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Del Nordquist, President C. G. Nelson, Editor

Next Meeting: To be announced--see page 41 for comments.

SIXTEENTH ANNUAL NORTHWEST ANTHROPOLOGICAL CONFERENCE

Reed College at Portland, Oregon, is acting as host to the Sixteenth Annual Northwest Anthropoligucal Conference which will be held April 26th and 27th. In advance of the published program, we have been advised that the Friday Session, April 26th, will be devoted to the papers dealing with archaeology and anthropology running concurrently as they have in the past. There will be more papers than usual dealing with archaeology. Many of these will cover salvage work performed in past digging seasons. The paper to be presented by C. M. Nelson, Washington State University, discussing 45KT28 will be of particular interest to members since this will cover a portion of the report being published by the Society with the support of Public Utility District No. 2 of Grant County.

The Saturday Session, April 27th, will constitute the Second Conference of Western Archaeologists on Problems of Point Typology. No formal program has been developed for the Saturday Session. This will be a continuation of the First Conference held March 15-17, 1962, at Idaho State College, Pocatello, Idaho, and reported in the Occasional Papers of the Idaho State College Museum, Number 10.

The annual banquet will be held Friday, April 26th, at one of the hotels to be announced later. This will be followed by an address by Dr. Cressman, University of Oregon, at the Portland Art Museum. Details will be available at a later date and can be had by contacting the Department of Anthropology, University of Washington.

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THE SYMONS EXAMINATION OF THE UPPER COLUMBIA RIVER

C. G. Nelson

ABSTRACT: The maps published in the Symons Report of an Examination of the Upper Columbia River and the Territory in Its Vicinity, 1882, have been reproduced. The original maps have been revised to show current place names, ethnographic and archaeological locations. The area covered on the Columbia River is from the confluence of the Snake River to the international boundary.

Important sources of ethnographic information and environmental physiography are the maps and observations prepared by the early explorers and cartographers associated with expeditions. The astute reading of these maps will provide an understanding of the environs and in some cases solve specific problems of interpretation. While this statement is axiomatic, it is also true that many scholars do not utilize this source of information to the fullest extent. The purpose of this paper is to examine the text and maps included in the Report of An Examination of the Upper Columbia River and the Territory in Its Vicinity by Lieutenant Thomas W. Symons (Symons 1882), and to relate this original material to current place names, ethnographic and archaeological locations.

The Symons' report was selected because the maps represent one of the earliest river surveys and is probably the first complete survey of the upper Columbia. Undoubtedly there are segmental surveys prepared by the military which antedate Symons' work but these are not available. A review of the maps listed by Odgers (Odgers 1947: pp. 261-272) points up the paucity of maps published and preserved by the government. The Wilkes' map of the Oregon Territory (Wilkes 1841: Vol. VI) shows the upper Columbia based on the "latest information of the Hudson Bay Company." The 1857 version of the map entitled Territory of the United States from the Mississippi to the Pacific Ocean prepared by Lt. Warren and included in the folio of maps with the Explorations for a Railroad Route 1854-7 shows only that part of the Columbia River which had been actually surveyed. That portion of the upper Columbia from 15 miles north of the confluence of the Yakima and Columbia Rivers to Colocham Creek is shown by a dotted line indicating that none of their surveys had been made in this area. The Warren 1857 map was the foundation for most maps made of the western United States for the next quarter century (Symons 1882: pp. 96-97). As Chief Engineer of the Department of the Columbia, Lt. Symons coordinated his surveys with numerous reconnaissances both military and commercial (Northern Pacific Railway Company's Land Department) which when added to the land surveys of the Department of Interior resulted in a map of the Pacific Northwest superseding the Warren map. Of his own map, Symons comments: "In compiling this map I could not help being struck with the great lack of information concerning certain portions of the country which it is intended to represent." (Symons 1882: 97). His candor in elaborating on the inadequacies of his surveys is used to support a plea for additional funds.

It is worth noting that the terms 'upper Columbia' and 'lower Columbia' were well established in 1881. The point of separation is the confluence of the Snake and Columbia Rivers. From the Snake to the mouth of the Columbia is the Lower Columbia; from the Snake to the international boundary is the upper Columbia. The concept started with Lewis and Clark who first came upon the Columbia via the Snake in 1805. Wilkes covered the same ground in reverse in 1841. The Oregon Railway and Navigation Company records reflect the same division. The Corps of Engineers have used the same classification. Their river miles originally started with the international boundary increasing downstream. The current river miles show the distance from the mouth of the Columbia.

Since the 1881 survey, the Corps of Engineers has conducted two complete surveys of the Upper Columbia River. These are generally referred to as the '1910 survey' and the '1930 survey'. The 1910 survey was actually started in 1891. These sheets bear the note: "Tacoma, Wash., May, 1908 . Original survey under direction Capt. T. W. Symons, Corps of Engineers U.S.A. by Wm. Cuthbert Ass't. Engr. March to December 1891. Additions from survey of January 1908 under direction H. M. Chittenden, Corps of Engineers U.S.A. by Eugene Ricksecker Ass't. Engr." The 1930 survey was a joint effort between the Corps of Engineers and the U.S. Geological Survey. Since 1930 the river surveys have been related to reservoirs of proposed dams and are segmental.

The 1881 survey is amazingly accurate when you consider the conditions under which it was made. The 1881 distance between the mouth of the Snake River to the international boundary is given as 416 miles. The more recent surveys show this as 424 miles. The difference of 8 miles in 424 indicates an overall error of 1.89%. However, the error is actually greater since this is a net figure. For example, Priest Rapids is two miles longer in 1881 than later. Considering that these distances were estimated rather than measured, the inherent skill of the surveyors becomes apparent. The technique of mapping by hearsay is present. A case in point is Moses Coulee. It shows up on the index map but never gets to the detailed maps. The confusion of Lynch Coulee with the south end of Grand Coulee suggests that Grand Coulee was never completely examined. The minor tributaries of the Columbia, i.e., creeks, were largely ignored. Some creeks are shown and named on the index map but do not find their way to the detailed map. The cartographer placed hachure marks more on an artistic basis rather than actual topographic differences. Since the map is being made to illustrate navigational problems, it is logical that a rapids becomes more important than a feature which does not affect navigation. Still the maps read well enough so that the correlation between these and present day maps can be made with fair accuracy. The process of plotting locations has demonstrated that the anthropologist uses a great deal more license in preparing maps than did the early cartographers. The anonymity of site locations has been preserved in the finest tradition.

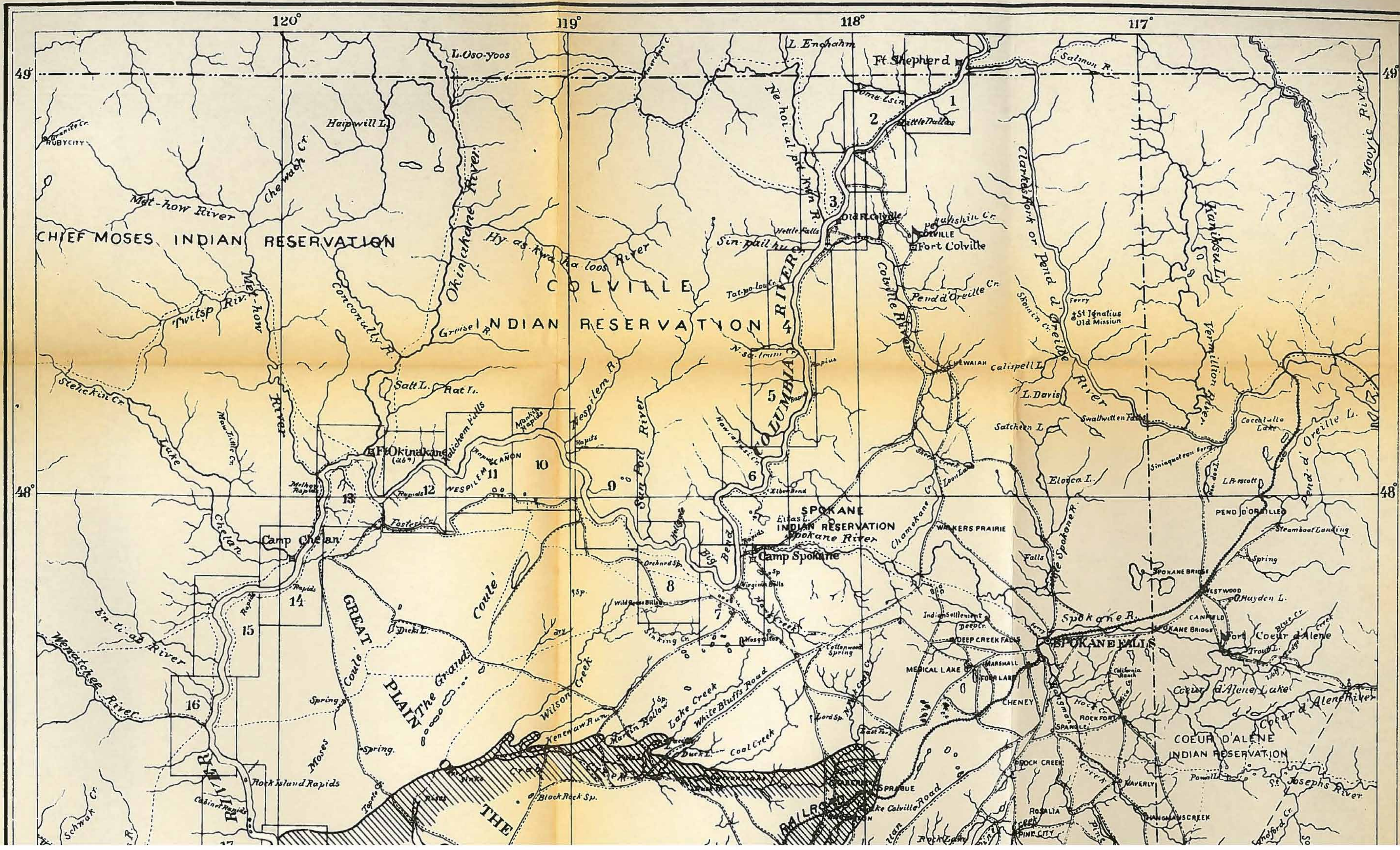
The twenty-six plates that follow consist of one index map and twenty-five detailed maps. The index map has been reproduced at full size so as to keep the detail. While this detail is not directly related to the subject of this paper, the information of place names, routes of travel, etc., makes it very worthwhile. The detailed maps are larger than the original and have certain types of information added to them.

Ethnographic sites are shown with an equilateral triangle symbol. The basic reference used for both sites and tribal boundaries is Verne F. Ray, Native Villages and Groupings of the Columbia Basin (Ray 1936) and the code (R-1) indicates that it is Ray's No. 1 for that particular tribal group. The page reference has been omitted since there is no discussion. The tribal boundary is shown by a line (heavy) followed by two dots. Tribal names are larger upper case slanted letters. The code (S-1) indicates that it is Swanton's No. 1 for that particular tribal group as listed in his The Indian Tribes of North America (Swanton 1952). These are for locations which were not covered by Ray's original work. The prefix 'T' refers to Teit (Teit 1928).

