficients for all elements could be determined, they could be used to correct obtained values upward to their true levels. They would also have important bearing on the construction of pools discussed in the section on "Statistical Methods."

Element reliabilities have been examined further by making three pairs of divisions, as indicated in table 8. The only significant difference in averages is between definitely skewed and not definitely skewed elements. It is interesting to note that, according to our correlation coefficient, observational errors as well as sampling errors are greater for skewed distributions.

Reliability of tribal inventories.--Reliabilities of tribal inventories range from 1.0 to 0.1,

[101] Gifford and Kroeber.

[102] Driver, 1938.

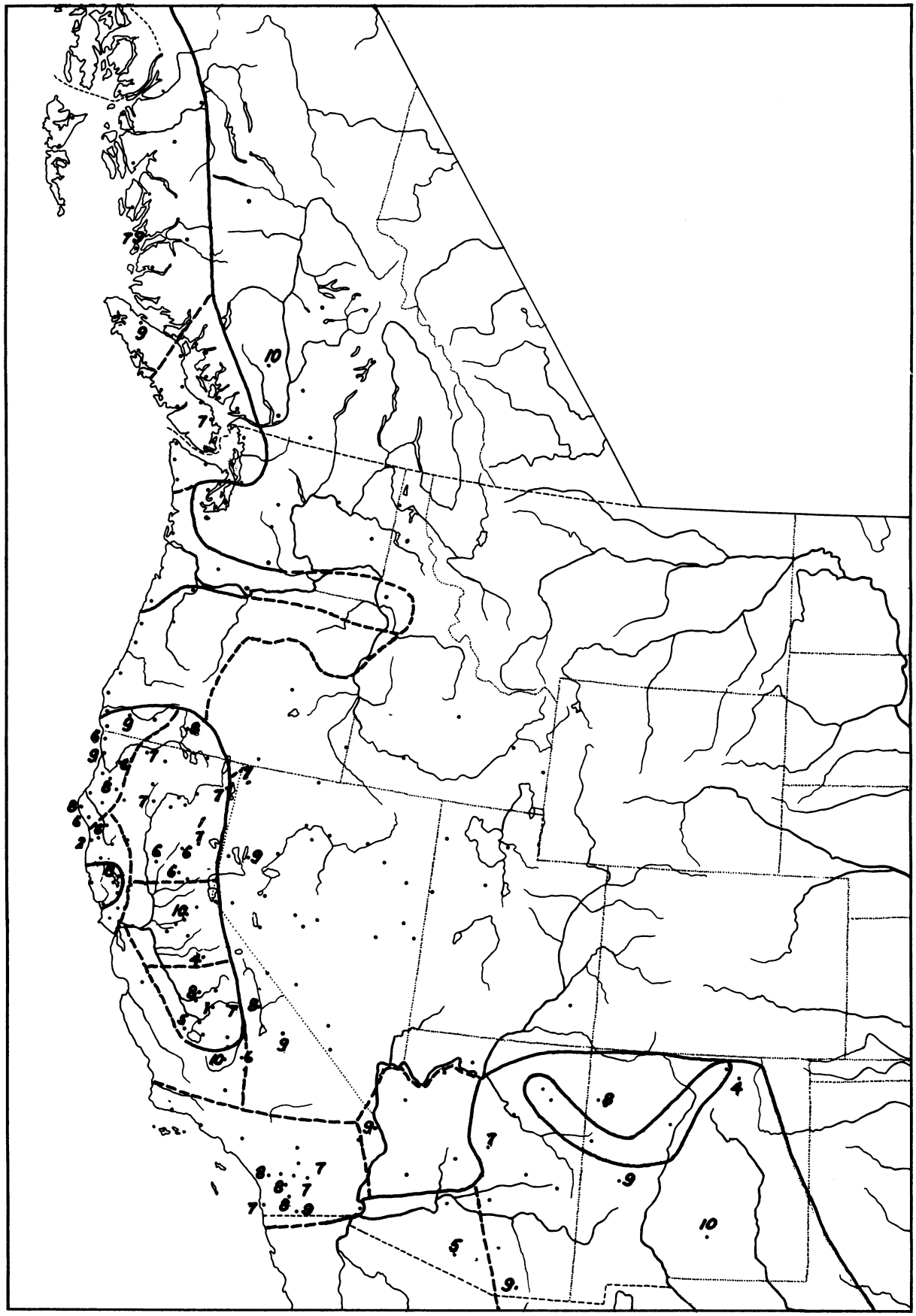
[103] For skewed distributions with a small percentage of pluses, say 10 per cent, two distributions of the same element may correlate zero yet show substantial agreement in most correlations with other elements. Reason: most correlations with other elements will be negative, and those other elements which have no common positive occurrences with the two distributions of the original element will yield negative correlations of similar magnitude.

TABLE 8

Reliability Coefficients (r_{hk}) of Elements*

Elements	Skewed	Not skewed	Widely distributed	Narrowly distributed	Generic	Specific
1. Ceremonial number 3 or multiple of 3	0.2			0.2	0.2	
2. Ceremonial number 3	0.7			0.7		0.7
3. Ceremonial number 6	0.2			0.2		0.2
4. Ceremonial number 4 or multiple of 4		0.8		0.8	0.8	
5. Ceremonial number 4		0.8		0.8		0.8
6. Ceremonial number 8	0.3			0.3		0.3
7. Ceremonial number 16	0.7			0.7		0.7
8. Ceremonial number 5 or multiple of 5		0.8	0.8		0.8	
9. Ceremonial number 5	0.7			0.7		0.7
10. Ceremonial number 10		0.6		0.6		0.6
12. Girl secluded or confined	0.5		0.5		0.5	
14. Secluded 1-20 days	0.5		0.5			0.5
15. Secluded 1 month	0.0			0.0		0.0
16. Secluded more than 1 month	0.6			0.6		0.6
17. Secluded in dwelling		0.4	0.4			0.4
19. Secluded in separate hut	0.5			0.5		0.5
20. Secluded in permanent ceremonial house	0.5			0.5		0.5
21. Secluded outdoors in enclosure	0.4			0.4		0.4
22. Secluded outdoors, no enclosure	0.5			0.5		0.5
39. Restriction on food	0.9		0.9		0.9	
49. Meat taboo	0.7		0.7			0.7
60. Scratching or touching self with hands taboo	0.0		0.0		0.0	
61. Wood scratcher	0.6		0.6			0.6
116. Physical exertion or work by girl (including dancing at public rite)	0.3		0.3			
154. Public recognition of girls' puberty		0.7	0.7			
156. 1 or 2 days' or nights' duration		0.4		0.4		
157. 3 or more days' or nights' duration		0.7		0.7		
159. Each girl a separate ceremony		0.7	0.7			
160. 2 or more girls at one ceremony		0.3		0.3		
167. Held in tipi-like structure erected for purpose		1.0		1.0		
171. Held in daytime		0.5		0.5		
172. Held at night		0.7		0.7		
176. Men attend or participate		0.7	0.7			
177. Women attend or participate		0.8	0.8			
178. Singing		0.8	0.8			
187. Girl dances at public rite		0.7		0.7		
189. Group dancing		0.7		0.7	0.7	
190. Men dance		0.6		0.6		0.6
191. Women dance		0.7		0.7		0.7
192. Each sex separately		0.4		0.4		0.4
Averages	0.5	0.7	0.6	0.5	0.6	0.5
Average of all coefficients: 0.6						

*A skewed element is one with less than 0.25 or more than 0.75 plus for at least one variable. A not skewed element is one with more than 0.25 and less than 0.75 plus for both variables. A widely distributed element is one with more than 0.50 plus. A narrowly distributed element is one with less than 0.50 plus. A generic element is one for which there are two or more specific subvariants. A specific element is one that is a subvariant of a generic element (indented in the table).



Map 15. Reliability coefficients (r_{hk}) of tribal inventories.

averaging 0.7. Here also skewed distributions appear to be less reliable than more symmetrical ones. The fact that these figures are higher than those for element-with-element correlations is a nice illustration of the relativity of correlation coefficients. It may also be noted in comparing tables 11 and 12 that tribal correlations are higher than those for elements. The two lowest tribal reliabilities, 0.2 and 0.1, are due to disagreement with respect to the presence or absence of public recognition of girls' puberty. A disagreement on this generic concept automatically introduces differences for all elements referring to group dancing, feasting, singing, and such. Both tribes are on the borderline between areas which have definite public recognition and those which do not. Map 15 gives the geographical location of reliability coefficients and the boundaries of girls' puberty areas of map 2. In general it cannot be said that there is any definite tendency for low reliabilities to fall near major boundaries. In fact there are several high reliabilities near such boundaries.

TABLE 9

Reliability Coefficients (r_{hk}) of Tribal Inventories*

BlBl	0.8	LkPo	0.8	KiMo	0.7	WSA	0.9
Kwak	0.9	Klam	0.8	KiYo	0.1	HuA	0.9
Cow	0.7	WSha	0.7	LkYo	0.5	TonA	0.7
Lill	1.0	EAch	0.7	BaPa	1.0	Pap	0.5
Tol	0.6	MWin	0.7	Tub	0.6	Moha	0.8
Gal	0.9	MMai	0.7	Pana	0.9	DDie	0.9
Kar	0.6	FMai	0.6	Owen	0.8	WDie	0.7
Yur	0.9	VMai	0.6	Kuyu	0.9	MDie	0.8
Hupa	0.8	FNis	0.6	Kidu	0.7	Luis	0.8
Matt	0.8	NMi	1.0	ENav	0.8	Cup	0.8
Sin	0.6	SMi	0.4	Jic	0.4	MCah	0.7
Kato	0.6	SJYo	0.8	Mes	1.0	DCah	0.7
CYHu	0.2						

Average	0.7
Average of skewed distributions	0.6
Average of distributions not skewed	0.8

*Correlations based on skewed distributions (as defined in table 8) are underlined.

As they stand, most of the correlations in tables 11 and 12 are scarcely correct to one place. Two places is certainly sufficient for any ethnological purpose.[104] The use of three places, by Kroeber and me,[105] and by Kroeber alone,[106] is a waste of space, and any rank ordering or other manipulation based on the third place is worthless.

It should be remembered that $r_{hk} = 0.6$ is equivalent to $Q_6 = 0.8$. For symmetrical distributions, tetrachoric r would be the same as Q_6 and Q_8 would be 0.9. Therefore, this is not a hopeless reliability. There is merely no point in stressing minor numerical differences between correlations.

Validity.--Table 10 represents an attempt to compare the validity of element lists with other sources. Such a comparison is of limited value because other sources give so little definite negative evidence. I have applied the same criteria for inferring absences to both kinds of data, and have chosen only those traits for which all sources on a given tribe listed in table 10 provide data. For each tribe, there is at least one element-list source and one other source. An aberrance, in this context, is defined as an entry that is different from the majority of others for a single trait and single tribe. Thus, for the Alberni Nootka (ANoo) there are thirty-eight traits for which all three sources commit themselves. Of these thirty-eight traits, all three sources agree on thirty-five. For the remaining three, Sapir and Drucker give plus, Curtis minus. Curtis is therefore aberrant on the minus side in three instances. Where four sources occurred, three out of four is of course a majority, and for the seven sources of the Luiseño, four out of six, or four out of seven, was chosen as a majority.

The per cents and averages at the end of table 10 summarize the results. The correlations are determined by constructing a "true" inventory for each tribe by choosing the majority opinion on each element, and then correlating each source in turn with the "truth."

On the whole, element lists are no more aberrant than other sources, but their aberrances are mostly negative. If the majority of aberrances are errors, which I believe is more true of negatives, then element lists contain an erroneously large ratio of minuses. This result may be due entirely to selection, since essay-type sources offer so little negative evidence. However, this is what one would expect from recent field work done among progressively perishing cultures. Practically, I believe this situation is inevitable, at least ultimately, because informants will be less and less well informed about native cultures as time goes on. At the present time I believe it is better for the field worker to try to come to a decision in each instance, if necessary, by using a second or third informant, than to leave a great many blanks which produce a distortion of their own (see "Comparability of Data," p. 76). To date, most of us have left too many blanks in our element-list reports.

How much error is assignable to informants, how much to field workers, and how much to the

[104] Correct to two places does not mean absolute accuracy in the second place. It means that the second place is not more than one unit off from the true value.

[105] Driver and Kroeber.

[106] Gifford and Kroeber.