Geographical features are shown with a square symbol with printing in upper case slanted letters. If the original name is still current no change is made. The sources for the geographical features include the 1910 upper Columbia survey, the 1930 upper Columbia survey, current U.S. Geological Survey quadrangle sheets, Metsker county maps and maps published by the Washington Geological Survey. Wherever dam reservoirs are now existing, the place names for the inundated features has been removed. Since these names are of considerable importance in following the older literature, an effort has been made to show these names. There are cases of several names being used for one location in which case the more recent name is used. For example, Brewster was Virginia City in 1894; Rock Island Rapids has been shown as Buckland's Rapids, Isle de Pierre Rapids, Osel de Pierre Rapids; Methow Rapids (lower end) as Ross Rapids; Quilomene Rapids as Eagle Rapids; etc. Other bits of name evolution have not been recorded: the 1910 survey shows Lodge Pole Rapids as Lodged Pole Rapids, the allusion being to a condition rather than a species of wood (Pinus murrayana).

Archaeological sites are shown with a circle. If a lower case letter 'e' appears in the circle, the site has been excavated under controlled conditions and with the exception of the Priest Rapids and Wanapum Reservoirs has been published. Sites in the Grand Coulee Dam Reservoir, Plates 2 through 10, are taken from Collier, Hudson and Ford, Archaeology of the Upper Columbia Region, 1942. Sites in the Chief Joseph Reservoir, Plates 10 through 13, are from Osborne, Crabtree and Bryan, Archaeological Investigations in the Chief Joseph Reservoir, 1952. Sites in the Rocky Reach Reservoir, Plates 15 through 17, are from Daugherty, Survey of Rocky Reach Reservoir, 1956; and Gunkel, A Comparative Cultural Analysis of Four Archaeological Sites in the Rocky Reach Reservoir Region Washington, 1961. Information concerning both Priest Rapids and Wanapum Reservoirs was secured from Dr. Robert E. Greengo, Robert Kidd and C. M. Nelson, covering those sites which had been excavated and for which reports are in preparation. Site locations are, in part, from Shiner, An Appraisal of the Archaeological Resources of the Priest Rapids Reservoir on the Columbia River, Washington, 1951. The remaining site is shown on Plate 23 and is reported by Kreiger, A Prehistoric Pit House Village Site on the Columbia River at Wahluke, Grant County, Washington, 1928.

One additiona feature, that of the existence of a river ferry, is shown by an eighth inch 15° ellipse drawn in midstream with a line perpendicular to the major axis to each shore. The records concerning ferries is very sketchy. Prior to 1900 permits were not required. Records are currently kept on only those ferries in service. Permits are for a three-year period. These are


120°
119°
118°
117°
49°
48°
L. Oso-yoos
L. Enchahm
Ft. Shepherd
Salmon R.
Haipwill L.
RUBY CITY
Met-how River
Chewah Cr.
CHIEF MOSES INDIAN RESERVATION
Okinakane River
Hy-as-kwa-ha-loos River
COLVILLE
INDIAN RESERVATION
Sin-hail-hu Cr.
Kettle Falls
Old Ft. Colville
COLVILLE
Fort Colville
Colville River
Pend d'Oreille Cr.
Clark's Fork or Pend d'Oreille River
Kalispell Cr.
St. Ignatius Old Mission
Ferry
Twitsp Riv.
Conconully R.
Salt L.
Rat L.
Nespilem R.
COLUMBIA RIVER
Calispell L.
L. Davis
Vermillion River
Stehekin Cr.
Lake
Ft. Okinakane
NESPILEM CAÑON
Methow Rapids
Camp Chelan
Chelan
Foster Cr.
SPOKANE INDIAN RESERVATION
Spokane River
Camp Spokane
Big Bend
Orchard Sp.
Wild Goose Bills
Virginia Bills
WALKERS PRAIRIE
Chamokane Cr.
Sacheen L.
Eloyca L.
PEND D'OREILLE
Steamboat Landing
Pend d'Oreille L.
Cocolalla Lake
GREAT PLAIN
Grand Coulee
Moses Coulee
Dick L.
Spring
Wilson Creek
Lake Creek
White Bluffs Road
Coal Creek
Crab Creek
Kenewaw Run
Martin Hollow
Duck L.
Black Rock Sp.
Rock Island Rapids
Cabinet Rapids
En-ti-at River
Wenatchee River
Schwak Cr.
RIVER
THE
Lord Sp.
Deep Creek Falls
Indian Settlement
Cottonwood Spring
MEDICAL LAKE
MARSHALL
CHENEY
SPOKANE FALLS
Spokane R.
Fort Coeur d'Alene
Hayden L.
Spring
CAMDEN
WESTWOOD
SPOKANE BRIDGE
Coeur d'Alene Lake
Coeur d'Alene River
COEUR D'ALENE INDIAN RESERVATION
ROCKFORD
SPANGLE
SPRAGUE
RAILROAD
Colville Road
ROCK CREEK
WAVERLY
ROSALIA
PINE CITY
St. Josephs River
Moyie River
Kaniksu L.
1
2
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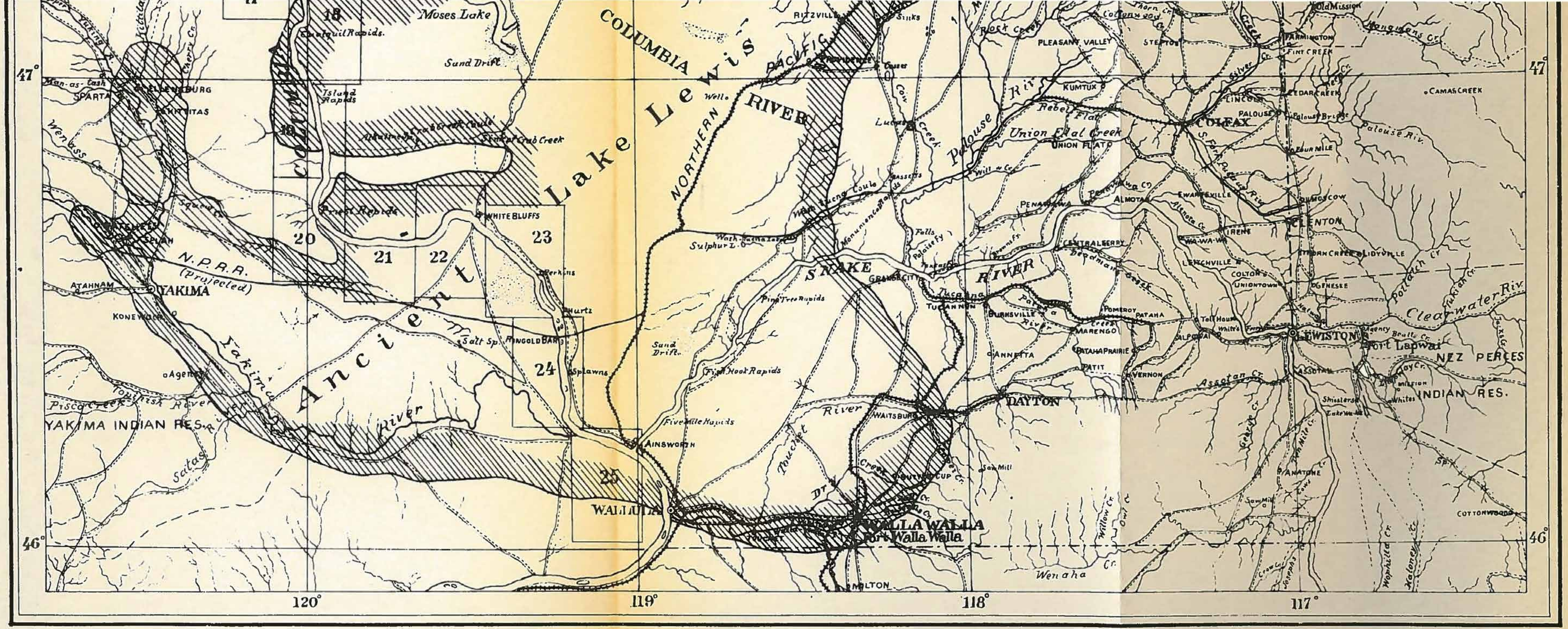

Portion of the Map of MILITARY DEPARTMENT OF THE COLUMBIA showing location of River Survey Sheets