TABLE 10

Validity of Tribal Inventories

Tribe	Sources	Aberrances			Number of traits (n)			Validity (r_{hk})
		+	−	Total	+	−	Total	
ANoo	Curtis	0	3	3	23	15	38	0.9
	Drucker*	0	0	0				1.0
	Sapir	0	0	0				1.0
Tol	Curtis	1	0	1	29	14	43	1.0
	Driver*	1	4	5				0.8
	Drucker	0	0	0				1.0
	Du Bois	0	0	0				1.0
Kar	Driver 1*	1	4	5	28	14	42	0.8
	Driver 2*	1	4	5				0.8
	Kroeber	2	2	4				0.8
Yur	Curtis	1	0	1	9	51	60	0.9
	Driver 1*	1	1	2				0.9
	Driver 2*	0	3	3				0.8
	Kroeber	1	0	1				0.9
Hupa	Curtis	2	0	2	27	20	47	0.9
	Driver 1*	1	3	4				0.8
	Driver 2*	1	2	3				0.9
	Goddard	0	0	0				1.0
CYHu	Driver* (Coast Yuki)	0	8	8	15	8	23	0.5
	Loeb (Huchnom)	3	2	5				0.5
	Loeb (Coast Yuki)	1	0	1				0.9
LkPo	Gifford (E Pomo)*	0	0	0	5	51	56	1.0
	Gifford (SE Pomo)*	0	0	0				1.0
	Loeb (E Pomo)	0	1	1				0.9
	Loeb (SE Pomo)	0	0	0				1.0
HWin	Essene	1	0	1	13	6	19	0.9
	Gifford*	0	1	1				0.9
	Goldschmidt	3	0	3				0.6
Klam	Nash	5	0	5	35	26	61	0.8
	Spier	1	1	2				0.9
	Voegelin*	1	2	3				0.9
MMai	Dixon	2	3	5	26	20	46	0.8
	Loeb	4	0	4				0.8
	Voegelin*	1	5	6				0.8
Pap	Densmore	0	0	0	25	10	35	1.0
	Gifford*	1	8	9				0.5
	Underhill	1	0	1				0.9
MDie	Drucker 1*	0	0	0	22	10	32	1.0
	Drucker 2*	0	0	0				1.0
	Waterman	2	2	4				0.7
Luis	Curtis	0	3	3	22	11	33	0.8
	Drucker 1*	0	1	1				0.9
	Drucker 2*	1	2	3				0.8
	Drucker 3*	0	0	0				1.0
	Du Bois	1	1	2				0.9
	Sparkman	1	1	2				0.9
	Strong	1	0	1				0.9

*Element-list source

TABLE 10 (Continued)

Tribe	Sources	Aberrances +	Aberrances −	Aberrances Total	Number of traits (n) +	Number of traits (n) −	Number of traits (n) Total	•Validity (r_{hk})
MCah	Drucker 1*	0	0	0	21	11	32	1.0
	Drucker 2*	0	0	0				1.0
	Strong	0	7	7				0.6
DCah	Curtis	0	0	0	17	5	22	1.0
	Drucker 2*	1	1	2				0.7
	Hooper	0	0	0				1.0
	Strong	0	1	1				0.9
Total		44	76	120	317	272	589	
Total for element lists		11	49	60				
Total for other sources		33	27	60				
Per cent for total		14	28	20				
Per cent for element lists		3	18	10				
Per cent for other sources		10	10	10				
Average correlation for total								0.9
Average correlation for element lists								0.9
Average correlation for other sources								0.9

compiler of distributions from several field reports is impossible to determine without more carefully controlled field conditions.

The fact that validity correlations are higher than reliability correlations probably expresses the truth, but it should be remembered that the statistical universes vary considerably and the samples are small.

Corrections of author's distributions by Barnett and O. Stewart.--When I had completed the first draft of the distributions, Barnett, Stewart, and Gifford previewed them. Barnett and Stewart made some new entries. Counts of these, compiled only from the 118 traits of table 13, are given in the following.

O. Stewart's Entries

Tribe	New entries +	New entries −	Ratio of + to total information*
Tasi	1	41	0.13
Kuyu	1	13	0.17
Kŭpa	1	13	0.16
Toe	2	13	0.13
Töv	2	14	0.17
Pak	0	12	0.11
Wash	4	21	0.29
Atsa	2	13	0.18
Sawa	2	13	0.16
Tagŏ	2	13	0.18
Wada	1	13	0.16
Kidü	2	18	0.26
Totals	20	172	

*Included for comparison with ratio of + for new entries. Total information includes the additional entries herein. In general the ratio of + for new entries is close to that for the total.

Barnett's Entries

Tribe	New entries +	New entries −	+ + Barnett Driver	+ − Barnett Driver	− + Barnett Driver	− − Barnett Driver	Correlation of original with corrected distributions (r_{hk})
Pent...	9	10	35	4	0	74	0.9
Cmx ...	4	5	38	5	0	80	0.9
Klah...	4	6	47	1	1	70	1.0
Sesh...	6	8	25	12	0	79	0.8
Squa...	3	5	39	12	0	74	0.8
Sane...	3	7	47	2	2	72	0.9
Cow....	4	7	47	4	2	69	0.9
Nan....	5	9	43	1	2	73	1.0
Totals.	38	57	321	41	7	591	

Barnett had revisited his Salish tribes the summer following his element-list survey. Therefore his corrections of my entries represent additional knowledge as well as my misinterpretation of his element-list report. On the assumption that the entries as they now stand are correct, those which contradict my own show the amount of error made by an element-list field worker and a compiler of distributions combined. Except for the Seshelt and Squamish, this is small. For these two tribes, the original data deny public recognition of girls' puberty. Later field work affirmed this. It is significant to note that more inquiry and better acquaintance with native cultures alters previous results by increasing the ratio of pluses. More superficial work contains too many minuses. The new entries by Barnett illustrate, roughly, the amount of additional information on 118 traits which twice

as long an acquaintance with native cultures supplies. Except for the Seshelt and Squamish, Barnett's corrections would not significantly alter intertribal correlation coefficients.

None of O. Stewart's entries contradict my own. They consist mostly of minuses. He did no additional field work. His additions would not affect correlations significantly.

Validity of Klimek's girls' puberty distributions.--I plotted my own data in Klimek's distribution tables to obtain the comparisons shown in the tabulation below.

Element	+ + Driver Klimek	+ − Driver Klimek	− + Driver Klimek	− − Driver Klimek	r_{hk}
28. (Girl must lie in seclusion on heated spot) In definite pit: Klimek's 332, Girls' rite with pit-roasting ceremonial...	7	11	0	18	0.5
x. Girl roasted in pit with public participation: Klimek's 332..	7	2	0	30	0.9
30. Hot stone on belly: Klimek's 347, Crescentic stone in girls' rite.....	1	2	0	8	0.5
144. Girl eats or drinks tobacco: Klimek's 234, Girls' rite with drinking tobacco.	6	0	0	49	1.0
149. Girl looks into haliotis: Klimek's 406, Haliotis looked into in girls' puberty..	1	1	0	58	0.7
152. East significant: Klimek's 420, East significant in girls' rite.....	5	5	0	1	0.3
187. Girl dances at public rite: Klimek's 404, Girl dances in puberty rite	11	16	3	29	0.4
Totals	38	37	3	193	4.3
Average					0.6

It was difficult to equate some of Klimek's elements with my own. Klimek's element 399 seems to be equivalent to the roasting pit, although Gifford's original data on the Miwok did not mention heat. I have constructed an additional distribution, x, which seems to be the concept to which Klimek's element 332 refers; but I have also retained comparison with my 28. At any rate, Klimek's distributions contain far too many negative entries. Most of these were inferred merely from lack of mention of the elements in essay-type sources. The excess of minuses in Klimek's data is greater than the apparent excess of minuses in culture-element data (see "Validity," p. 72, and "Corrections of Author's Distributions," p. 75). Nevertheless, his results may be no wilder than those derived from distributions full of blanks (see "Comparability of Data," below). This illustrates the condition of California's ethnology before the culture-element survey. Other ethnologists who have worked in the area have no doubt erred as much as Klimek, but, because they often made no attempt to give specific distributions including absences, they have not laid themselves open to such direct criticism.

COMPARABILITY OF DATA

It is possible for data to be perfectly reliable yet very imperfectly comparable. If each fact in each field report on each tribe could be equated to a similar fact in all other reports on all other tribes in an area, then all the data would be perfectly comparable. It is obvious to anyone who has ever made a comparative study over a continuous area of any size that the comparability of most sources is very low. The majority of facts have no comparative value because they cannot be matched with similar facts from other tribes. The result is nothing or a series of wild inferences regarding absences. This is a sad state of affairs scientifically. How comparable are the present data?

The 214 puberty traits listed in Appendix 1 do not exhaust the culture-element reports, yet of these, only about 118 were complete enough to be used in the statistics: about 75 per cent. The line was not drawn exactly at that figure because certain traits seemed to have more significance than others, and the blanks for some were more nearly randomly distributed than for others. In a few instances traits were eliminated because of low reliability, which, usually, was combined with limited positive occurrence or apparent unimportance in native culture; for example, ceremonial number 6. Even though two distributions are 75 per cent complete, mutual exclusiveness of the blanks may leave only 50 per cent for the correlation.

Unless blanks are randomly distributed, which is seldom the case, they introduce errors in correlations. Thus:

	Tribes											
	a	b	c	d	e	f	g	h	i	j	k	l
Trait 1	x	x	x	x	x	x	x	x	-	-	-	-
Trait 2	x	x	x	x	-	-	-	-	x	x	-	-
Trait 3	x	x	x	x							-	-

For these hypothetical distributions, trait 3 correlates 1.00 with both 1 and 2, but 1 and 2

correlate 0.00 with each other.[107] This logically impossible result is caused by the use of different universes in computing the three correlations. Error of this type exists in some quantity in almost all correlations in this study, because few distributions contain no blanks at all. It is impossible to measure it because there is no way to determine complete distributions for all traits. There is perhaps some justification for filling in blanks, when they do not run over say 25 per cent, according to one's impressions of what ought to be there. This I have not done except as indicated in the section "Inferred Absences," which offers suggestions as to how negative evidence may be increased. However, the only real remedy is more carefully constructed lists, and more careful field work including the use of a second informant at least for those items unknown or uncertain to the first. None of us were sufficiently aware of these difficulties when in the field.

For broad comparisons of the culture-area type, 50 per cent comparability is sufficient. The entire list must be cut down anyway because of the terrific amount of computatory labor. A sample of 1000 traits would yield intertribal correlations as valid as 2000 or 4000. Thus I found that there were no significant differences between reliability coefficients based on 706 traits and on about 2000 traits, even though the universes in the latter data varied.[108] But for specific studies such as the present one, every fact counts. Although comparability will never be perfect, I believe it could be raised without much increase in time or expense.

INFERRED ABSENCES

Every comparative ethnologist in the past has inferred most of his negative evidence. Those who have been conscious of this have seldom bothered to make their methods explicit. I have been fortunate in having at my disposal a considerable quantity of negative evidence, mainly from the culture-element survey. Nevertheless, unevenness of these reports, discussed under "Comparability of Data," makes it necessary to infer a large number of absences.

1. Whenever a trait was stated to be absent in the entire culture of a tribe, I recorded it absent for girls' puberty of that tribe. For example, if tattooing was not practiced, it could not have been done at puberty. This sounds simple. In practice it means searching through many sections of monographs for an occasional negative statement, and checking over many sections of culture-element lists. Similarly, traits derived from or dependent on other traits were assumed to be absent when the latter were absent. For example, if boats were not used in a culture, paddles, sails, ferriage customs, and such obviously are absent.

2. Elements which were logically contradictory, conceptually mutually exclusive, or nearly exclusive in known distribution were assumed to be mutually exclusive in the remaining distribution. Two such are 23, girl must sit or squat in seclusion, and 24, girl must lie in seclusion. Logically these would seem mutually exclusive because a girl cannot sit and lie at the same time. It is possible, however, that the girl sits part of the time and lies the rest of the time, or that certain families prescribe sitting and others lying. An empirical comparison of the two distributions compiled only from specified negative evidence showed that, with very few exceptions, the two were actually mutually exclusive, and that sitting or squatting was mainly northern, lying mainly southern. Because this sample included more than half the total, it should be representative. Therefore, whenever one of the traits was marked plus and the other left blank, a minus was substituted for the blank. Thus a high negative correlation was assumed to be a perfect negative correlation for remaining data and the original data thus extrapolated to yield more data. Under such circumstances I prefer this procedure to the leaving of many blanks, which in most instances would distort the correlations more than the extrapolation (see "Comparability of Data"). Many cases are not as clear as the above, and because this procedure is partly gratuitous, the elements to which it has been applied are listed.

When one member of the following groups of traits is reported present, the rest of the group are assumed to be absent, nothing to the contrary: 2, 3, 5, 6, 7, 9, 10; 14, 15, 16; 17, 19, 20, 21, 22; 23, 24; 58, 59; 98, 99, 100; 101, 102; 136, 137; 139, 140; 156, 157; 159, 160; 165, 166, 167, 168, 169; 192, 193; 195, 196; 198, 202, 205, 206, 207, 208.

When two members of the following groups of traits are reported present, the rest of the group are assumed to be absent, nothing to the contrary: 78, 79, 80, 81, 82, 83; 126, 127, 128, 129, 131, 132, 133. For these groups, two alternatives were frequently reported present for single tribes, rarely three. Therefore, it seemed safe to infer that when two were present the remaining ones were absent.

A partial proof of the legitimacy of the procedure may be found in Barnett's corrections of my entries in the Georgian Gulf area, described under "Reliability and Validity of Data," p. 69. Although Barnett reversed forty-eight of my entries, not a single one of the alterations affected absences inferred in this manner.

3. Occasionally I inferred absences on what might be called simply distributional grounds. Thus element 31 (girl lies prone, massaged) was

[107] These values would be the same for all forms of r and Q.

[108] Driver, 1938.

only reported for Southern California and the adjacent Southwest. It seemed an obvious enough part of a puberty rite to have been reported by someone in the north if it occurred there. Furthermore, it is often associated with pit roasting, which apparently has a wider distribution but which is still confined to the southern half of western North America. Other elements for which at least some absences were thus inferred are: 53, 57, 66, 106, 107, 148, 158, 210. As above, none of Barnett's alterations affected absences inferred for these elements.

RESIDUAL DISTRIBUTIONS

The following distributions are too imperfectly known to be worth including in tables 13 and 14. The numbers refer to the basic list of elements (Appendix 1).

30a. Girl must flex legs. Present: BlBl, BlCl, Wik, Kwak, Kosk, CNoo, ANoo, Quin, Moha. Absent: NTli, STli, SHai, MHai, GTsi, HTsi, Hais, and all Northern Paiute.

38. Girl instructed (other than concerning menstruation). The following are positive distributions of certain kinds of instruction. Myths: Chim, Kato, NPo, Luis, Cup, DCah. Songs: Chim, Kato, NPo, PCah. General moral exhortation: Lum, Mod, MWin, SWin, Chim, EAch, MMai, FMai, MNis, VMai, FNis, SNis, JicA, Pima, Pap, Wash, Luis, Egan, BtlM, SnRi, BoSh, Ban, all Northern Paiute, Moha, Hava. Housekeeping and feminine crafts: Sesh, Mod, MWin, SWin, EAch, MMai, FMai, MNis, VMai, FNis, SNis, Pap. Motherhood: Lum. Chastity: Pima.

63. Shell scratcher. Present: Tol, MDie, Luis, Gab, IChu. Absent: Hais, BlBl, Pent, Cmx, Klah, Sesh, Squa, Sane, Nan, Cow, Klal, Mak, Quin, Skok, Duwa, all Northern Paiute, Zuñi.

67. Towel for face. Positive distributions of materials follow. Bark: Song, Quin, Chin, EAch, FMai, MNis, VMai, Mari, Shus, Lill, Thom, Moha. Wool: Pent. Grass: Mod, ESha, FNis. Buckskin: Mod, ESha, FNis.

76. Lice set adrift in stream. Present: Cup, Shus, Thom, Moha, Coco. Absent: all Northern Paiute, and probably all other tribes where delousing was denied.

88a. Girl builds fire on mountain. Present: MMai, Wash, Lill, Thom. Absent: Chin, Klik, Sanp, Pcwa, Wen, all Northern Paiute.

94. Girl wears headband. Distributions of materials follow. Bark present: Klah, Cow, Nan, Quil, Tol, Klik, Klam, Mod, Yana, Atsu, Wach, EAch, Shus, Lill. Skin present: ANoo, Matt, ESha. "Crown" of plants present: VMai, DDie, WDie, MDie, Luis, PCah. "Crown" of plants absent: Klam, Mod, ESha, WSha, MWin, SWin, TWin, Atsu, WAch, EAch, MMai, FMai, MNis, FNis, SNis.

151. Whistle. Girl blows: Shus, Lill, Thom, Okan. Male performers blow: NezP, Coos, FMai, MNis.

170. Public recognition seasonal. Winter: Tol, Kato, CYHu, NPo, Cup, PCah. Spring: FMai, FNis, Yuki. Summer: Yuki, MesA, HuA, WMA, SCA, DDie, WDie, MDie, MCah. Fall: MWin, Yuki, WMA, DDie, Cup, MCah.

181-185. Songs. Reference to love or sex: ANoo, Mak, Klal, Chin, Klik, Klam, Mod, MWin, HWin. Reference to puberty rite itself: Sane, Nan, Cow, CeMi, Mari, MDie, DCah. Reference to dawn: Klam, Mod, Wail, ENav, Pap. Reference to dusk or night: Klam, Mod. Rivalry between men and women singers: ANoo, Klam, Mod. Rivalry between local groups: DDie, WDie, MDie, Cup, PCah, SSer. Songs personal property: ANoo, Pent, Cmx, Klah, Sesh, Squa, Sane, Nan, Cow, Klal, Klam.

210. Masked dancers. The Apache and British Columbia occurrences are specifically different. The Apache dancers resemble katchinas. The British Columbia dancers wear regalia like those described for the Kwakiutl.

Because of an oversight, the following distributions were not tabulated in tables 13 and 14.

58. Bone drinking tube. Present: STli, BlCl, Kwak, Pent, Cmx, Klah, Sesh, Squa, Sane, Tahl, Car, Shus, Lill, Thom. Absent: Hais, BlBl, SHai, Cow, Nan, Sanp, Kali, Mak, Klal, Quin, Skok, Duwa, and all other tribes to the south.

166. Public recognition held in permanent ceremonial house. Present: Huch, Kato, NPo, HWin, MWin, SWin, CeMi, Cup, MCah, PCah, Serr. Absent: all other tribes.

167. Public recognition held in tipi-like structure erected for purpose. Present: MesA, WSA, HuA. Absent: all other tribes.

GEOGRAPHICAL DISTRIBUTIONS OF NATIVE RATIONALIZATIONS

This compilation consists of native reasons for observing specific taboos or performing specific acts of behavior. Were such material more fully reported, it could be distributed and compared the same as other information. Definite correlations between behavior and beliefs could then be determined. Unless otherwise stated, only positive distributions are given; negative are unknown.

49. Meat taboo. Because eating it spoils the luck of hunters, Tahl, SHai, Quin, Til, WSha, WAch, Yur, Lill, Ste, Owen, all Northern Paiute, Wala, SEYa, Wap, Tub. Because the girl's family will be harmed: girl's future children harmed, Tahl; girl's future children killed, Owen; sickness for girl's family, Pap. Because the girl herself will be harmed: consumption, SHai; bad luck, Tsim; loses senses and mouth turns into beak, BlCl; gets old prematurely, ANoo; sickness, Matt; consumption, Klam; consumption, MWin; loss of teeth, Atsu; sickness, deer hair grows in stomach if deer meat eaten, WAch; sickness, insanity, CeMi; cough, CYHu; laziness and ugliness, ENav; ugliness, premature old age, Pima; shortens life, MDie; granulated eyes, Luis; cramps, DCah; sickness, Car; "harm," Lill; sickness, Thom; menstrual flow stopped, Owen; premature loss of teeth, gray hair, wrinkles, Wala; growth in belly, WYa; sterility, Coco; sterility, Hava; weakness, Mes 2. Because the girl will become a glutton,

Sesh, Ste, MDie. Because fasting will accustom the girl to hardship, Cow.

53. Salt taboo. Because it harms the girl: makes her lazy and ugly, ENav; makes her ugly and old, Pima; dries up her blood, DCah; makes her body swell up, Moha; causes weakness in limbs, Wala; causes sterility, Coco; weakens girl, Mes 2. Because it brings sickness to the girl's family, Pap.

55. Cold water taboo. Warm water hastens future births, Luis. Cold water stops menstrual flow, causes cramps, DCah. Cakes the blood and causes cramps, warm water prevents future cramps, Moha. Stops the flow and makes the teeth fall out, Coco. Causes girl to catch cold, LkPo.

57. Drinking tube. Otherwise girl will have stomach trouble, Tahl. So girl will have small mouth: otherwise it will rain, MesA. Lest girl get throat disease, Car. Spring will dry up if girl's mouth touches surface of water, Thom. Lest hair grow on girl's lips, WYa.

60. Scratching or touching self with hands taboo. Baldness, ANoo, Lum, Quin, Tol, Yana, CeMi, WSA, Pap, Mari, Yuma, DDie, MDie, DCah, Lill, Kidü, Wala, SEYa, Coco, LkPo, Mes 2, Mes 1. Prematurely gray hair, Klam, Yana, Lill, Kaib. Dandruff, CeMi, DCah. Hair ends split, Owen, LkPo. Hair stands up, Moha. Hair curls, WYa. Hair grows on mouth, Thom. Too much hair on body, Coco. Lice, Pima, Yuma, Kidü. Scars on body, ANoo, ENav. Lill, Coco. Wrinkles, Quin, Klam. Skin disease, Matt, Sin, MDie, Luis, DCah, LkPo. Black streaks or spots on skin, Wala, LkPo. White streaks or spots on skin, Moha, LkPo. Spots on face, Yuma. Dry skin, LkPo. Sore eyes or blindness, Sin, Matt, Thom. Ugliness and premature old age, Pima. Loss of teeth, Coco. General poor health, Car.

77. Girl's head or eyes covered. Prevents seeing sun, moon, sky, fire: sky, STli; sun and fire, which would weaken eyes, SHai; sun, BlCl; sky, Chin; sky, Take; sun, Tol; sky, Matt; sun or moon, WSha. Prevents looking up, Yana; at sun or moon, FMai; at sun or moon, which weakens eyes, FNis; at light, Wail; at sun or moon, NPo. Prevents seeing people: men, Tsim, Hupa, Matt, WSha. Prevents men seeing her, Car. Prevents people seeing her, Shus. Prevents baldness, ANoo. Prevents unlady-like conduct (?), Pent, Cmx, Klah, Sesh, Squa, Sane, Nan, Cow. Prevents dreaming of dead at night, Take, WSha. Prevents seeing ghosts, CYHu. Prevents seeing horned, feathered snake, Kato. Prevents fright sickness, NPo. To keep flies away, Luis. Prevents "blasting" the world with her glance, Sin.

84. Gazing at people taboo. Harms people, Hais, BlBl, Chin. People sicken or die, Hupa, Sin. People turned to trees in myth, Matt, Skok, Duwa, Car, Sanp, Kali, Pewa, Wen. Harms girl, Pent, Cmx, Klah, Sesh, Squa, Sane, Nan, Cow; her breasts swell up, Yur; goes blind, Hupa, Matt; bad dreams or death, WSha.

85. Gazing at sun or moon or sky taboo. Weak eyes or blindness, BlCl, CNoo, Pent, Cmx, Klah, Sesh, Squa, Sane, Nan, Cow, Tol, ESha, SWin, MNis, FNis. Bad dreams or death, WSha, Sin. See evil spirit, TWin. Social disgrace (?), ANoo. Rain or bad weather, SHai, Chin, Yana, Atsu, MesA. Death for all village, FMai.

87. Girl avoids fire. Weak eyes or blindness, CNov, ANoo, Klal, Quil, Quin, Hupa, Chil. Face red, SHai. Ages quickly, Quin. Her family becomes sick, Pap. If she blows on fire her teeth will come out, Pima. Social disgrace, ANoo.

114. Restriction on sleep. To prevent bad dreams, Take, VanD, Klam, Mod, ESha, WSha, MWin, SWin, TWin, Atsu, WAch, EAch, MMai, Mari. To prevent future laziness, Sin, FMai, FNis, Pap. To give long life, ANoo. Training for endurance in event of war, Klal. To prevent bad luck, ENav.

115. Restriction on talking or laughing. Talking, lest girl becomes garrulous, SHai, Pent, Cmx, Klah, Sesh, Squa, Sane, Nan, Cow, Klal, Mod, Mari, Yuma, Moha. Laughing, lest she have a wrinkled face, Klal, MesA, WSA, HuA, WYa. Girl must not show her teeth, MWin, Yuma. Lest a storm come, Wap.

116. Physical exertion or work by girl. To make her industrious, and prevent laziness, SHai, BlBl, Klah, Sesh, Squa, Sane, Nan, Cow, Klal, Hupa, Klam, Yana, HPat, ENav, TonA, Pap, Shus, Lill, Thom, Cd'L, Owen, PrSh, Moha, Wala, WYa, SEYa, Coco, LkPo. To make her physically strong, Chil, Klam, ENav, MesA, WSA, HuA, Wash, Shus, Lill, Thom, Kali, Cd'L, Spok, Kidü, Wala, Coco. Girl must work rapidly lest she be slow in future, Sin, Shus, Lill, Thom. Running will make the girl a good runner, Atsu. Good luck for girl to win race, ENav. Work prevents pain at future menses, Zuñi.

154. Public recognition of girl's puberty. For prestige, STli, SHai, MHai, GTsi, Tsim, HTsi, Hais, Xai, BlBl, BlCl, Wik, Kwak, Kosk, CNoo, ANoo, Pent, Cmx, Klah, Sesh, Squa, Sane, Nan, Cow, Lum, Klal, Tol, Klam, Wish, NezP, FNis. For purification of girl, Sane, Nan, Cow, Lum, Pima. To prevent bad dreams or sickness, Tol, Kar, Sin, Klam, Mod, ESha, Atsu, EAch, TWin, MWin, MMai, FMai, FNis, MNis. So girl will get power from dreams, WAch, EAch. So girl will be lucky with seed crops, VMai.

APPENDIX 1

BASIC LIST OF ELEMENTS

(The information in parentheses after each element description refers to the table or section or map where the distribution is given. RD refers to the section "Residual Distributions," page 78. Distributions of native rationalizations are given in the preceding section.)

1. Ceremonial number 3 or multiple of 3 (table 13, map 3).
2. Ceremonial number 3 (table 13).
3. Ceremonial number 6 (table 14).
4. Ceremonial number 4 or multiple of 4 (table 13, map 3).
5. Ceremonial number 4 (table 14).
6. Ceremonial number 8 (table 14).
7. Ceremonial number 16 (table 14).
8. Ceremonial number 5 or multiple of 5 (table 13, map 3).
9. Ceremonial number 5 (table 13).
10. Ceremonial number 10 (table 13).
11. Maximum reported duration of any observance in months when 1 month or more (table 14).
12. Girl secluded or confined (table 13).
13. Duration of seclusion in days when less than 1 month (table 14).
14. Seclusion 1-20 days (table 13).
15. Duration of seclusion in months when more than 1 month (table 14).
16. Seclusion more than 1 month (table 13).
17. Seclusion in dwelling (table 13, map 4).
18. Seclusion in dwelling, screened-off or separate room (table 13).
19. Seclusion in separate (menstrual) hut (table 13, map 4).
20. Seclusion in permanent ceremonial house (table 14, map 4).
21. Seclusion outdoors in enclosure (table 13, map 4).
22. Seclusion outdoors, no enclosure (table 13, map 4).
23. Girl must sit or squat in seclusion (table 13, map 5).
24. Girl must lie in seclusion (table 13, map 5).
25. Girl must lie prone (table 14).
27. Girl must lie on heated spot (table 13, map 5).
28. Girl must lie in definite pit (table 13).
29. Plants under or over girl (table 14).
30. Hot stone on girl's belly (table 14).

30a. Girl must keep legs flexed in seclusion (RD).

31. Girl lies prone, massaged (table 13).
32. Girl attended or proctored (table 13).
33. Girl attended by kinswoman (table 13).
34. Girl attended by mother (table 14).
35. Girl attended by kinswoman other than mother (table 14).
36. Girl attended by professional woman normally not kin (table 14).
37. Attendant paid or given gifts (table 14).
38. Girl instructed (other than concerning menstruation) (table 14, RD).
39. Restriction on food (table 13).
40. Complete fast (table 13).

40a. Duration of complete food fast in days (table 14).