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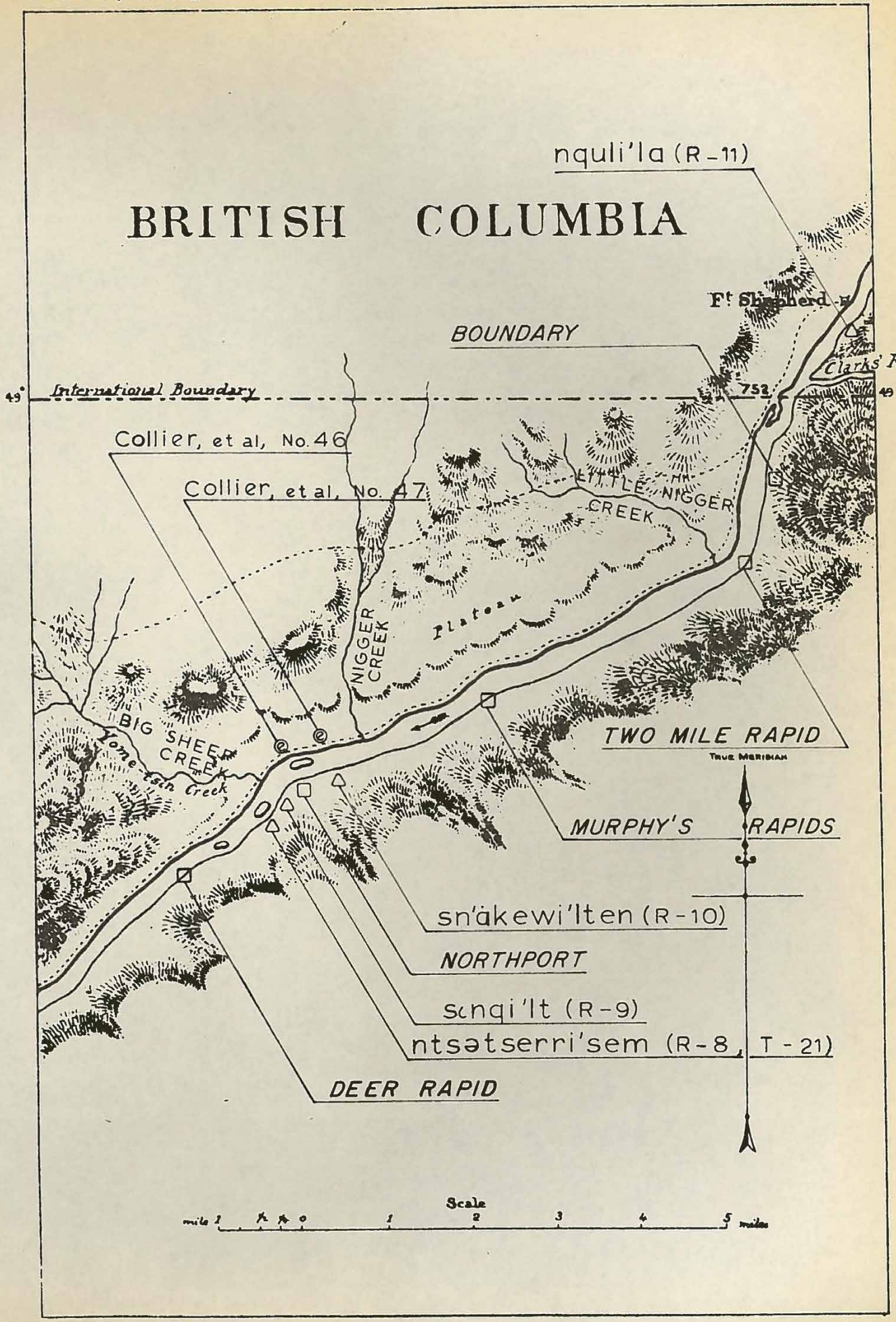
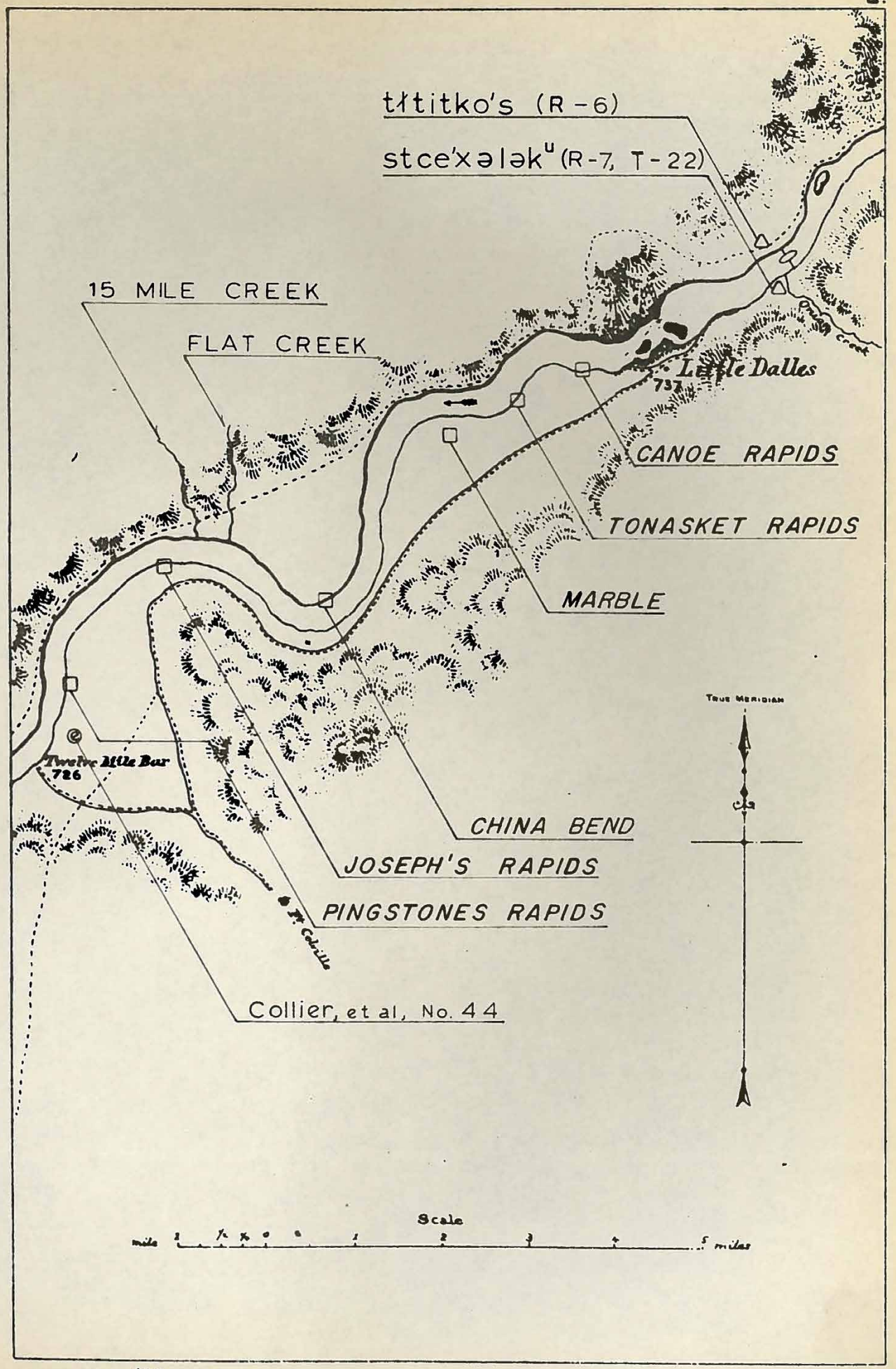
miles 16 8 0 SCALE 16 32 miles

PLATE 1 — INDEX MAP


nquli'la (R-11)
BRITISH COLUMBIA
Ft Shepherd
BOUNDARY
Clarks Fork
49°
International Boundary
752
49
Collier, et al, No. 46
Collier, et al, No. 47
LITTLE NIGGER CREEK
NIGGER CREEK
Plateau
BIG SHEEP CREEK
Yonetin Creek
TWO MILE RAPID
TRUE MERIDIAN
MURPHY'S RAPIDS
sn'äkewi'lten (R-10)
NORTHPORT
scnqi'lt (R-9)
ntsətserri'sem (R-8, T-21)
DEER RAPID
Scale
mile 1
0
1
2
3
4
5 miles

2.



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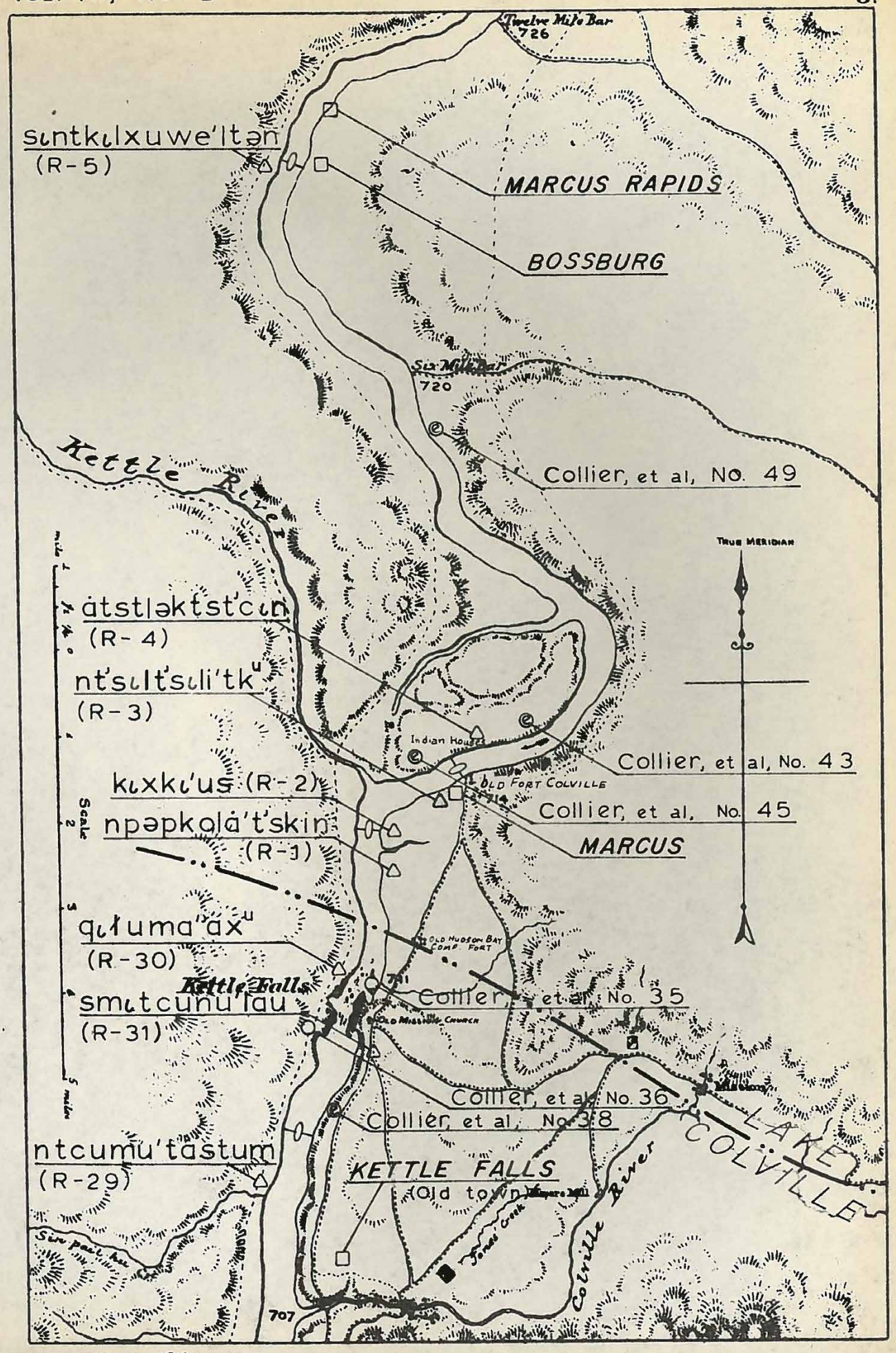