41. Separate eating or drinking receptacles (other than drinking tube) (table 14).
42. Girl eats alone or with other menstruants or attendant (table 14).
43. Girl eats once daily (table 14).
44. Girl eats twice daily (table 14).
45. Girl eats about sunrise or sunset (table 14).
46. Girl fed special food at conclusion of rite (table 14).
47. Hot food taboo (table 14, map 6).
48. Girl spits out food (table 14).
49. Meat taboo (table 13).
50. Some dried meat or fish permitted (table 13).
52. Berries taboo (table 14).
53. Salt taboo (table 13, map 6).
54. Restriction on drinking water (table 13).
55. Cold water taboo (table 14, map 7).
56. Water itself taboo (table 14).
57. Drinking tube (table 13, map 7).
58. Bone drinking tube.
59. Straw, cane, or elder drinking tube (table 14).
60. Scratching or touching self with hands taboo (table 13).
61. Wooden scratcher (table 13).
62. Bone or horn scratcher (table 13).
63. Shell scratcher (RD).
64. 1-prong (single stick) scratcher (table 14).
65. 2-prong (forked) scratcher (table 14).
66. Comb (3 or more prongs) for scratcher (table 13).
67. Towel for face (table 14, RD).
70. Girl's hair cut (table 14).
71. Bangs, or forelock trimmed (table 14).
72. Girl's hair dressed by attendant (table 14).
73. Girl's hair washed by attendant (table 14).
74. Girl deloused (table 14).
75. Girl deloused with mud plaster (table 14).
76. Lice set adrift in stream (RD).
77. Girl's head or eyes covered (table 13).
78. Girl's head or eyes covered with hide, mat, or blanket (table 13).
79. Girl's head covered with basket hat (table 13).
80. Girl's head covered with utilitarian basket (table 13).
81. Girl's eyes covered with feather visor (table 13).
82. Girl's head or eyes covered with boughs or "brush" (table 13).
83. Girl wears her hair over her face (table 14).
84. Gazing at people taboo (table 13).
85. Gazing at sun, moon, or sky taboo (table 13).
86. Gazing at wild crops taboo (table 14).
87. Girl avoids fire (usually house fire) (table 13).
88. Girl has own fire in seclusion (table 14).

88a. Girl builds fire on mountain (RD).

89. Girl avoids all men (table 14).
91. Girl avoids hunters and fishermen (table 14).

92. Girl avoids gamblers (table 14).
93. Girl avoids the sick (table 14).
94. Girl wears special headband (table 14, RD).
95. Girl wears special belt (table 14).
96. Girl wears bands around arms or legs (table 14).
97. Girl painted (table 13).
98. Girl painted red (table 13).
99. Girl painted black (table 13).
100. Girl painted white (table 13).
101. Girl's face painted (table 13).
102. Girl's limbs or body painted (table 14).
103. Sequence of facial designs (table 14).
104. Moiety paint patterns (table 13).
105. Part in girl's hair painted red (table 14).
106. Girl sprinkled or marked with pollen (table 13).
107. Sun symbol on girl's head or face (table 13).
108. Girl mutilated (table 13).
109. Girl tattooed (table 13).
110. Girl's ears pierced (table 13).
111. Girl's nose pierced (table 14).
112. Girl's eyebrows plucked (table 14).
113. Girl's hairline on forehead plucked back (table 14).
114. Restriction on sleep (table 13).
115. Restriction on talking or laughing (table 13).
116. Physical exertion or work by girl (including dancing at public rite) (table 13).
117. Girl must run (table 13, map 8).
118. Girl must run daily during menstruation (table 13, map 8).
119. Girl must run only once or twice (table 13, map 8).
120. Girl must run early in the morning (table 13).
121. Girl must run east (table 13).
122. Girl must race or run with others (table 13).
123. Girl must work (table 13).
124. Girl must work during menstruation (table 13, map 9).
125. Girl must work for entire camp (table 14).
126. Girl must carry wood (table 13).
127. Girl must carry water (table 14).
128. Girl must gather plant food (table 14).
129. Girl must prepare plant food (table 14).
130. Girl must grind maize (table 13).
131. Girl must weave or spin (table 13).
132. Girl must dig (often for roots) (table 14).
133. Girl must pick leaves or conifer needles off branches (table 14).
134. Girl must bathe during menstruation (table 13, map 10).
135. Girl must bathe daily during menstruation (table 13).
136. Girl must bathe outdoors in cold water during menstruation (table 13, map 10).
137. Girl must take sponge bath or use warm water during menstruation (table 13, map 10).
138. Girl bathes at end of seclusion or menstruation (table 13).
139. Girl bathes in stream at end of seclusion or menstruation (table 14).
140. Girl takes sponge bath or uses warm water at end of rite (table 14).
141. Girl scrubbed with boughs when bathing (table 14).
142. Girl takes vapor ("steam") bath (table 14).
143. Girl's clothes changed or washed at end of rite (table 13).
144. Girl must eat or drink tobacco (table 13).
145. Vision quest at time of actual menstruation (table 13).
146. Rock painting by girl (table 14).
147. Girl named (including new name) (table 13).
148. Sand painting (table 13).
149. Girl looks into haliotis (table 14).
150. Scarification or bleeding of girl (table 14).
151. Whistle used (table 14, RD).
152. East significant (table 14).
153. Girl's suitor connected with rite (table 14).
154. Public recognition of girl's puberty (table 13, maps 11, 12, 13).
155. Duration of public recognition, days or nights (table 14).
156. Public recognition lasts 1 or 2 days or nights (table 13).
157. Public recognition lasts 3 or more days or nights (table 13).
158. Public recognition repeated (table 13, map 11).
158a. Number of times public recognition given altogether (table 14).
159. Each girl a separate public recognition ceremony (table 13, map 12).
160. 2 or more girls at one public recognition ceremony (table 13, map 12).
162. Public recognition only for girls of prominent families (table 13).
163. Girls of one "clan," party, moiety when public recognition for 2 or more (table 13).
165. Public recognition held in dwelling (table 13).
166. Public recognition held in permanent ceremonial house.
167. Public recognition held in tipi-like structure erected for purpose.
168. Public recognition held in brush enclosure (table 13).
169. Public recognition held outdoors, no enclosure (table 13).
170. Public recognition seasonal (RD).
171. Public recognition held in daytime (table 13).
172. Public recognition held at night (table 13).
173. Public recognition conducted by affiliated clan, party, moiety (table 13).
174. Public recognition held during actual menstruation of girl (table 13).
176. Men attend or participate in public recognition (table 13).
177. Women attend or participate in public recognition (table 13).

178. Singing at public recognition (table 13).
179. Men sing (table 13).
180. Women sing (table 13).
181-185. Content of songs (RD).
186. Singers paid or given gifts (other than gifts given out wholesale in the potlatch area)(table 14).
187. Girl dances at public recognition (table 13, map 14).
188. 1 or 2 persons support dancing girl at public recognition (table 13).
189. Group dancing at public recognition (table 13).
190. Men dance (table 13).
191. Women dance (table 13).
192. Each sex dances separately (table 13).
193. Both sexes dance together (table 13).
194. Women hold to men's belts, dance behind men (table 14).
195. Dancers in circle (table 13).
196. Dancers abreast (table 13).
197. Dancers in 2 lines abreast (table 13).
197a. "Washers" perform at public recognition (table 14).
198. Hoof rattle (table 13, map 14).
199. Hoof rattle worn by girl (table 14).
200. Hoof rattle hand-held by girl (table 13).
201. Hoof rattle hand-held by others (table 13).
202. Split-stick rattle (table 13, map 14).
203. Single split (table 13).
204. Multiple splits (table 13).
205. Cocoon rattle (table 13, map 14).
206. Gourd rattle (table 13, map 14).
207. Hollow-wood rattle (table 13, map 14).
208. Tortoise- (turtle-) shell rattle (table 13, map 14).
209. Drumming on plank (table 13).
210. Masked dancers (table 13, RD).
212. Feast for all (table 13).
213. Distribution of property to guests (other than food)(table 14).
214. Sexual license (table 14).

APPENDIX 2

TRIBAL ABBREVIATIONS

(The abbreviations in parentheses are those entered on the tribal map in Kroeber, Tribes Surveyed, UC-AR 1:435-440, 1939.)

Als Alsea. (F--Al)
ANoo Alberni Nootka. (A--NH, NT)
Ash Ash Meadows Southern Paiute. (T--SM)
Atsa Atsa Northern Paiute. (U--At)
Atsu Atsugewi. (K--At)
Ban Bannock. (S--Ba)
BaPa Bankalachi Shoshonean and Paleuyami Yokuts. (M--KB, Yp)
BlBl Bella Bella. (A--KO)
BlCl Bella Coola. (A--BC)
BoSh Bohogue Shoshoni. (S--Sr)
BtlM Battle Mountain Shoshoni. (T--So)
Bty Beatty Shoshoni. (T--Sb)
Car Carrier. (D--Ca)
CCPo Coast Central Pomo. (I--Ic)
Cd'L Coeur d'Alene. (D--Co)
CeMi Central Miwok. (L--M2, M4)
Chem Chemehuevi. (O--Cv)
Chet Chetco. (F--Ch)
Chil Chilula. (G--Cl)
Chim Chimariko. (G--Cm)
Chin Chinook. (D--Cl)
CiA Cibecue Apache. (Q--Ci)
Cmx Comox. (B--Cx)
CNoo Clayoquot Nootka. (A--NC, N2)
Coco Cocopa. (P--Co)
CoMi Coast Miwok.
Coos Coos. (F--Ku)
Cost Costanoan. (N--Cn, Cs)
Cow Cowichan. (B--Cw)
Cup Cupeño. (O--Cu)
CYHu Coast Yuki and Huchnom. (H--CY)
DCah Desert Cahuilla. (O--C1, C2)
DDie Desert Diegueño. (O--D5, D6)
DeCr Deep Creek Gosiute. (R--GD)
Duwa Duwamish. (C--Du)
EAch East Achomawi. (K--AE)
Egan Egan Canyon Shoshoni. (T--S1)
Elko Elko Shoshoni. (T--Sk)
Ely Ely Shoshoni. (T--Si)
ENav East Navaho. (Q--EN)
ESha East Shasta. (K--SE)
FLk Fish Lake Northern Paiute. (T--FL)
FMai Foothill Maidu. (K--MF)
FNis Foothill Nisenan. (K--NF)
Gab Gabrielino. (N--Ga)
Gal Galice Creek. (F--G1, G2)
GCSh Grouse Creek Shoshoni. (S--Sq)
GSmV Great Smoky Valley Shoshoni. (T--Sd)
GTsi Gitksan Tsimshian. (A--GK)
Hais Haisla. (A--KX)
Hava Havasupai.
Hmlt Hamilton Shoshoni. (T--Sh)
HPat Hill Patwin. (I--HP)
HTsi Hartley Bay Tsimshian. (A--TH)
HuA Huachuca Apache (Chiricahua). (Q--Hu)
Huch Huchnom.
Hupa Hupa. (G--H1, H2)
HWin Hill Wintun. (I--HW)
IChu Inezeño Chumash. (N--IN)
JicA Jicarilla Apache. (Q--O1, L1)
Kaib Kaibab Southern Paiute. (R--SK)
Kali Kalispel. (D--Kp)
Kar Karok. (G--K1, K2)
Kato Kato. (G--Ka)
Kaw Kawaiisu Southern Paiute. (M--Ka)
Kidü Kidü Northern Paiute. (U--Ki)
KiMo Kings River Western Mono: Tuhukwadj, Hodogida, Woponuch, Entimbich, Waksachi. (M--Mt, Mh, Mp, Me, Mw)
Kit Kitanemuk. (N--Ki)
KiYo Kings River Yokuts: Chukaimina, Choinimni, Kocheyali. (M--Ym, Yi, Yk)
Klah Klahoose. (B--K1)
Klal Klallam. (C--K1)
Klam Klamath. (K--K1)
Klik Klikitat. (D--K1)
Kosk Koskimo. (A--KK)
KTu Kalapuya, Tualatin. (E--TK)
Küpa Küpa Northern Paiute. (U--Kü)
Kuyu Kuyui Northern Paiute. (U--K1, K2)
Kwak Kwakiutl of Fort Rupert. (A--KR)
LeSh Lemhi Shoshoni. (S--Ss)
Lida Lida. (T--Sc)
Lill Lillooet. (D--Li)
LipA Lipan Apache (not on map because beyond S border)
LkMi Lake Miwok. (I--LM)
LkPo Lake Pomo: East Pomo, Southeast Pomo. (I--Ha, Ci, Ko, El)
LkYo Lake Yokuts: Tachi, Chunut, Nutunutu. (M--Yt, Yu, Yn)
Luis Luiseño. (O--LS, LT, LP)
Lum Lummi
Mak Makah. (C--Ma)
Mari Maricopa. (P--Ma)
Matt Mattole and Bear River. (G--Mt)
MCah Mountain Cahuilla. (O--C4, C5)
MDie Mountain Diegueño. (O--D1, D2)
MesA Mescalero Apache. (Q--Me)
Mes1 Hopi of the first mesa, incl. Walpi. (Q--Wa)
Mes2 Hopi of the second mesa.
MHai Massett Haida. (A--HM)
MMai Mountain Maidu. (K--MM)
MNis Mountain Nisenan. (K--NM)
Mod Modoc. (K--Mo)
Moha Mohave. (P--Mo)
MWin McCloud Wintu. (K--WM)
Nan Nanaimo. (B--Na)
NEYa Northeastern Yavapai. (P--Yv)
NezP Nez Percé.
Nisq Nisqually.
NMi Northern Miwok. (L--M5, M7, M8, M9)
NPMC Northern Paiute of Mill City. (T--MC)
NPo Northern Pomo. (I--Kb, K1, BW, Kc, SN)
NTli Northern Tlingit (not on map because beyond N border). (A--LC)
Okan Okanagan.
Owen Owens Valley Northern Paiute. (M--OB, FS, OI)
Pak Pakwi Northern Paiute. (U--Pa)
Pana Panamint Shoshoni: Koso area, Death Valley, Saline Valley. (M--PD, PS, PK, Sa)
Pap Papago. (Q--KP, HP, Pa)
PCah Pass Cahuilla. (O--C3)

Pcwa Pcwanwapan.
Pent Pentlach. (B--Pe)
Pima Pima. (P--Pi)
PlMi Plains Miwok. (L--M6)
PrSh Prom Shoshoni. (S--Sp)
Quil Quileute.
Quin Quinault.
RPat River Patwin. (I--RP)
RsRi Reese River Shoshoni. (T--Sf)
RubV Ruby Valley Shoshoni. (T--Sm)
SAna Santa Ana Pueblo. (Q--SA)
Sane Sanetch. (B--WS, ES)
Sanp Sanpoil. (D--Sn)
Sawa Sawa Northern Paiute. (U--Sa)
SCA San Carlos Apache. (Q--SC)
Serr Serrano.
Sesh Seshelt. (B--Se)
SEYa Southeast Yavapai.
SHai Skidegate Haida. (A--HS)
Shus Shuswap. (D--Sh)
Sin Sinkyone. (G--S1, S2)
Sius Siuslaw. (F--Si)
SixR Sixes River. (F--SR)
SJMo San Joaquin Western Mono: Auberry, Northfork. (L--Ma, Mn)
SJYo San Joaquin Yokuts, including Chukchansi. (L--Yj, Ys)
Skok Skokomish (Twana). (C--Sk)
Skul Skull Valley Gosiute. (S--GS)
SmCr Smith Creek Shoshoni. (T--Se)
SMi Southern Miwok. (L--M1, M3)
SNis Southern Nisenan. (K--NS)
Snoh Snohomish.
SnRi Snake River Shoshoni. (T--Sn)
Song Songish.
SPo Southern Pomo. (I--Mu, Ma)
Spok Spokan.
SprV Spring Valley Shoshoni. (T--Sj)
Squa Squamish. (B--Sq)
SSer Southern Serrano. (O--Se)
Ste Stse'e'lis.
STli Southern Tlingit. (A--LS)
SUte Southern Ute. (Q--SU)
SWin Sacramento Wintu. (K--WS)
Tagö Tago Northern Paiute. (U--Tg)
Tahl Tahltan (not on map).
Take Takelma.
Taos Taos
Tasi Tasiget Northern Paiute. (U--Ts)
Thom Thompson. (D--Th)
Til Tillamook. (F--Ti)
Toe Toe Northern Paiute. (U--To)
Tol Tolowa. (G--To)
TonA Tonto Apache. (Q--NT, ST)
Töv Tovusi Northern Paiute. (U--Tö)
Tsim Tsimshian proper. (A--TG)
Tub Tübatulabal. (M--KT)
Tutu Tututni. (F--Tu)
TWin Trinity Wintu. (K--WT)
VanD Van Duzen (Nongatl). (G--VD)
Vent Ventureño. (N--Ve)
VMai Valley Maidu. (K--MV)
WAch Western Achomawi. (K--AW)
Wada Wada Northern Paiute. (U--Wd)
Wail Wailaki.
Wala Walapai. (P--W1)
Wap Wappo.
Wash Washo. (U--Wa)
WDie Western Diegueño. (O--D3, D4)
Wen Wenatchi.
Wik Wikeno. (A--KW)
Wish Wishram.
Wiyo Wiyot. (G--Wy)
WMA White Mountain Apache. (Q--WM)
WNav Western Navaho. (Q--WN)
WSA Warm Springs Apache (Chiricahua). (Q--WS)
WSha Western Shasta. (K--SW)
WYa Western Yavapai.
WYYo Wukchamni and Yaudanchi Yokuts. (M--YW, YD)
Xai Xaixais. (A--KC)
Yak Yakima.
Yana Northern Yana. (J--YN)
Yuki Yuki. (H--Yu)
Yuma Yuma. (O--Yu)
Yur Yurok. (G--Y1, Y2)
Zuñi Zuñi. (Q--Zu)

APPENDIX 3

BIBLIOGRAPHY BY TRIBES

(Full references are given under "Bibliography by Authors," Appendix 4. Full names of tribes are listed in the section "Tribal Abbreviations," Appendix 2. Locations of tribes are given on map 1.)

Als: Barnett, 1937.
ANoo: Boas, 1891; Curtis; Drucker, MS; Sapir, 1913; Sproat. (Unlocalized Nootka data are arbitrarily allocated here.)
Ash: Steward, MS. a.
Atsa: O. Stewart, MS.
Atsu: Voegelin, MS.
Ban: Steward, MS. b.
BaPa: Driver, 1937.
BlBl: Drucker, MS; Olson, MS.
BlCl: Boas, 1890, 1892; Drucker, MS.
BoSh: Steward, MS. b.
BtlM: Steward, MS. a.
Bty: Steward, MS. a.
Car: Morice, 1890, 1895.
CCPo: Gifford and Kroeber; Loeb, 1926.
Cd'L: Teit, 1930.
CeMi: Aginsky; Gifford, MS. a.
Chem: Drucker, 1937b.
Chet: Barnett, 1937.
Chil: Driver, 1939.
Chim: Dixon, 1910; Driver, 1939.
Chin: Boas, 1894; Curtis; Ray, MS.
CiA: Gifford, 1940.
Cmx: Barnett, 1939.
CNoo: Drucker, MS.
Coco: Gifford, 1933.
CoMi: Loeb, 1932.
Coos: Barnett, 1937.
Cost: Harrington, MS.
Cow: Barnett, 1939; Curtis.
Cup: Drucker, 1937b; Strong.
CYHu: Driver, 1939; Loeb, 1932.
DCah: Curtis; Drucker, 1937b; Hooper; Strong.
DDie: Drucker, 1937b; Gifford, 1931.
DeCr: Steward, MS. b.
Duwa: Gunther, MS.
EAch: O. Stewart; Voegelin, MS.
Egan: Steward, MS. a.
Elko: Steward, MS. a.
Ely: Steward, MS. a.
ENav: Gifford, 1940; Reichard, 1928.
ESha: Voegelin, MS.
FLk: Steward, MS. a.
FMai: Dixon, 1905; Loeb, 1933; Voegelin, MS.
FNis: Loeb, 1933; Voegelin, MS.
Gab: Harrington, MS.
Gal: Barnett, 1937.
GCSh: Steward, MS. b.
GSmV: Steward, MS. a.
GTsi: Drucker, 1937b.
Hais: Drucker, 1937b; Olson, MS.
Hava: Spier, 1928.
Hmlt: Steward, MS. a.
HPat: Gifford and Kroeber; Halpern, MS. b; Kroeber, 1932; Loeb, 1933.
HTsi: Drucker, MS.
HuA: Gifford, 1940; Opler, MS. b.
Hupa: Curtis; Driver, 1939; Goddard, 1903; Powers.
HWin: Essene, MS. b; Gifford and Kroeber; Goldschmidt; Kroeber, 1932.
IChu: Harrington, MS.
JicA: Gifford, 1940; Goddard, 1913.
Kaib: Kelly, MS.
Kali: Curtis; Ray, MS.
Kar: Driver, 1939; Kroeber, Hdbk.
Kato: Curtis; Driver, 1939; Loeb, 1932.
Kaw: Driver, 1937.
Kidu: Kelly, 1932; O. Stewart, MS.
KiMo: Driver, 1937.
Kit: Driver, MS.
KiYo: Driver, 1937.
Klah: Barnett, 1939.
Klal: Gunther, 1927; MS.
Klam: Curtis; Nash, MS.; Spier, 1930a; Voegelin, MS.
Klik: Ray, MS.
Kosk: Drucker, MS.
KTu: Jacobs, MS.
Kupa: O. Stewart, MS.
Kuyu: Lowie, 1924; O. Stewart, MS.
Kwak: Boas, 1890, 1905, 1921, 1935; Curtis; Drucker, MS.
LeSh: Steward, MS. b.
Lida: Steward, MS. a.
Lill: Hill-Tout, 1905; Teit, 1906.
LipA: Gifford, 1940.
LkMi: Gifford and Kroeber; Kroeber, 1932; Loeb, 1932.
LkPo: Gifford and Kroeber; Kroeber, 1932; Loeb, 1926, 1932.
LkYo: Curtis; Driver, 1937.
Luis: Curtis; Drucker, 1937b; Constance Dubois; Sparkman; Strong.
Lum: Stern.
Mak: Gunther, MS.
Mari: Spier, 1933.
Matt: Driver, 1939; Nomland, 1938.
MCah: Drucker, 1937b; Strong.
MDie: Curtis; Drucker, 1937b; Waterman.
MesA: Gifford, 1940; Opler, MS. a.
Mes1: Curtis; Gifford, 1940; Stephen.
Mes2: E. Beaglehole; E. and P. Beaglehole.
MHai: Drucker, MS.
MMai: Dixon, 1905; Loeb, 1933; Voegelin, MS.
MNis: Voegelin, MS.
Mod: Voegelin, MS.
Moha: Devereux; Kroeber, Hdbk.
MWin: Cora Du Bois, 1935; Voegelin, MS.
Nan: Barnett, 1939.
NEYa: Gifford, 1936.
NezP: Curtis; Spinden.
Nisq: Haeberlin and Gunther.
NMi: Aginsky.
NPMC: Steward, MS. a.
NPo: Gifford and Kroeber; Loeb, 1926, 1932.
NTli: Drucker, MS.
Okan: Teit, 1930.
Owen: Driver, 1937; Steward, 1933, MS. a.
Pak: O. Stewart, MS.
Pana: Driver, 1937; Steward, MS. a.
Pap: Curtis; Densmore; Gifford, 1940; Underhill.
PCah: Drucker, 1937b; Strong.
Pcwa: Ray, MS.

Pent: Barnett, 1939.
Pima: Curtis; Russell.
PlMi: Aginsky.
PrSh: Steward, MS. b.
Quil: Curtis; Frachtenberg.
Quin: Olson, 1936.
RPat: Gifford and Kroeber; Kroeber, 1932.
RsRi: Steward, MS. a.
RubV: Steward, MS. a.
SAna: Gifford, 1940.
Sane: Barnett, 1939.
Sanp: Curtis; Ray, 1932, MS.
Sawa: O. Stewart, MS.
SCA: Gifford, 1940.
Serr: Benedict; Strong.
Sesh: Barnett, 1939; Hill-Tout, 1904a.
SEYa: Gifford, 1932.
SHai: Curtis; Drucker, MS.; Swanton, 1905. (Swanton and Curtis arbitrarily localized here.)
Shus: Boas, 1891; Teit, 1909.
Sin: Driver, 1939; Nomland, 1935.
Sius: Barnett, 1937.
SixR: Barnett, 1937.
SJMo: Aginsky.
SJYo: Aginsky.
Skok: Gunther, MS.
Skul: Steward, MS. b.
SmCr: Steward, MS. a.
SMi: Aginsky.
SNis: Voegelin, MS.
Snoh: Haeberlin and Gunther.
SnRi: Steward, MS. a.
Song: Boas, 1891; Curtis.
SPo: Gifford and Kroeber; Loeb, 1932.
Spok: Curtis.
SprV: Steward, MS. a.
Squa: Barnett, 1939.
SSer: Drucker, 1937b.
Ste: Hill-Tout, 1904b.
STli: Drucker, MS.; Krause; Swanton, 1908. (Latter two sources arbitrarily localized here.)
SUte: Gifford, 1940; Lowie, 1924.
SWin: Voegelin, MS.
Tago: O. Stewart.
Tahl: Emmons.
Take: Sapir, 1907.
Taos: Curtis.
Tasi: O. Stewart, MS.
Thom: Teit, 1900.
Til: Barnett, 1937; Boas, 1923.
Toe: O. Stewart, MS.
Tol: Curtis; Driver, 1939; Drucker, 1937; Cora Du Bois, 1932.
TonA: Gifford, 1940.
Töv: O. Stewart.
Tsim: Boas, 1890, 1916; Drucker, MS.
Tub: Driver, 1937; Voegelin, 1938.
Tutu: Barnett, 1937.
TWin: Voegelin, MS.
VanD: Driver, 1939.
Vent: Harrington, MS.
VMai: Dixon, 1905; Voegelin, MS.
WAch: Curtis; Voegelin, MS.
Wada: O. Stewart.
Wail: Curtis; Essene, MS. a; Loeb, 1932.
Wala: Kroeber, 1935.
Wap: Driver, 1936; Loeb, 1932.
Wash: Curtis; O. Stewart.
WDie: Drucker, 1937b.
Wen: Ray, MS.
Wik: Drucker, MS.
Wish: Sapir and Spier.
Wiyo: Curtis; Driver, 1939; Kroeber, Hdbk.
WMA: Gifford, 1940.
WNav: Gifford, 1940.
WSA: Gifford, 1940; Opler, MS. b.
WSha: Curtis; Dixon, 1907; Voegelin, MS.
WYa: Gifford, 1936.
WYYo: Driver, 1937.
Xai: Drucker, MS.
Yak: Curtis.
Yana: Gifford and Klimek.
Yuki: Curtis; Kroeber, Hdbk.
Yuma: Curtis; Drucker, 1937b; Forde; Halpern, MS. a.
Yur: Curtis; Driver, 1939; Kroeber, Hdbk.
Zuñi: Gifford, 1940; Stevenson.

APPENDIX 4

BIBLIOGRAPHY BY AUTHORS

Abbreviations:

AA	American Anthropologist.
AAA-M	American Anthropological Association, Memoir.
AFLS-M	American Folk-Lore Society, Memoir.
AMNH-AP	American Museum of Natural History, Anthropological Papers.
-B	Bulletin
-HS	Handbook Series.
-M	Memoir.
BAAS-R	British Association for the Advancement of Science, Report.
BAE-B	Bureau of American Ethnology, Bulletin.
-R	Report.
CNAE	Contributions to American Ethnology.
CU-CA	Columbia University, Contributions to Anthropology.
JRAI	Journal of the Royal Anthropological Institute.
RCI-P	Royal Canadian Institute, Proceedings.
-Tr	Transactions.
UC-AR	University of California, Anthropological Records.
-PAAE	Publications in American Archaeology and Ethnology.
UPM-AP	University of Pennsylvania Museum, Anthropological Publications.
UW-PA	University of Washington Publications in Anthropology.
YU-AP	Yale University Publications in Anthropology.