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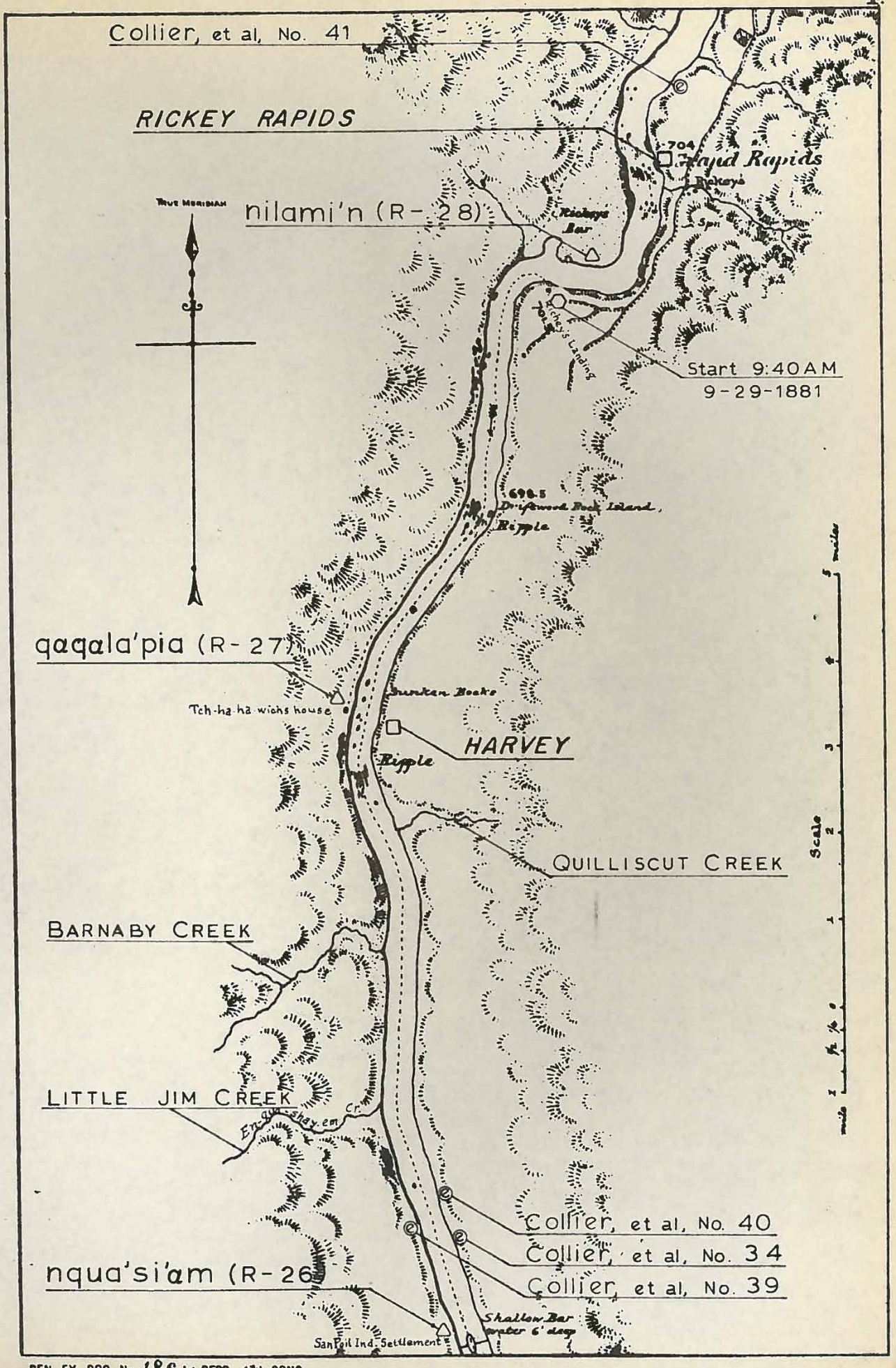

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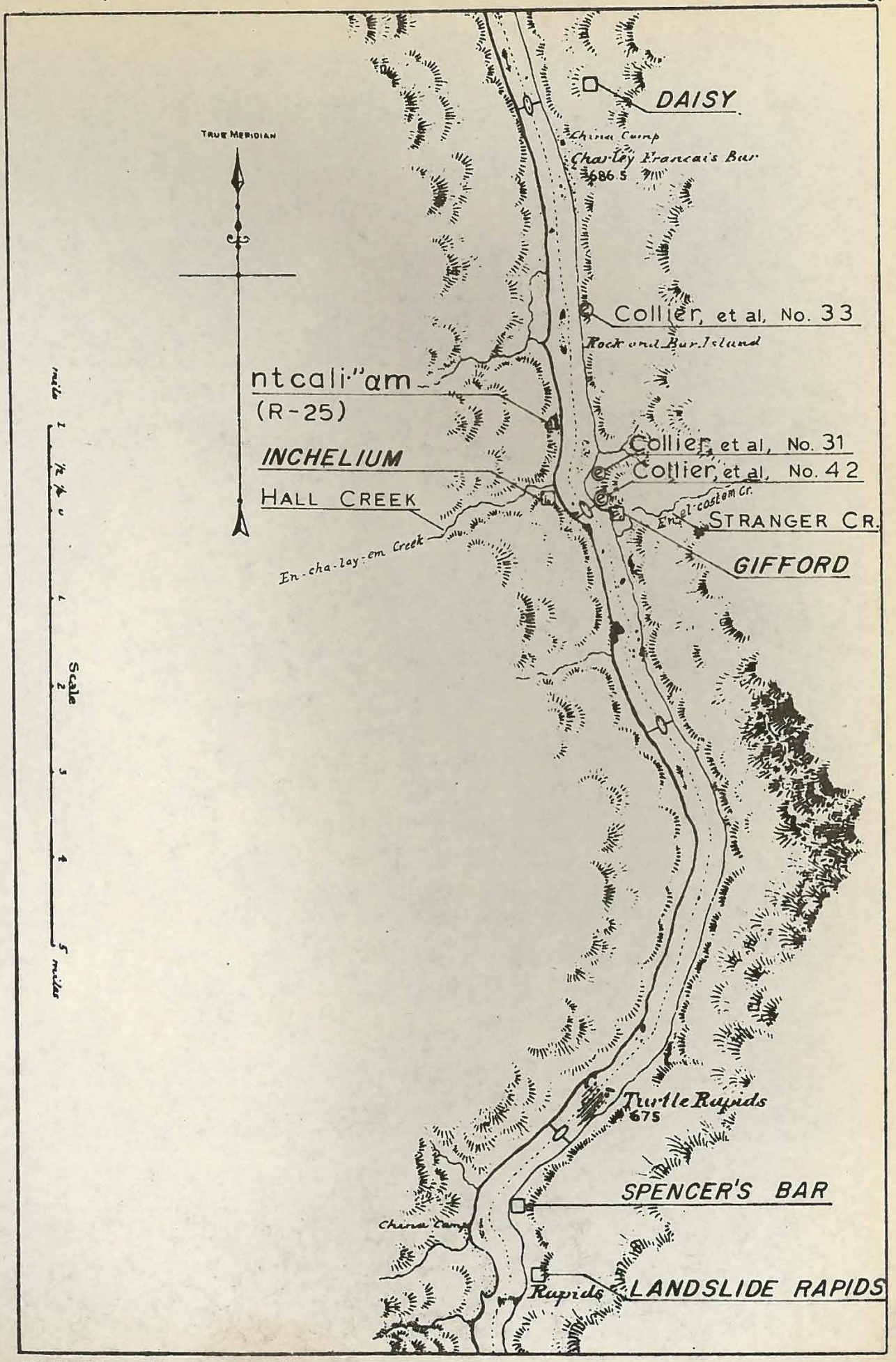

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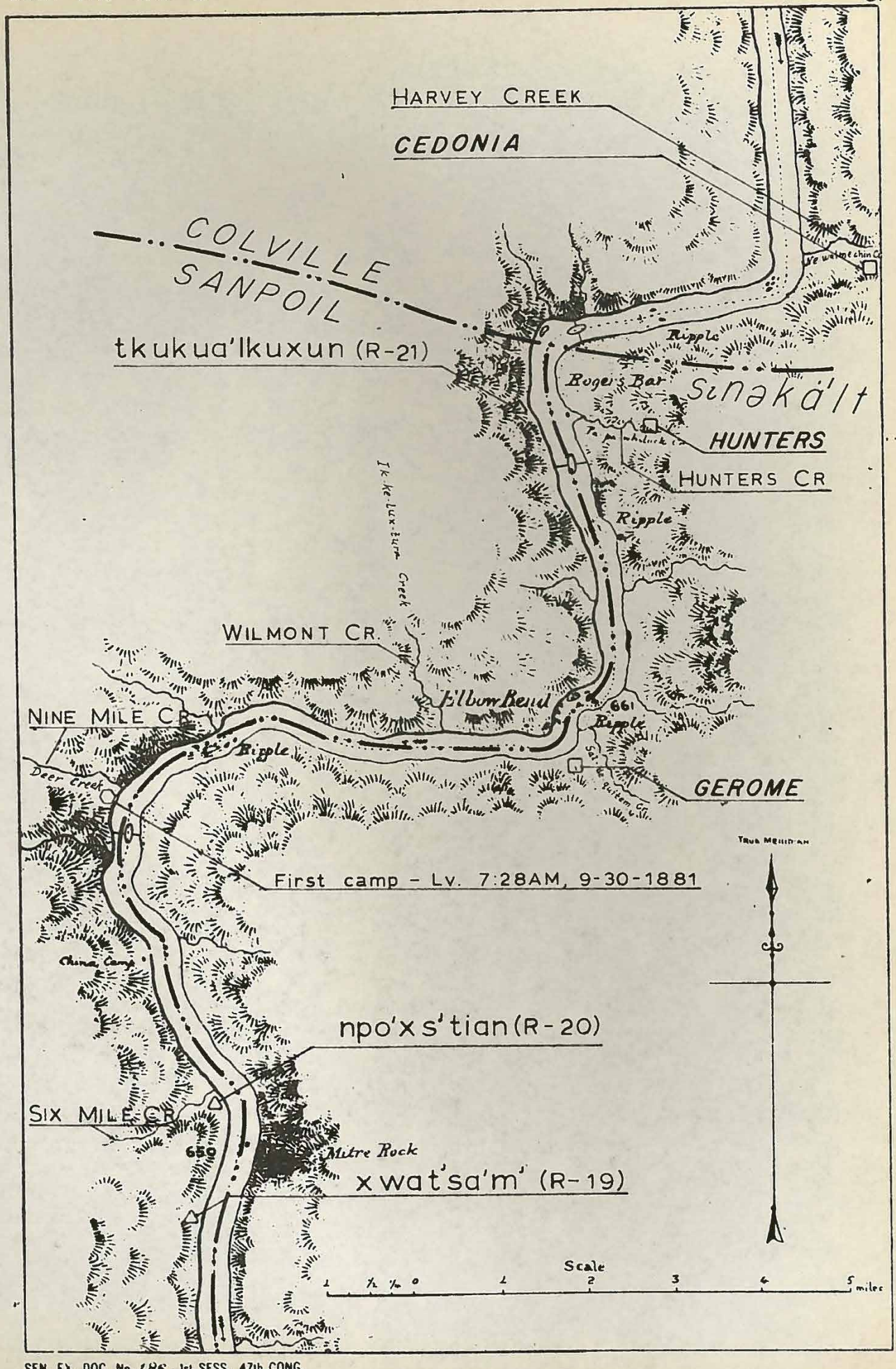