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Tables 11 to 14

TABLE 11

Correlations (r_{hk}) among Trait Pools and Individual Traits*

	VII	156	57	II	III	162	16	147	131	108	109	XVI	137	19	8	9	10	62	XV	110	79	145	202	203	204	158	188	196	81	XIII	XIV	X	77	78	4	17	14	33	VI	12	54	60	61	138	143	XI	VIII	XII	24	27	122	V	53	22	206	205	IV	99	100	160	I	IX
VII		4	4	5	4	3	2	3	3	3	2	0	1	-1	-2	-2	0	0	1	-1	2	2	-1	0	-1	1	0	2	1	0	2	4	2	-1	3	2	1	-2	-2	1	-1	1	1	1	2	0	2	-2	-2	-3	-2	-1	-3	-1	-1	0	-1	-1	1	-1	-1	1
156	4		3	5	3	3	1	5	2	3	3	-1	2	-3	-4	-3	0	-4	-1	-1	0	-1	0	1	-1	-1	-2	0	-1	-1	2	4	2	0	3	4	1	-1	-1	0	0	0	0	1	2	-1	0	-2	-2	-2	-2	-1	1	0	3	2	0	-2	-1	0	-1	-1
57	4	3		2	2	2	0	2	1	0	1	-1	0	-1	-3	-3	-2	-1	2	0	1	2	-1	0	0	-2	0	1	-1	-1	0	2	1	-1	3	1	1	-3	2	1	1	1	1	0	2	1	1	2	1	-3	1	1	-2	1	1	-1	-2	-1	-1	-1	-1	4
II	5	5	2		6	4	2	3	1	4	3	2	2	-3	-1	-2	3	1	0	0	1	-1	1	1	1	2	2	1	2	1	3	5	4	3	3	5	3	0	1	2	0	1	-2	2	2	-2	-1	-3	-2	-2	-1	2	-1	-2	0	1	-1	-2	-3	-1	-2	-1
III	4	3	2	6		6	3	2	4	1	3	4	1	-1	1	0	4	3	0	-1	1	2	1	1	1	2	1	0	1	-1	1	3	4	3	1	2	1	-1	0	2	-3	1	2	1	0	-1	1	-2	-4	-3	-1	-2	-3	-1	-1	-1	-2	-1	-2	-1	-1	-2
162	3	3	2	4	6		2	2	2	3	3	1	1	-2	0	-2	3	0	1	-1	2	-2	1	0	1	3	2	1	1	1	3	6	3	2	3	3	1	-1	1	1	2	0	-1	1	2	-2	1	-2	-1	-1	0	-1	-2	-1	0	-1	1	0	-1	1	0	0
16	2	1	0	2	3	2		1	2	0	0	0	-1	1	1	0	2	1	1	-1	-1	2	2	0	2	2	2	2	-1	1	2	2	2	2	1	0	-4	1	0	1	0	0	0	1	1	-2	-1	-1	-1	-2	-1	-3	-1	-1	1	3	0	1	-2	1	-1	-1
147	3	5	2	3	2	2	1		4	3	3	1	1	-2	-3	-3	0	1	-2	-1	0	0	-2	-1	-1	2	-3	-1	-1	-2	1	2	1	-1	3	2	0	-3	-1	1	0	0	0	1	2	1	0	-2	-2	-1	0	1	0	-1	2	-1	0	-1	0	0	0	-1
131	6	2	1	1	4	2	2	4		4	2	3	-1	1	0	-1	2	3	-1	0	0	2	-1	-1	-1	-1	-2	0	-1	-3	-1	0	3	1	2	0	0	-1	0	1	-1	0	-2	1	2	3	1	-1	-4	-2	0	-3	-3	-1	1	-1	-3	-2	-2	-1	-1	-1
108	3	3	0	4	1	3	0	3	4		8	2	2	-1	-2	-1	0	1	1	3	3	3	1	2	-1	2	1	1	1	3	3	5	4	2	0	2	2	-1	2	-1	-1	1	2	1	4	-2	1	-3	1	1	0	-1	1	2	0	2	2	2	1	2	1	-1
109	2	3	1	3	3	3	0	3	2	8		2	2	-3	-2	-1	0	0	-1	-2	1	0	0	1	0	0	-1	-1	0	0	2	3	3	1	0	2	1	-3	1	-1	0	1	2	0	2	-2	2	-3	-1	0	0	-1	1	0	1	1	1	2	1	2	2	-1
XVI	0	1	-1	2	4	1	0	1	3	2	2		3	1	2	1	3	3	0	-1	-1	2	2	1	2	1	0	0	1	0	0	0	2	3	0	1	1	0	1	1	-1	1	0	0	0	1	1	2	-2	-1	2	-1	0	-1	-1	-1	-2	-2	-2	-1	-2	-2
137	1	2	0	2	1	1	-1	1	-1	2	2	3		-1	-1	-1	0	-1	0	-1	1	0	-1	-1	-1	-1	-1	0	1	0	0	0	0	-1	1	1	2	-1	1	1	0	0	1	0	1	0	2	-1	0	1	0	0	1	0	1	-1	1	0	-1	-1	0	-1
19	-1	3	-1	-3	-1	-2	1	-2	1	-1	-3	1	-1		3	3	1	2	2	2	0	3	0	-1	1	2	2	1	0	1	-1	-1	-2	-1	2	-6	-3	2	0	2	-1	0	0	-1	2	2	1	2	0	-1	0	-2	-2	1	-1	-1	-2	0	-2	-1	-2	-1
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9	-2	3	-3	-2	0	-2	0	-3	-1	-1	-1	1	-1	3	8		1	2	1	2	1	2	1	1	1	2	1	0	0	0	-1	-1	-3	-1	-6	-4	-3	1	0	-1	-1	-1	-1	-1	-3	2	-1	2	0	-1	-1	-4	-3	-1	-2	-2	-3	0	-3	-3	-2	-2
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XV	1	-1	2	0	0	1	1	-2	-1	1	-1	0	0	2	1	1	1	2		3	2	4	0	0	0	5	3	4	2	5	4	4	1	2	-1	-1	0	0	0	1	0	1	0	1	2	0	1	3	2	-1	2	2	-1	1	0	0	1	2	2	0	0	3
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79	2	0	1	1	1	2	-1	0	0	3	1	-1	1	0	1	1	-1	1	2	3		2	-1	0	-1	2	2	2	3	2	1	2	3	0	-1	-1	1	0	1	0	-1	1	0	1	2	0	1	0	1	1	0	0	-2	2	-1	-1	1	3	1	0	0	0
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81	1	-1	-1	2	1	1	-1	-1	-1	1	0	1	1	0	1	0	2	2	2	-1	3	-1	1	-1	1	2	3	3		2	2	1	2	2	-2	0	1	1	1	1	1	1	-2	0	1	-1	1	0	2	1	0	0	-1	0	0	-1	2	0	0	0	1	-1
XIII	0	-1	-1	1	-1	1	1	-2	-3	3	0	0	0	1	0	0	1	2	5	1	2	-1	4	3	3	6	5	5	2		8	6	2	4	0	2	2	1	1	2	1	2	1	1	2	-2	-1	1	4	1	3	-2	2	2	2	2	4	5	3	4	2	3
XIV	2	2	0	3	1	3	2	1	-1	3	2	0	0	-1	-1	-1	2	1	4	2	1	0	4	3	3	6	5	6	2	8		8	4	5	1	3	2	1	1	1	1	2	1	2	3	-3	0	1	3	1	3	1	2	1	2	3	3	3	[illegible]	4	3	2
X	4	4	2	5	3	6	2	2	0	5	3	0	0	-1	-1	-1	2	1	4	2	2	0	3	2	2	5	4	5	1	6	8		4	4	2	4	2	0	0	1	1	2	0	2	4	-3	1	-2	2	-1	2	1	1	1	2	2	2	4	4	3	2	2
77	2	2	1	4	4	3	2	1	3	4	3	2	0	-2	-2	-3	2	4	1	0	3	2	2	2	1	2	3	2	2	2	4	4		7	3	3	3	-1	1	1	-2	4	1	1	3	-4	1	-1	1	1	1	0	0	0	0	1	2	2	1	3	1	-1
78	-1	0	-1	3	3	2	2	-1	1	2	1	3	-1	-1	0	-1	2	4	2	0	0	2	3	3	1	3	3	3	2	4	5	4	7		2	3	2	3	2	1	0	2	-1	0	2	-5	0	0	2	1	3	1	1	0	0	2	2	[illegible]	2	3	1	0
4	3	3	3	3	1	3	1	3	2	0	0	0	1	2	7	-6	-2	-1	-1	-1	-1	-1	1	1	0	-1	-1	1	-2	0	1	2	3	2		4	3	-1	0	2	2	2	-1	-2	2	1	0	-1	-1	-1	1	3	0	0	-1	1	0	-2	0	1	-2	2
17	2	4	1	5	2	3	0	2	0	2	2	1	1	-6	-4	-4	0	-2	-1	-2	-1	-3	1	1	1	0	0	2	0	2	3	4	3	3	4		5	0	0	2	2	1	1	2	-1	-4	-2	-3	0	0	1	2	3	0	2	2	1	1	2	2	2	1
14	1	1	1	3	1	1	4	0	0	2	1	1	2	-3	-2	-3	1	0	0	1	1	0	0	0	0	0	1	1	1	2	2	2	3	2	3	5		-1	0	3	0	1	0	3	0	-1	0	-1	2	1	2	3	1	2	0	0	2	1	2	1	1	1
33	-2	-1	-3	0	-1	-1	1	-3	-1	-1	-3	0	-1	2	1	1	0	1	0	2	0	0	1	1	1	2	2	1	1	1	1	0	-1	3	-1	0	-1		5	2	0	-1	-2	1	-1	-1	-2	-1	1	1	0	0	2	2	1	1	2	2	-1	1	1	-2
VI	-2	-1	2	1	0	1	0	-1	0	2	1	1	1	0	1	0	-1	2	0	2	1	-1	0	1	0	2	1	0	1	1	1	0	1	2	0	0	0	5		2	3	1	0	0	-1	-1	-1	-1	0	3	1	-1	1	1	1	1	3	-2	-2	1	1	-3
12	1	0	1	2	2	1	1	1	1	-1	-1	1	1	2	-1	-1	0	1	1	1	0	1	1	1	2	1	1	1	1	2	1	1	1	1	2	2	3	2	2		1	1	1	1	2	-1	0	0	2	0	0	0	0	1	0	1	1	0	1	1	1	1
54	-1	0	1	0	-3	2	0	0	-1	-1	0	-1	0	-1	-1	-1	0	1	0	1	-1	-5	1	1	1	0	1	1	1	1	1	1	-2	0	2	2	0	0	3	1		3	0	2	0	1	-1	2	3	2	2	1	1	0	0	1	2	2	1	1	1	1
60	1	0	1	1	1	0	0	0	0	1	1	1	0	0	-1	-1	1	2	1	1	1	0	1	1	1	2	1	1	1	2	2	2	4	2	2	1	1	-1	1	1	3		6	1	2	-2	0	1	3	1	1	0	0	1	1	1	2	0	1	1	-1	1
61	1	0	1	-2	2	-1	0	0	-2	2	2	0	1	0	-2	-1	-2	-2	0	0	0	1	0	1	0	0	-1	0	-2	1	1	0	1	-1	-1	1	0	-2	0	1	0	6		0	2	-1	1	1	2	2	0	1	2	1	1	1	0	2	2	2	1	1
138	1	1	0	2	1	1	1	1	1	1	0	0	0	-1	0	-1	1	1	1	0	1	0	1	0	0	1	1	1	0	1	2	2	1	0	-2	2	3	1	0	1	2	1	0		0	-2	3	0	1	0	1	0	1	1	0	0	1	1	1	1	0	0
143	2	2	2	2	0	2	1	2	2	4	2	0	1	2	-2	-3	2	1	2	1	2	2	1	1	0	2	1	2	1	2	3	4	3	2	2	-1	0	-1	-1	2	0	2	2	0		-1	2	0	3	2	1	1	-2	0	1	1	2	2	1	1	0	1
XI	0	-1	1	-2	-1	-2	-2	1	3	-2	-2	1	0	2	2	2	0	0	0	1	0	1	-1	-2	0	-2	-1	-1	-1	-2	-3	-3	-4	-5	-1	-4	-1	-1	-1	1	-1	-2	-1	-2	-1		0	5	-2	-1	1	1	-2	0	-1	-2	-2	-2	-2	-3	-2	1
VIII	2	0	1	-1	1	1	-1	0	1	1	2	1	2	1	-1	-1	-1	0	1	-1	1	2	-1	-2	-1	-1	-1	1	1	-1	0	1	1	0	0	-2	0	-2	-1	0	-1	0	1	3	2	0		1	1	1	1	1	-2	1	-1	-1	1	3	3	1	2	1
XII	2	2	2	-3	-2	-2	-1	-2	-1	-3	-3	2	-1	2	2	2	0	1	3	2	0	3	1	1	1	1	1	1	0	1	1	-2	-1	0	-1	-3	-1	-1	-1	0	2	1	1	0	0	5	1		0	-1	5	5	-1	0	-1	0	-2	-2	0	-2	-2	3
24	-2	-2	1	-2	-4	-1	-1	-2	-4	1	-1	-2	0	0	-1	0	-1	1	2	2	1	-1	0	0	1	2	3	2	2	4	3	2	1	2	-1	0	2	1	0	2	3	3	2	1	0	-2	0			6	2	3	2	3	0	1	5	5	4	3	2	8
27	-3	-2	-3	-2	-3	-1	-2	-1	-2	1	0	-1	1	-1	-2	-1	-1	1	-1	-1	1	-3	-1	-1	-1	-1	0	-1	1	1	1	-1	1	1	-1	0	1	1	3	0	2	1	2	0	2	-1	1	-1	6		0	2	2	3	1	2	6	4	3	3	3	-2
122	-2	-2	1	-1	-1	0	-1	0	0	0	0	2	0	0	-1	-1	0	3	2	3	0	1	2	2	2	1	1	3	0	3	3	2	1	0	1	1	2	0	1	0	2	1	0	1	1	1	1	5	2	0		6	2	2	2	-1	1	3	4	2	3	4
V	-1	-1	1	2	-2	-1	-3	1	-3	-1	-1	-1	0	-2	-4	-4	-1	0	2	0	0	-1	-1	0	-1	0	-1	1	0	-2	1	1	0	1	3	2	3	0	-1	0	1	0	1	0	1	1	1	5	3	2	6		4	4	1	0	3	3	5	2	3	4
53	-3	1	-2	-1	-3	-2	-1	0	-3	1	1	0	1	-2	-3	-3	0	2	-1	-1	-2	-3	1	3	-1	-1	-1	0	-1	2	2	1	0	1	0	3	1	2	1	0	1	0	2	1	-2	-2	-2	-1	2	2	2	4		1	3	1	4	2	4	3	3	0
22	-1	0	1	-2	-1	-1	-1	-1	-1	2	0	-1	0	1	-1	-1	-1	2	1	2	2	2	-1	-1	-1	1	2	-1	0	2	1	1	0	0	0	0	2	2	1	1	0	1	1	1	0	0	1	0	3	3	2	4	1		1	-1	3	4	2	1	2	2
206	-1	3	1	0	-1	0	1	2	1	0	1	-1	1	-1	-2	-2	-1	-1	0	-1	-1	-1	-1	0	0	-1	-1	1	0	2	2	2	0	0	-1	2	0	1	1	0	0	1	1	0	1	-1	-1	-1	0	1	2	1	3	1		1	1	1	2	0	4	1
205	0	2	-1	1	-1	-1	3	-1	-1	2	1	-1	-1	-1	-2	-2	-1	-2	0	1	-1	-1	0	1	0	2	2	2	-1	2	3	2	1	2	1	2	0	1	1	1	1	1	1	0	1	-2	-1	0	1	2	-1	0	1	-1	1		0	2	0	4	-1	-1
IV	-1	0	-2	-1	-2	1	0	0	-3	2	1	-2	1	-2	-2	-3	0	1	1	-1	1	-2	-1	0	-1	1	2	0	2	4	3	2	2	2	0	1	2	2	3	1	2	2	2	1	2	-2	1	-2	5	6	1	3	4	3	1	0		4	3	4	4	-1
99	-1	-2	-1	-2	-1	0	1	-1	-2	2	2	-2	0	0	-1	0	-1	1	2	1	3	0	0	0	0	2	2	2	0	5	4	3	2	3	-2	1	1	2	2	0	1	2	2	1	2	-2	3	-2	5	4	3	3	2	4	1	2	4		5	6	6	0
100	1	-1	-1	-3	-2	-1	-2	0	-2	1	1	-2	-1	-2	-3	-3	-2	1	2	0	1	0	1	1	-1	-1	-2	2	0	3	3	3	1	2	0	2	2	-1	-2	1	0	1	2	1	1	-2	3	0	4	3	4	5	4	2	2	0	3	5		4	6	2
160	-1	0	-1	-1	-1	1	-1	0	-1	2	2	-1	-1	-1	-3	-3	-2	-1	0	0	0	-1	-1	0	-1	0	5	2	0	4	4	3	3	3	1	2	1	1	1	1	1	1	2	1	1	-3	1	-2	3	3	2	2	3	1	0	4	4	6	4		5	1
I	-1	-1	-1	-2	-1	0	-1	0	-1	1	2	-2	0	-2	-3	-2	-1	2	0	1	0	-1	-1	-1	0	-1	-1	0	1	2	3	2	1	1	-2	2	1	1	1	1	1	-1	1	0	0	-2	2	-2	2	3	3	3	3	2	4	-1	4	6	6	5		-1
IX	1	-1	4	-1	-2	0	-1	-1	-1	-1	-1	-2	-1	-1	-2	-2	-2	-1	3	1	0	3	-1	-1	-1	1	1	4	-1	3	2	2	-1	0	2	1	1	-2	-3	1	1	1	1	0	1	1	1	3	8	-2	4	4	0	2	1	-1	-1	0	2	1	1	