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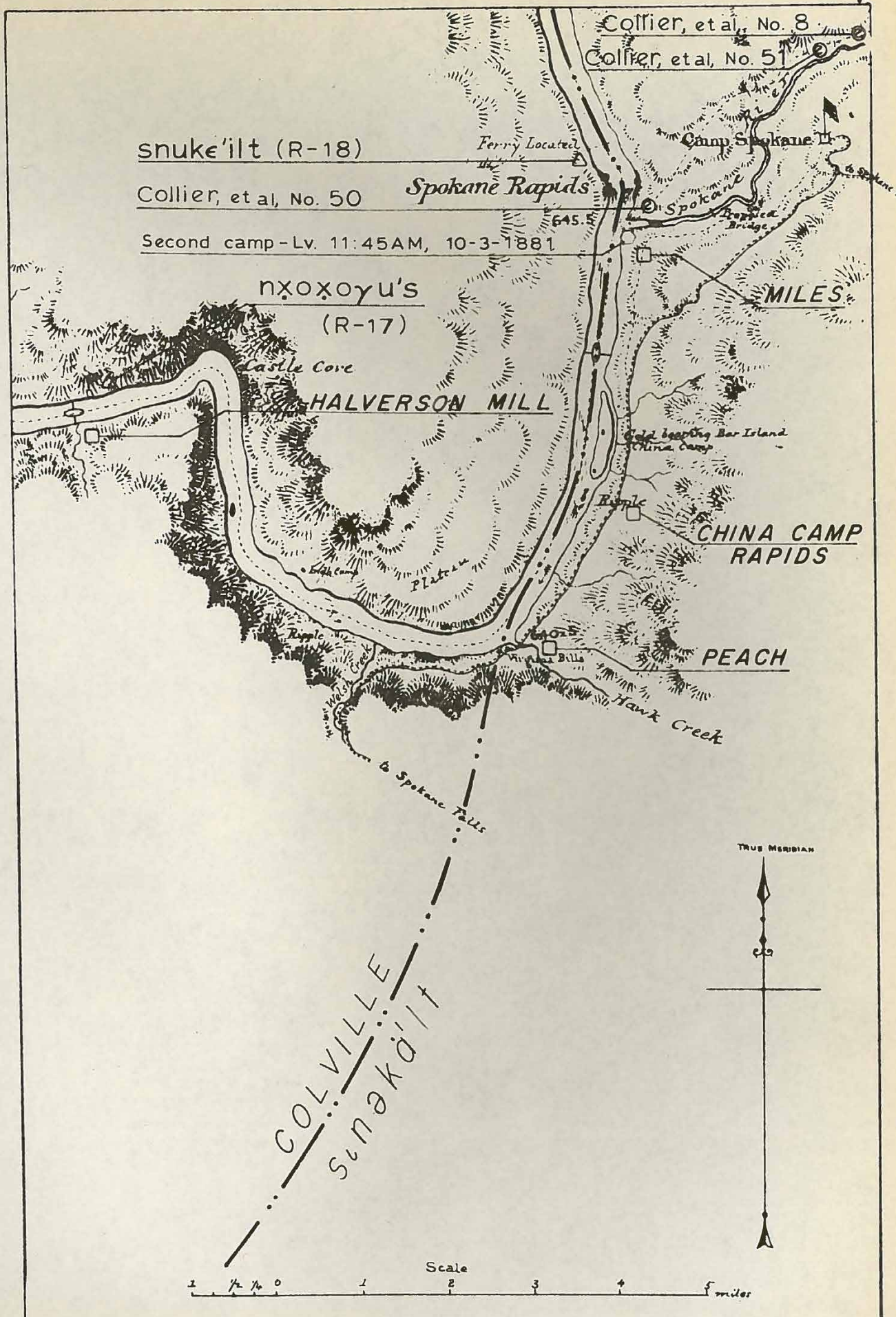

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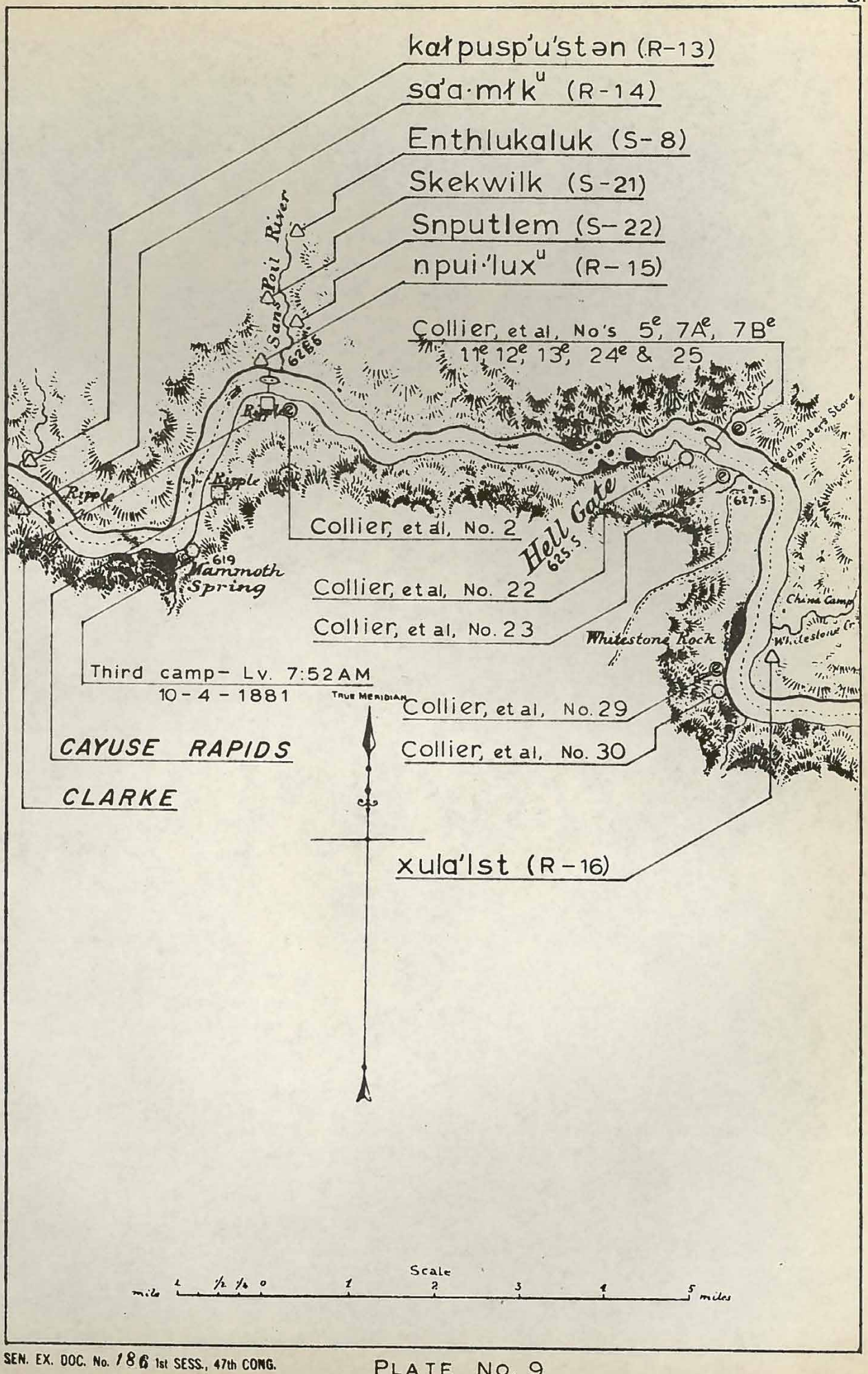

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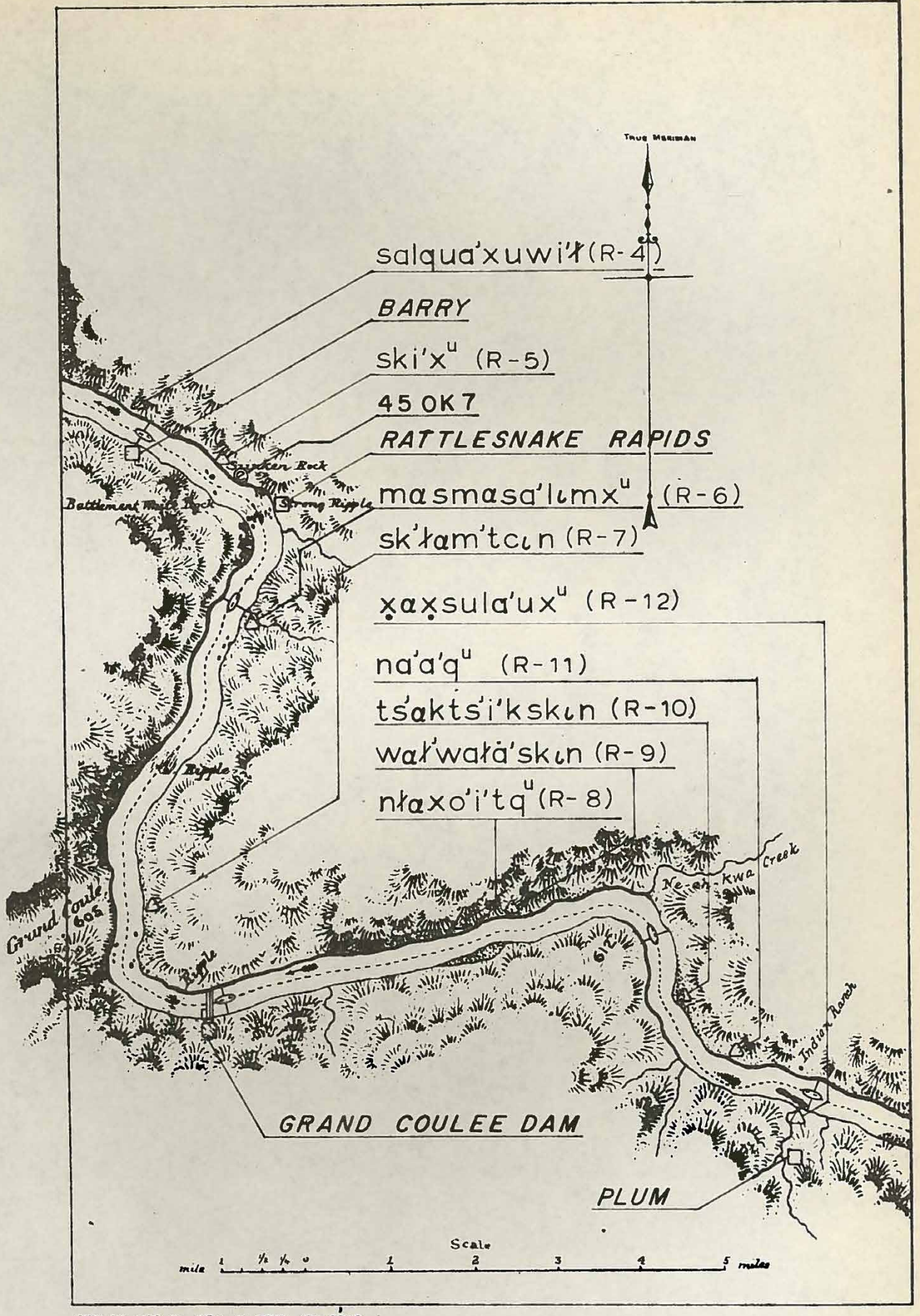