*Correlations are carried only one place, with decimal point dropped. Thus, 5 means +0.5, more specifically, +0.45 to +0.54. Underlined coefficients are those computed from distributions whose ratio of plus to minus entries is more skewed than 0.80:0.20 or 0.20:0.80. Tribal abbreviations are given in Appendix 2. Single capital letters refer to the groups of tribes shown in Table 10.

After computations had been made, Philip Drucker returned from the field with additional information on tribes from the Nootka to the Tlingit. This has been entered in Tables 13 and 14, but correlations have not been recomputed. Therefore, some correlations will be off one unit.

TABLE 12

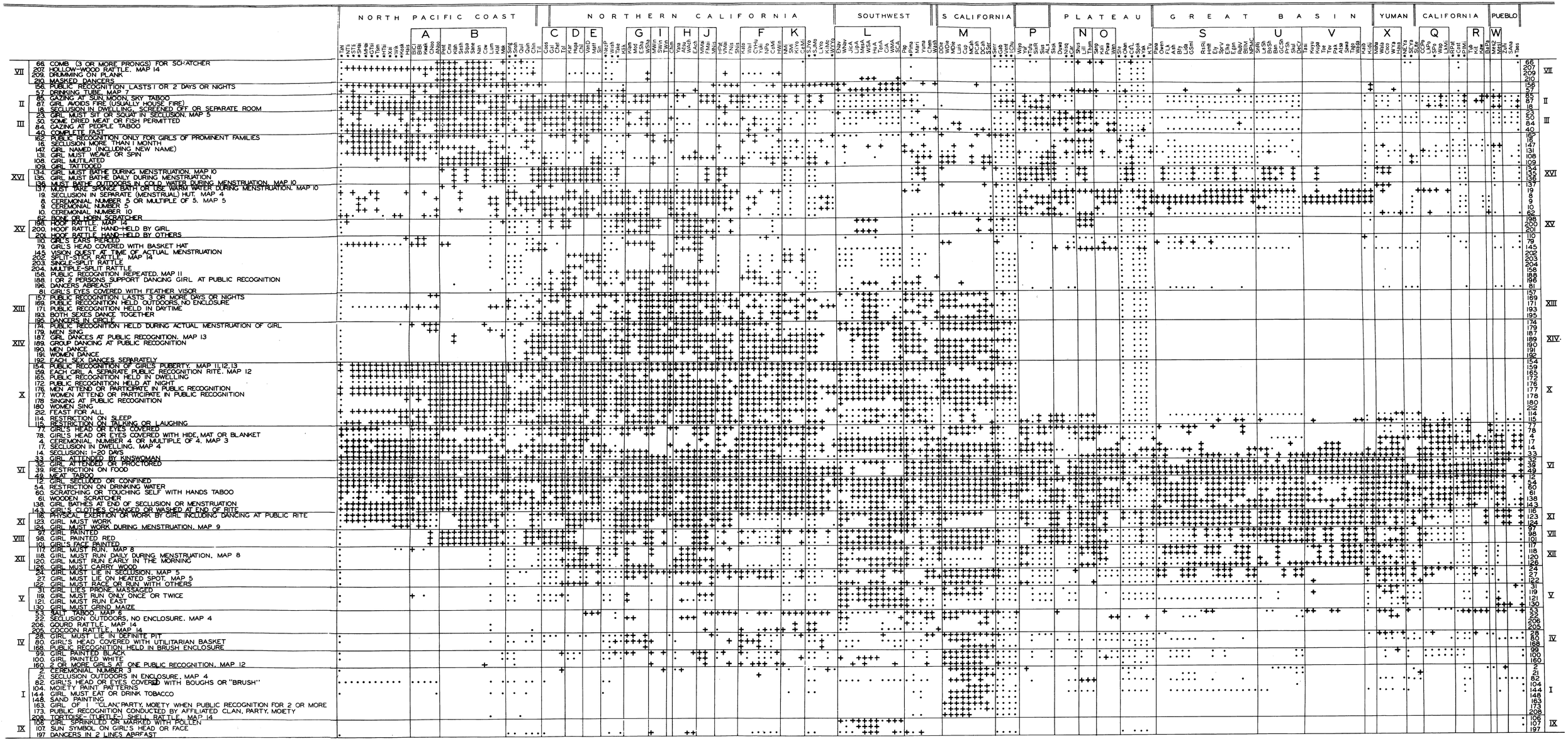
Intercorrelations (r_{hk}) between Tribes and Groups of Tribes*