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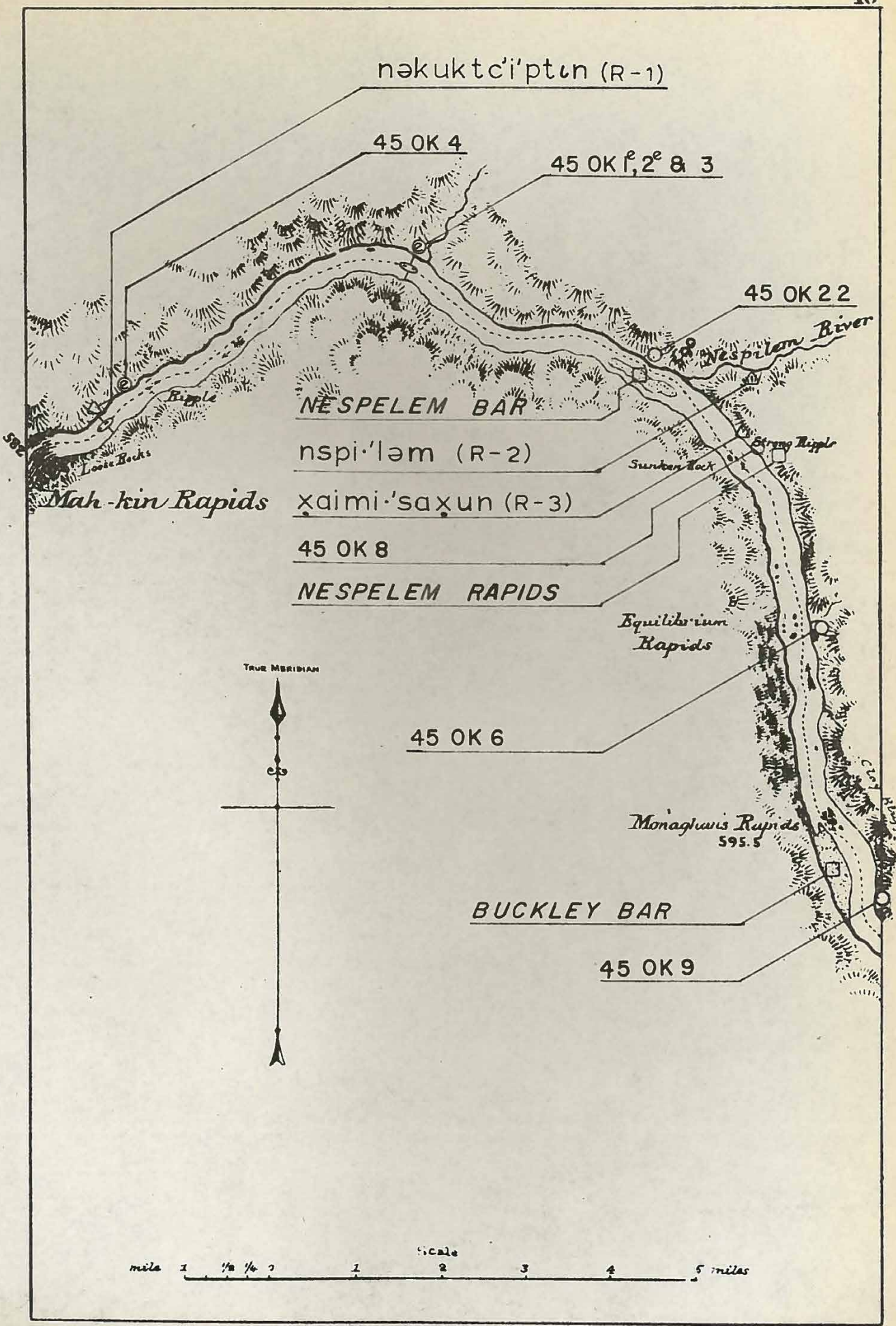
nəkuktc'i'ptun (R-1)
45 0K 4
45 0K 1e, 2e & 3
45 0K 22
Nespilem River
NESPELEM BAR
nspi·'ləm (R-2)
Strong Ripple
Sunken Rock
Ripple
Loose Rocks
Mah-kin Rapids
xaimi·'saxun (R-3)
45 0K 8
NESPELEM RAPIDS
Equilibrium Rapids
TRUE MERIDIAN
45 0K 6
Monaghans Rapids
595.5
BUCKLEY BAR
45 0K 9
Scale
mile 1 1/2 1/4 0 1 2 3 4 5 miles

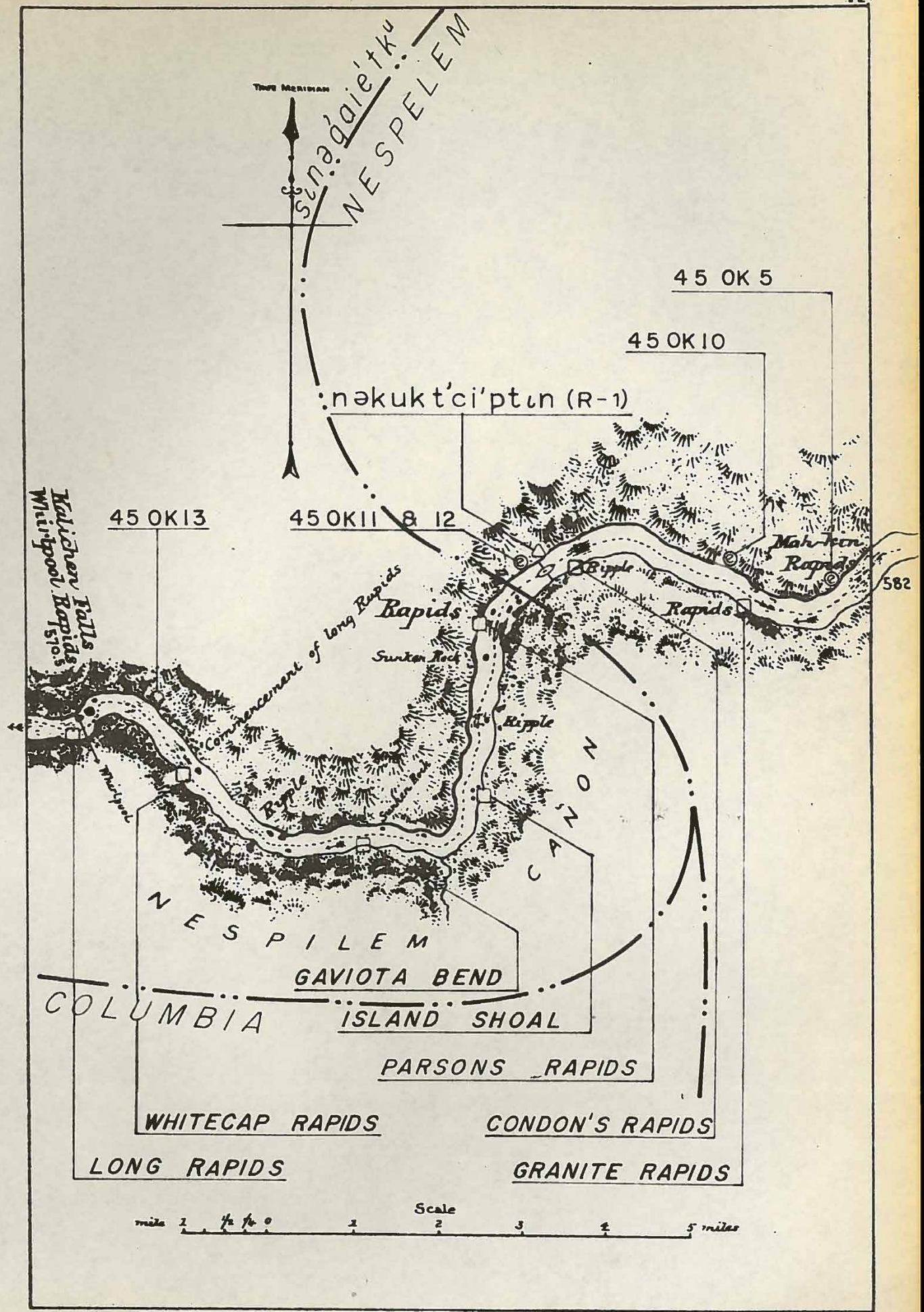

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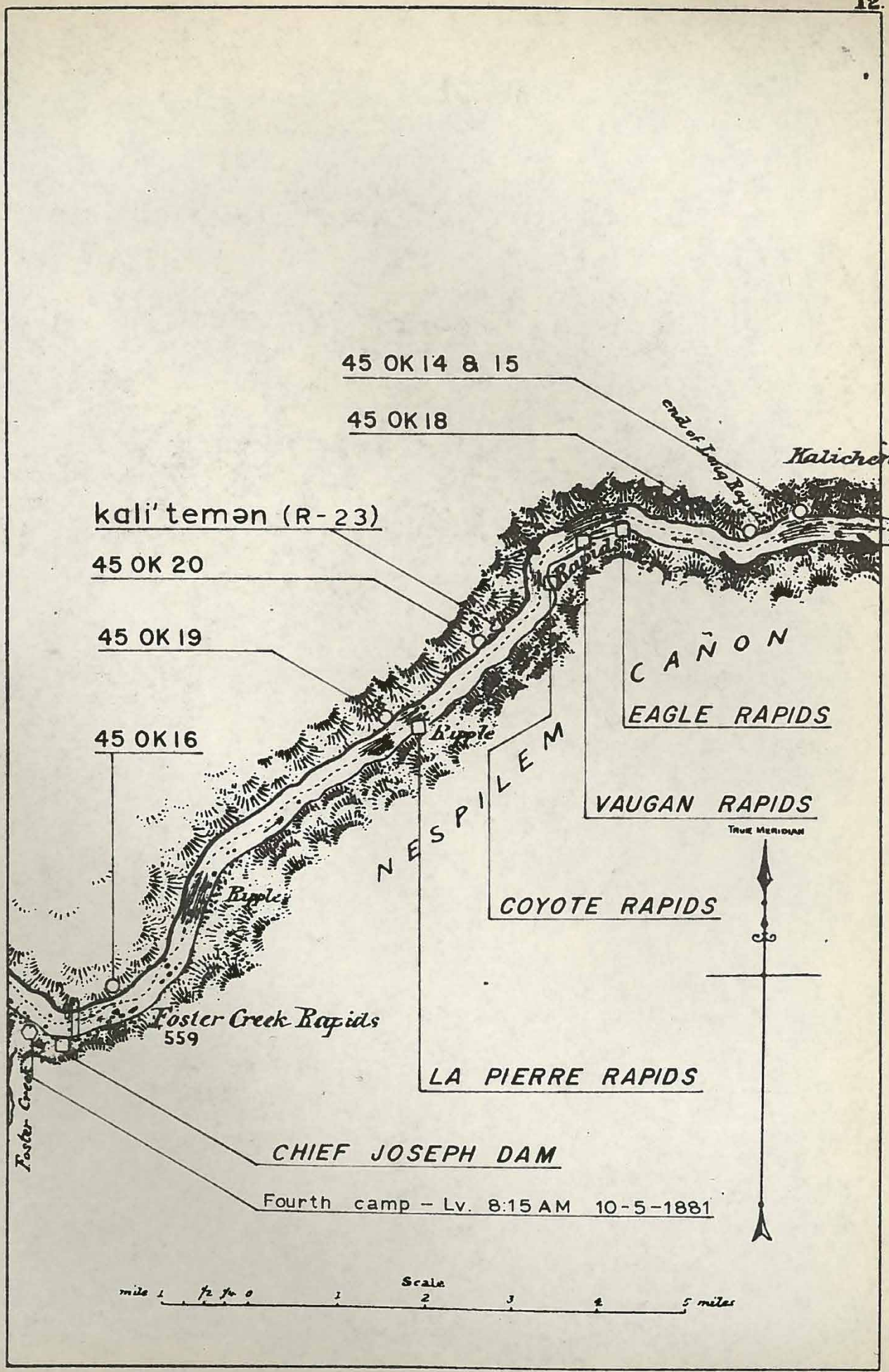
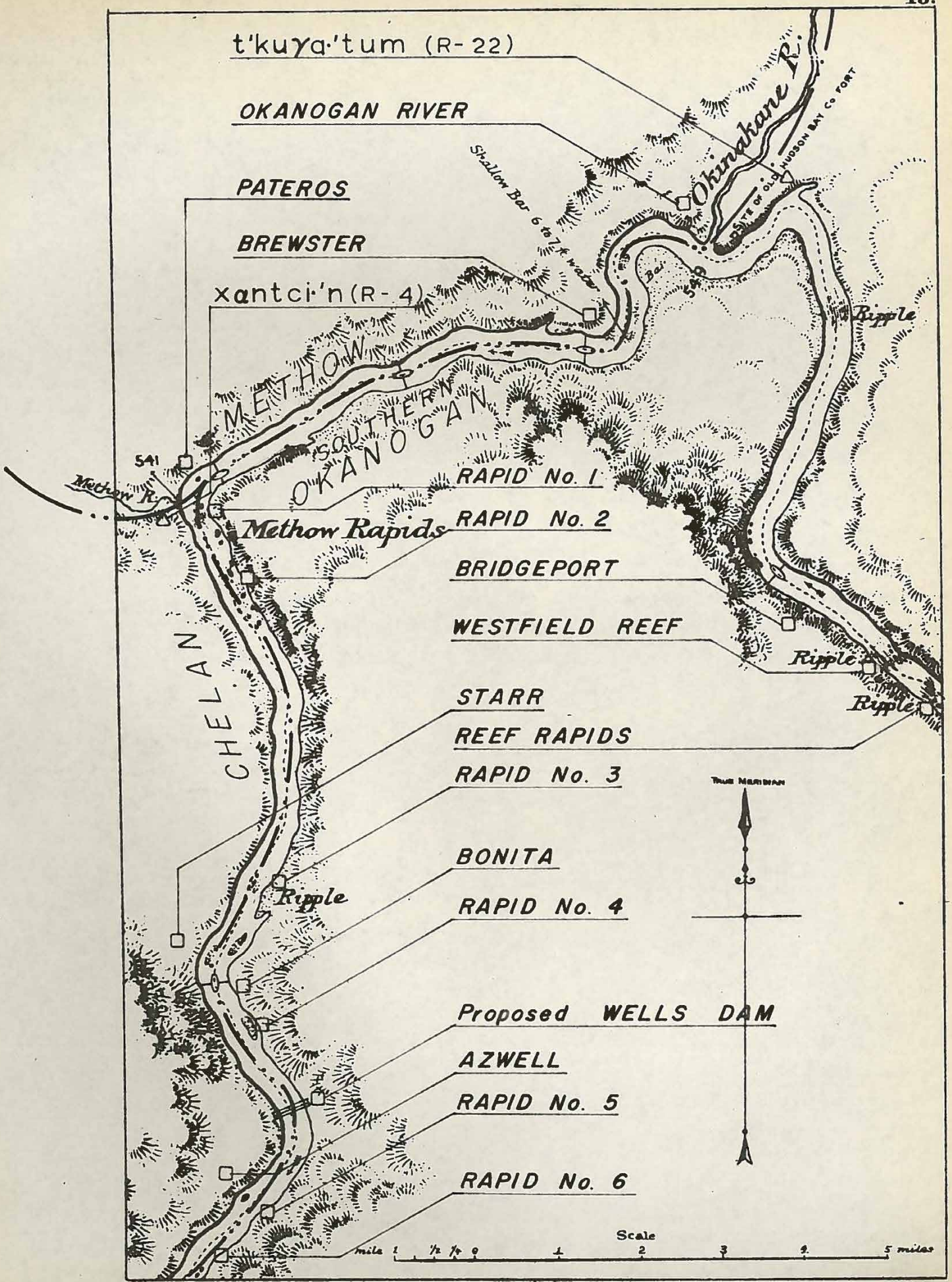
PLATE NO. 12

12.


45 OK 14 & 15
45 OK 18
end of Long Rapids
Kalichen Falls
570.5
Whirlpool Rapids
kali'teman (R-23)
45 OK 20
45 OK 19
45 OK 16
Ripple
Rapids
CAÑON
EAGLE RAPIDS
NESPILEM
VAUGAN RAPIDS
TRUE MERIDIAN
Ripple
COYOTE RAPIDS
Foster Creek Rapids
559
Foster Creek
LA PIERRE RAPIDS
CHIEF JOSEPH DAM
Fourth camp – Lv. 8:15 AM 10-5-1881
Scale
mile 1 ½ ¼ 0 1 2 3 4 5 miles



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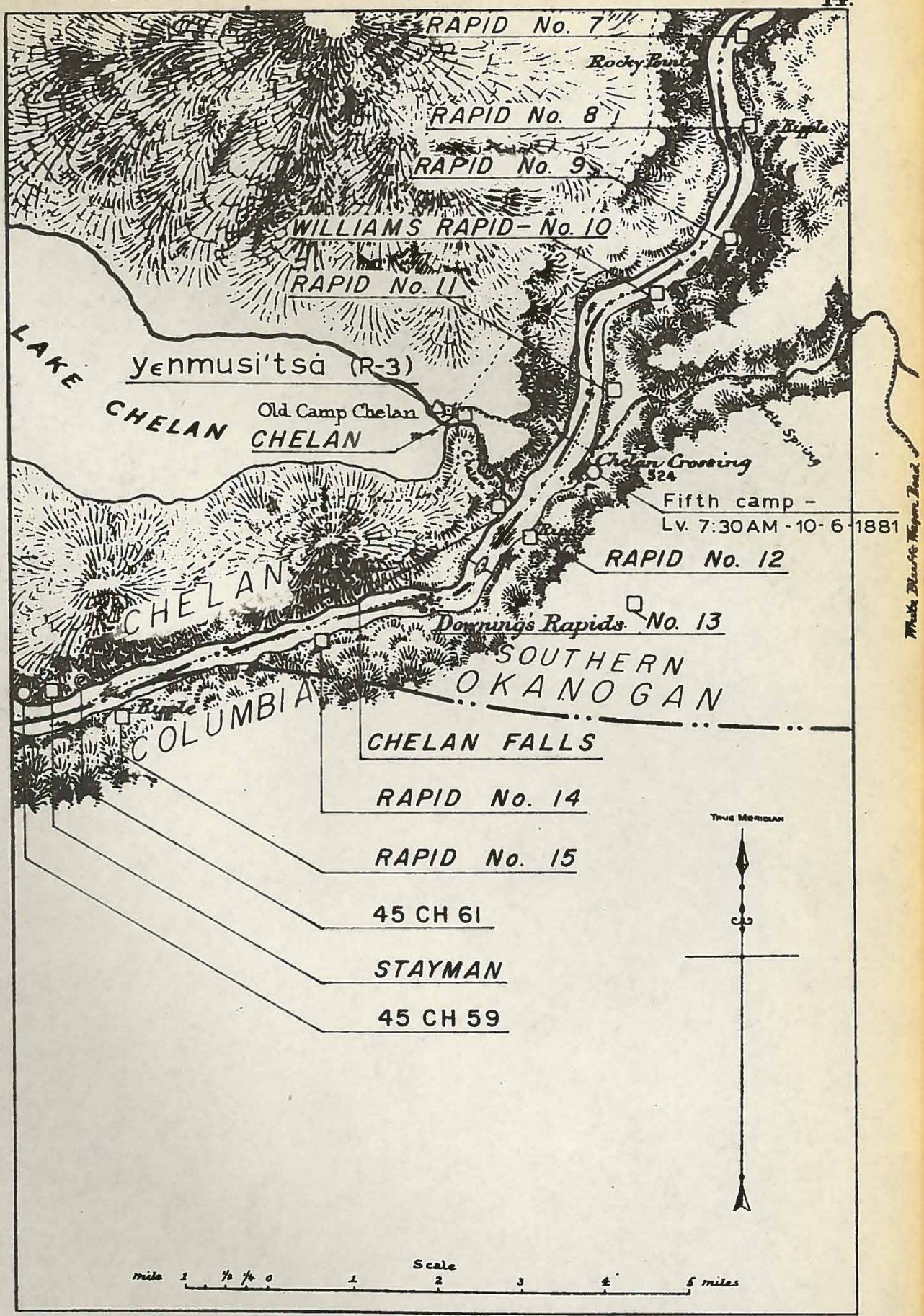