	Hais	A	B	Quil	Quin	Chin	Til	C	D	E	Klik	G	I	H	Chim	J	HPat	VMai	FNis	SNis	F	K	LKYo	KiMo	L	Pap	Mari	Yuma	Chem	Wash	P	Skok	Duwa	N	O	KTu	S	U	V	Kaib	Kidü	X	SUte	Q	R	BaPa	W	Zuni	SAna	M
Hais		6	5	3	5	4	2	2	3	2	4	2	4	3	3	3	3	3	4	4	3	3	3	4	2	3	3	4	3	2	2	2	1	3	2	5	1	2	2	2	4	1	2	3	2	0	2	3	0	0
A	6		7	7	4	5	3	4	4	4	5	3	2	3	2	2	4	4	3	5	4	4	4	2	3	4	2	4	3	3	3	3	2	3	3	4	2	2	2	2	3	1	3	5	4	4	4	2	2	1
B	5	7		5	5	7	4	5	5	4	4	2	2	1	1	2	5	4	2	3	4	3	3	2	3	3	4	3	3	5	5	4	3	4	2	4	3	3	3	3	3	2	3	4	3	3	4	2	2	1
Quil	3	7	5		6	5	4	5	4	5	3	3	4	3	5	3	5	5	4	6	4	4	5	4	3	3	2	3	3	3	3	2	3	0	1	3	2	2	3	3	3	1	2	4	3	4	3	-1	2	2
Quin	5	4	5	6		7	5	5	3	3	4	4	4	1	4	3	5	5	4	3	4	3	5	5	2	2	1	3	2	3	3	3	4	2	2	1	1	2	2	3	3	-1	1	2	0	3	1	-1	0	2
Chin	4	5	7	5	7		6	7	6	6	5	4	4	3	5	3	7	6	3	3	5	4	4	3	2	3	5	2	2	4	4	4	4	3	4	3	3	3	3	3	3	1	2	4	2	3	3	1	2	0
Til	2	3	4	4	5	6		6	5	4	4	4	4	4	3	5	6	5	3	2	3	3	2	2	3	5	4	2	2	4	4	2	2	2	1	2	3	2	2	1	2	1	1	2	0	2	0	1	0	1
C	2	4	5	5	5	7	6		7	7	5	6	6	5	5	5	6	6	4	3	5	4	3	2	3	4	5	4	3	4	5	4	4	3	2	3	1	3	3	3	3	2	3	3	1	3	2	0	1	2
D	3	4	5	4	3	6	5	7		7	5	5	4	4	5	4	7	5	4	2	5	3	2	1	3	5	5	3	2	4	5	3	2	3	3	4	3	4	3	2	4	2	3	3	2	3	2	2	1	0
E	2	4	4	5	3	6	4	7	7		4	4	4	5	5	4	6	5	4	3	5	5	6	2	2	4	5	3	3	3	5	3	2	2	2	2	3	3	3	2	2	2	2	3	2	4	2	1	1	1
Klik	4	5	4	3	4	5	4	5	5	4		7	6	6	5	6	6	5	5	2	5	4	2	4	2	4	4	3	3	4	2	1	2	2	3	4	3	3	2	4	5	0	1	3	2	3	0	5	-2	2
G	2	3	2	3	4	4	4	6	5	4	7		6	6	5	5	5	5	5	3	6	4	2	3	2	3	3	2	3	3	2	1	3	0	2	3	2	3	2	3	3	2	1	2	2	3	1	1	1	1
I	4	2	2	4	4	4	4	6	4	4	6	6		6	6	6	6	5	5	4	6	5	3	3	4	4	5	3	3	4	0	1	3	1	1	3	2	3	3	3	4	1	7	3	1	1	1	1	-1	3
H	3	3	1	3	1	3	4	5	4	5	6	6	6		6	7	4	4	6	3	4	4	2	4	4	5	5	3	4	3	2	1	2	1	2	3	3	3	3	3	5	2	2	3	2	2	1	2	0	1
Chim	3	2	1	5	4	5	3	5	5	5	5	5	6	6		4	6	5	4	3	5	5	4	3	2	4	3	3	3	4	0	1	1	-1	1	3	2	2	2	2	4	0	0	3	2	3	0	0	0	2
J	3	2	2	3	3	3	5	5	4	4	6	5	6	7	4		6	6	7	4	5	4	3	3	5	5	6	4	5	4	2	2	3	1	2	4	3	4	5	5	5	3	4	3	3	2	2	2	0	3
HPat	3	4	5	5	5	7	6	6	7	6	6	5	6	4	6	6		7	5	6	6	6	3	4	3	5	4	7	5	5	3	4	3	2	2	5	4	4	4	5	4	2	2	5	5	4	4	1	2	2
VMai	3	4	4	5	5	6	5	6	5	5	5	5	5	4	5	6	7		6	4	5	4	4	4	3	4	4	5	3	3	3	3	3	2	2	4	3	4	4	4	4	3	2	4	2	2	3	2	1	2
FNis	4	3	2	4	4	3	3	4	4	4	5	5	5	6	4	7	5	6		6	3	4	5	3	4	5	3	6	5	3	2	2	2	1	2	4	3	4	4	3	4	2	3	4	4	2	3	2	0	3
SNis	4	5	3	6	3	3	2	3	2	3	2	3	4	3	3	4	6	4	6		5	6	6	4	4	4	4	5	6	3	2	2	2	1	2	4	3	3	4	4	3	3	4	6	6	4	5	1	4	3
F	3	4	4	4	4	5	3	5	5	5	5	6	6	4	5	5	6	5	3	5		6	3	2	3	4	4	5	4	5	1	1	2	0	1	2	1	2	2	3	2	1	3	5	3	3	2	0	2	4
K	3	4	3	4	3	4	3	4	3	5	4	4	5	4	5	4	6	4	4	6	6		5	4	3	5	5	5	6	4	0	1	1	0	0	2	2	2	2	2	3	2	2	4	4	3	3	1	1	3
LKYo	3	4	3	5	5	4	2	3	2	6	2	2	3	2	4	3	3	4	5	6	3	5		5	3	3	3	3	4	3	2	3	2	1	2	4	3	3	4	3	3	2	3	4	5	4	4	0	2	2
KiMo	4	2	2	4	5	3	2	2	1	2	4	3	3	4	3	3	4	4	3	4	2	4	5		2	2	2	2	3	2	2	2	1	0	2	3	2	3	3	3	5	1	2	1	2	2	1	-1	0	2
L	2	3	3	3	2	2	3	3	3	2	2	2	4	4	2	5	3	3	4	4	3	3	3	2		5	5	4	5	4	1	1	2	1	1	3	2	2	3	2	4	4	3	2	3	1	3	2	2	2
Pap	3	4	3	3	2	3	5	4	5	4	4	3	4	5	4	5	5	4	5	4	4	5	3	2	5		7	4	5	5	2	1	0	2	2	4	3	2	4	2	5	3	4	4	3	2	5	3	2	1
Mari	3	2	4	2	1	5	4	5	5	5	4	3	5	5	3	6	4	4	3	4	4	5	3	2	5	7		4	5	4	3	4	3	3	1	3	3	3	4	3	4	4	5	3	2	2	3	2	1	1
Yuma	4	4	3	3	3	2	2	4	3	3	3	2	3	3	3	4	7	5	6	5	5	5	3	2	4	4	4		7	4	2	1	4	2	2	3	3	4	3	3	2	6	3	5	5	4	4	2	3	5
Chem	3	3	3	3	2	2	2	3	2	3	3	3	3	4	3	5	5	3	5	6	4	6	4	3	5	5	5	7		5	3	3	2	3	4	6	5	5	5	5	5	4	6	6	6	4	4	2	3	5
Wash	2	3	5	3	3	4	4	4	4	3	4	3	4	3	4	4	5	3	3	3	5	4	3	2	4	5	4	4	5		2	1	1	3	4	5	5	5	5	4	6	4	5	4	4	2	3	3	2	3
P	2	3	5	3	3	4	4	5	5	5	2	2	0	2	0	2	3	3	2	2	1	0	2	2	1	2	3	2	3	2		6	5	6	5	6	6	5	5	6	3	4	5	5	3	5	4	2	1	0
Skok	2	3	4	2	3	4	2	4	3	3	1	1	1	1	1	2	4	3	2	2	1	1	3	2	1	1	4	1	3	1	6		6	6	4	5	5	6	4	6	3	4	5	4	3	3	4	1	0	-1
Duwa	1	2	3	3	4	4	2	4	2	2	2	3	3	2	1	3	3	3	2	2	2	1	2	1	2	0	3	0	2	1	5	6		4	4	4	4	4	4	6	3	2	5	3	1	4	1	-1	1	0
N	3	3	4	0	2	4	2	3	3	2	2	0	1	1	-1	1	2	2	1	1	0	0	1	0	1	2	3	2	3	3	6	6	4		6	6	5	5	5	5	4	4	6	5	2	3	3	3	1	-1
O	2	3	2	1	2	3	1	2	3	2	3	2	1	2	1	2	2	2	2	2	1	0	2	2	1	2	1	2	4	4	5	4	4	6		8	7	6	6	7	5	4	5	5	4	3	3	4	1	1
KTu	5	4	4	3	1	4	2	3	4	2	4	3	3	3	3	4	5	4	4	4	2	2	4	3	3	4	3	3	6	5	6	5	4	6	8		8	8	8	9	7	6	7	8	7	6	7	5	3	1
S	1	2	3	2	1	3	3	1	3	3	3	2	2	3	2	3	4	3	3	3	1	2	3	2	2	3	3	3	5	5	6	5	4	5	7	8		8	7	9	6	4	6	6	5	4	4	3	1	1
U	2	2	3	2	2	3	2	3	4	3	3	3	3	3	2	4	4	4	4	3	2	2	3	3	2	2	3	4	5	5	5	6	4	5	6	8	8		7	9	6	6	6	6	6	4	4	4	1	1
V	2	2	3	3	2	3	2	3	3	3	2	2	3	3	2	5	4	4	4	4	2	2	4	3	3	4	4	3	5	5	5	4	4	5	6	8	7	7		9	7	6	7	6	5	4	5	4	2	2
Kaib	2	2	3	3	3	3	1	3	2	2	4	3	3	3	2	5	5	4	3	4	3	2	3	3	2	2	3	3	5	4	6	6	6	5	7	9	9	9	9		6	7	7	7	6	5	5	3	2	2
Kidü	4	3	3	3	3	3	2	3	4	2	5	3	4	5	4	5	4	4	4	3	2	3	3	5	4	5	4	2	5	6	3	3	3	4	5	7	6	6	7	6		4	5	4	3	2	3	3	0	1
X	1	1	2	1	-1	1	1	2	2	2	0	2	1	2	0	3	2	3	2	3	1	2	2	1	4	3	4	6	4	4	4	4	2	4	4	6	4	6	6	7	4		6	5	6	3	5	3	4	2
SUte	2	3	3	2	1	2	1	3	3	2	1	1	7	2	0	4	2	2	3	4	3	2	3	2	3	4	5	3	6	5	5	5	5	6	5	7	6	6	7	7	5	6		6	5	5	5	8	8	3
Q	3	5	4	4	2	4	2	3	3	3	3	2	3	3	3	3	5	4	4	6	5	4	4	1	2	4	3	5	6	4	5	4	3	5	5	8	6	6	6	7	4	5	6		7	6	7	3	4	2
R	2	4	3	3	0	2	0	1	2	2	2	2	1	2	2	3	5	2	4	6	3	4	5	2	3	3	2	5	6	4	3	3	1	2	4	7	5	6	5	6	3	6	5	7		6	7	3	4	2
BaPa	0	4	3	4	3	3	2	3	3	4	3	3	1	2	3	2	4	2	2	4	3	3	4	2	1	2	2	4	4	2	5	3	4	3	3	6	4	4	4	5	2	3	5	6	6		6	-1	5	1
W	2	4	4	3	1	3	0	2	2	2	0	1	1	1	0	2	4	3	3	5	2	3	4	1	3	5	3	4	4	3	4	4	1	3	3	7	4	4	5	5	3	5	5	7	7	6		5	4	1
Zuni	3	2	2	-1	-1	1	1	0	2	1	5	1	1	2	0	2	1	2	2	1	0	1	0	-1	2	3	2	2	2	3	2	1	-1	3	9	5	3	4	4	3	3	3	8	3	3	1	5		0	0
SAna	0	2	2	2	0	2	0	1	1	1	-2	1	-1	0	0	0	2	1	0	4	2	1	2	0	2	2	1	3	3	2	1	0	1	1	1	3	1	1	2	2	0	4	8	4	4	5	4	0		1
M	0	1	1	2	2	0	1	2	0	1	2	1	3	1	2	3	2	2	3	3	4	3	2	2	2	1	1	5	5	3	0	-1	0	-1	1	1	1	1	2	2	1	2	3	2	2	1	1	0	1	

*Correlations are carried only to one place, with decimal point dropped. Thus, 5 means +0.5, which in turn means within the range +0.45 to +0.54. Underlined coefficients are those computed from distributions whose ratio of plus to minus entries was more skewed than 0.80:0.20 or 0.20:0.80. Descriptions of elements are given in Appendix 1 and in Table 13. Roman numbers refer to pools of elements, shown graphically in Table 13.

After computations had been made, Philip Drucker returned from the field with additional information on tribes from the Nootka to the Tlingit. This has been entered in Tables 13 and 14, but correlations have not been recomputed. Therefore, some correlations will be off one unit.

TABLE 13. GEOGRAPHICAL DISTRIBUTIONS USED IN STATISTICS†



† +, PRESENT; •, DOUBTFUL; BLANK, ABSENT. ROMAN NUMBERS REFER TO TRAIT POOLS; CAPITAL LETTERS TO TRIBAL POOLS, AS EXPLAINED IN THE SECTION, "STATISTICAL METHODS." TRIBAL ABBREVIATIONS ARE EXPLAINED UNDER APPENDIX 2. COLUMNS MARKED WITH AN ASTERISK WERE NOT INCLUDED IN THE STATISTICS BECAUSE EITHER THE INFORMATION WAS RECEIVED TOO LATE, OR IT WAS TOO INCOMPLETE.

TABLE 14

Incomplete Geographical Distributions

Element	Tribal distributions	No.
65. 2-prong (forked) scratcher	[illegible]	65
199. Hoof rattle worn by girl	[illegible]	199
133. Girl must pick leaves or conifer needles off branches	[illegible]	133
7. Ceremonial number 16	[illegible]	7
113. Girl's hair line on forehead plucked back	[illegible]	113
105. Part in girl's hair painted red	[illegible]	105
197a. Washers perform at publ. recog.	[illegible]	197a
213. Distribution of property to guests (other than food)	[illegible]	213
112. Girl's eyebrows plucked	[illegible]	112
141. Girl scrubbed with boughs at bathing	[illegible]	141
140. Sponge bath or warm water at end of rite	[illegible]	140
52. Berries taboo	[illegible]	52
37. Attendant paid or given gifts	[illegible]	37
86. Gazing at wild crops taboo	[illegible]	86
56. Water as such taboo	[illegible]	56
47. Hot food taboo (map 6)	[illegible]	47
152. East significant	[illegible]	152
186. Singers paid or given gifts (other than at potlatch)	[illegible]	186
36. Girl attended by paid woman, normally not kin	[illegible]	36
45. Girl eats about sunrise or sunset	[illegible]	45
132. Girl must dig (often for roots)	[illegible]	132
67. Towel for face	[illegible]	67
153. Girl's suitor connected with rite	[illegible]	153
151. Whistle used	[illegible]	151
43. Girl eats once daily	[illegible]	43
150. Scarification or bleeding of girl	[illegible]	150
71. Bangs or forelock trimmed	[illegible]	71
194. Women hold to men's belts, dance behind men	[illegible]	194
149. Girl looks into haliotis	[illegible]	149
83. Girl wears her hair over her face	[illegible]	83
142. Girl takes vapor "steam" bath	[illegible]	142
40a. Duration of complete food fast in days	[illegible]	40a
88. Girl has own fire in seclusion	[illegible]	88
70. Girl's hair cut	[illegible]	70
128. Girl must gather plant food	[illegible]	128
125. Girl must work for entire camp	[illegible]	125
214. Sexual license	[illegible]	214
158a. Publ. recog. repeated; no. times given altogether	[illegible]	158a
155. Duration of publ. recog.; days or nights	[illegible]	155
102. Girl's limbs or body painted red	[illegible]	102
96. Girl wears bands around arms or leg	[illegible]	96
73. Girl's hair washed by attendant	[illegible]	73
95. Girl wears special belt.	[illegible]	95
94. Girl wears special headband	[illegible]	94
46. Girl fed special food at conclusion of rite	[illegible]	46
5. Ceremonial number 4	[illegible]	5
13. Duration of seclusion, in days	[illegible]	13
15. Duration of seclusion, in months	[illegible]	15
11. *Max. duration of any observance, in months*	[illegible]	11
44. Girl eats twice daily	[illegible]	44
41. Separate eating or drinking receptacles (excl. drink. tube).	[illegible]	41
139. Girl bathes in stream at end of seclusion or menstruation.	[illegible]	139
38. Girl instructed (other than about menstruation)	[illegible]	38
34. Girl attended by mother	[illegible]	34
35. Girl attended by kinswoman other than mother	[illegible]	35
42. Girl eats alone or with other menstruants or attendant	[illegible]	42
64. 1-prong (single-stick) scratcher	[illegible]	64
72. Girl's hair dressed by attendant	[illegible]	72
91. Girl avoids hunters and fishermen	[illegible]	91
93. Girl avoids gamblers	[illegible]	93
92. Girl avoids the sick	[illegible]	92
89. Girl avoids all men	[illegible]	89
55. Cold water taboo (map 7)	[illegible]	55
74. Girl deloused	[illegible]	74
127. Girl must carry water	[illegible]	127
111. Girl's nose pierced	[illegible]	111
6. Ceremonial number 8	[illegible]	6
129. Girl must prepare plant food	[illegible]	129
59. Straw cane or elder drinking tube	[illegible]	59
3. Ceremonial number 6	[illegible]	3
1. Ceremonial number 3 or multiple of 3 (map 3)	[illegible]	1
25. Girl must lie prone	[illegible]	25
75. Girl deloused with mud plaster	[illegible]	75
20. Seclusion in permanent ceremonial house (map 4)	[illegible]	20
29. Plants under or over girl	[illegible]	29
48. Girl spits out food	[illegible]	48
146. Rock painting by girl	[illegible]	146
30. Hot stone on girl's belly	[illegible]	30
103. Sequence of facial designs	[illegible]	103

*13: Klal, also 6-14; Snoh, also 25; ESha, 8-10; Aysu, 3-10; WAch, also 6-12; EAch, also 3-4; MMai, 6-8; FNis, also 10; Wail, also 10; LKYo, also 10; Yuma, also 12; PCah, 4-5; DCah, 1-8; SSer, 4-5; Wiy, also 10; Kali, also 6-8; Yak, 5-10; SUYe, also 3-4; Cost, 3-5.

15: Tahl, 6-12; NTli, also 3-12; MWin, 1-12; TWin, 1-36; Chim, 1-24; HWin, 1-5; KiYo, 1-2; Nisq, 6-8; Can, 36-48; Lill, 6-48; Thom, 4-12; Cd'L, 3-5.

40a: Klal, also 10; Snoh, also 25; Chin, also 10; Kar, 3-4; Wail, also 10; Nisq, 5-9; Kali, 6-8; Yak, 3-5.

155: ESha, 8-10; Aysu, 3-10; WAch, also 3-12; EAch, also 4 and 5; MMai, 4-6; VMai, 1-7; FNis, also 10; HWin, also 30; NMi, 1-4; CeMi, 1-4; ENav, 1-4; Pap, also 4 and 30; Yuma, 1-4; Cup, 3-4; MCah, 3-7; PCah, also 4-5; DCah, 1-3.

158a: Klam, 5-6; ESha, 2-3; WSha, 2-3; Atsu, 3-6; WAch, 2-3, also 5-6; HWin, 2-3.