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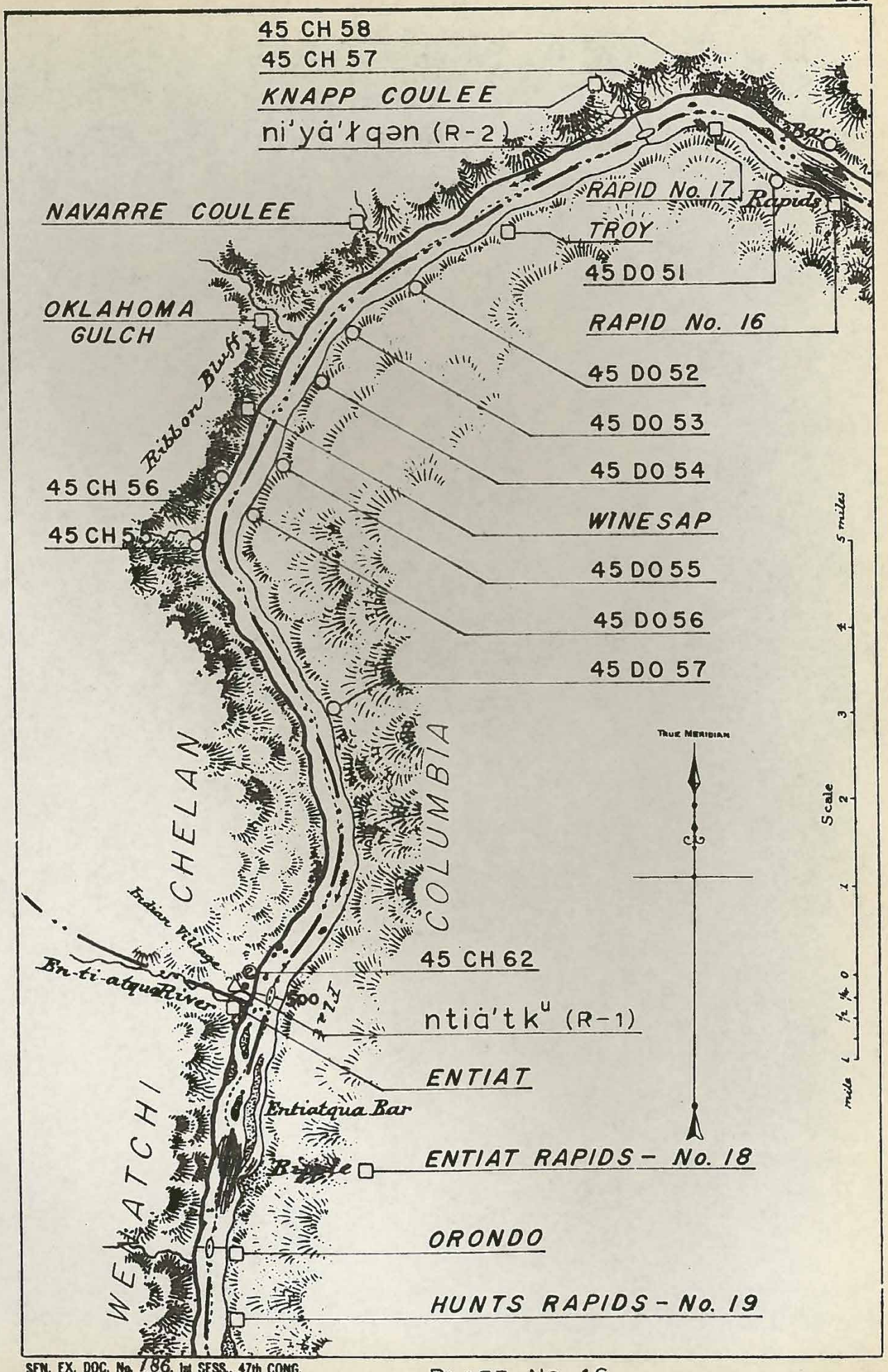

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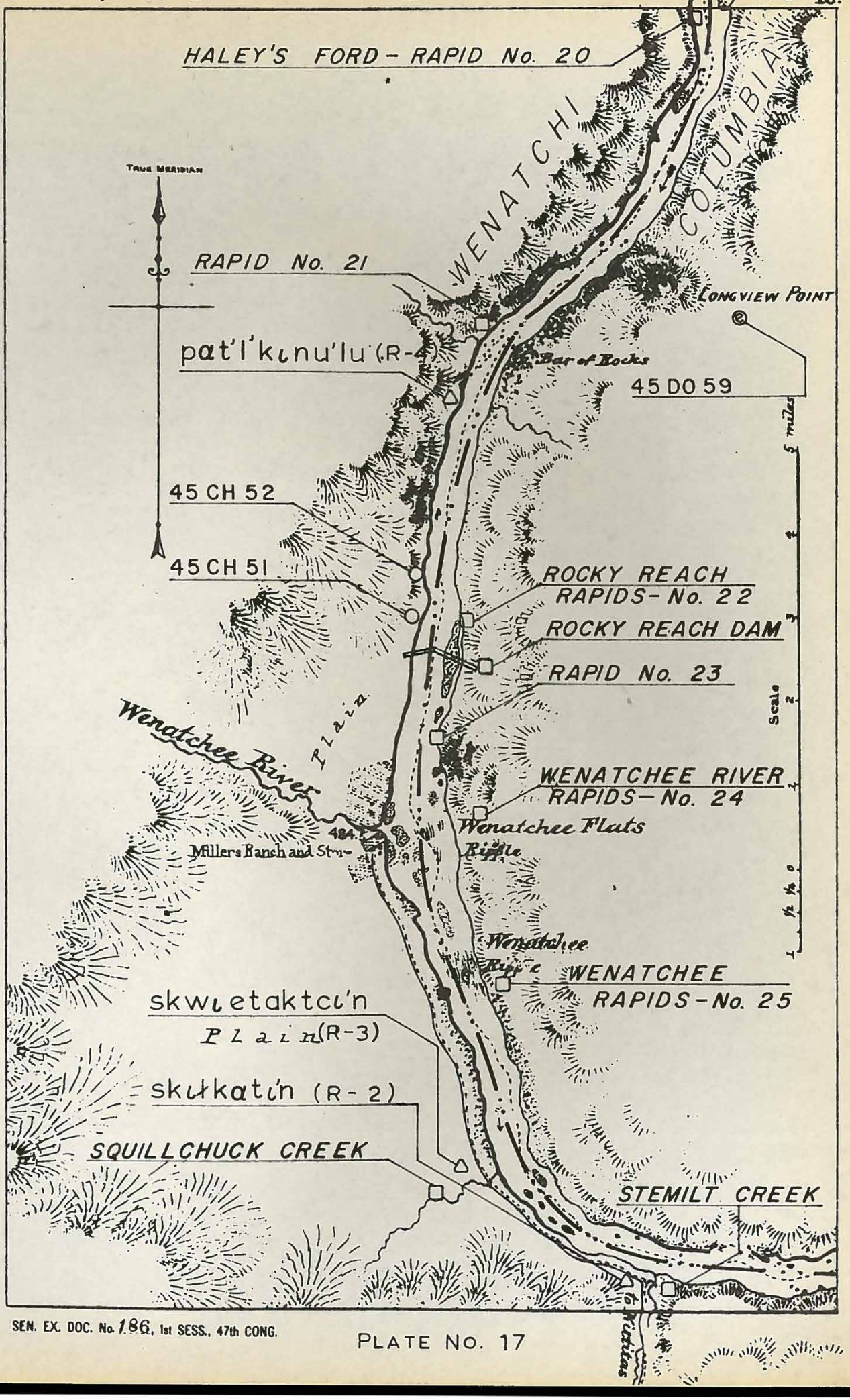

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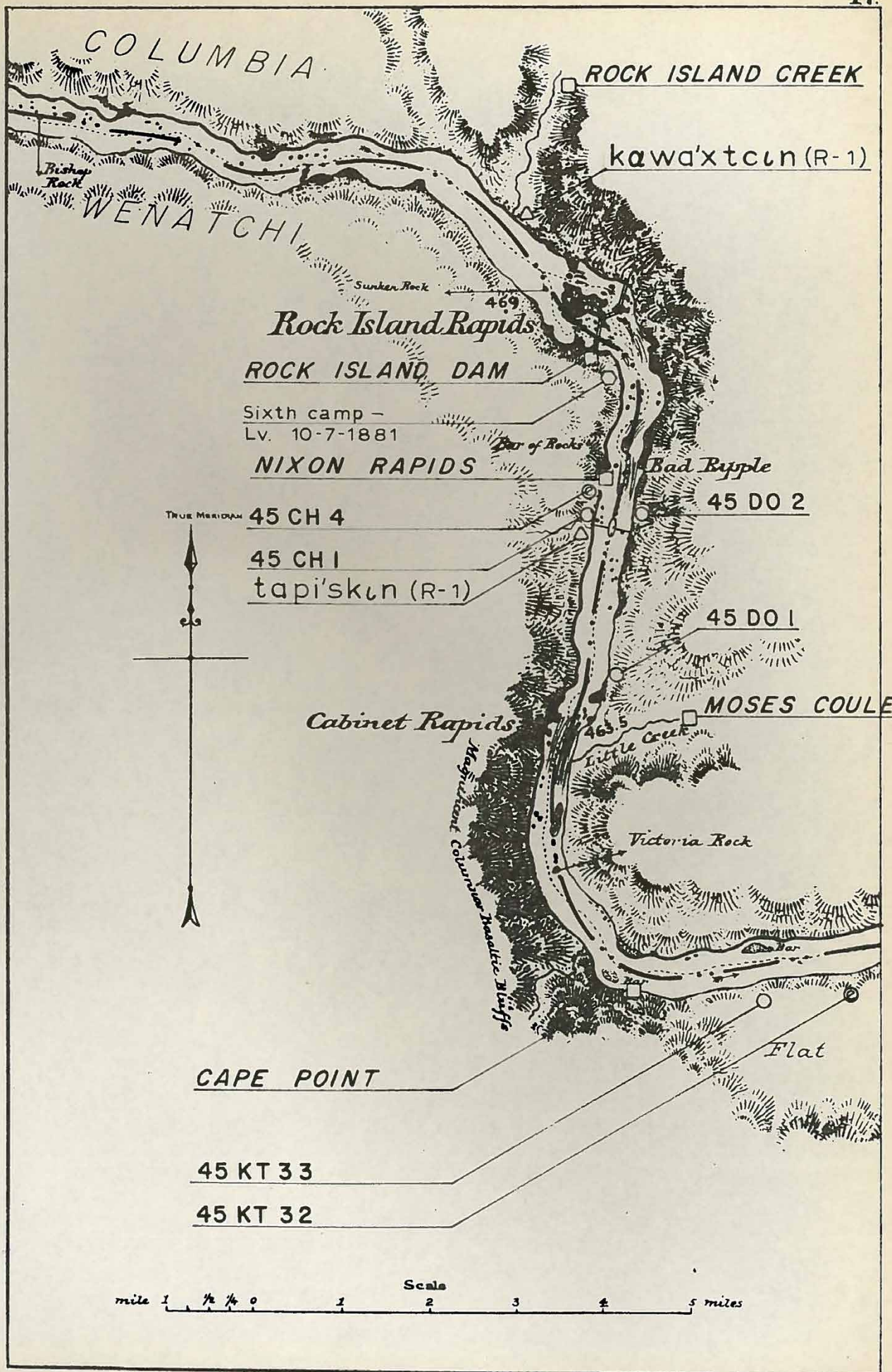
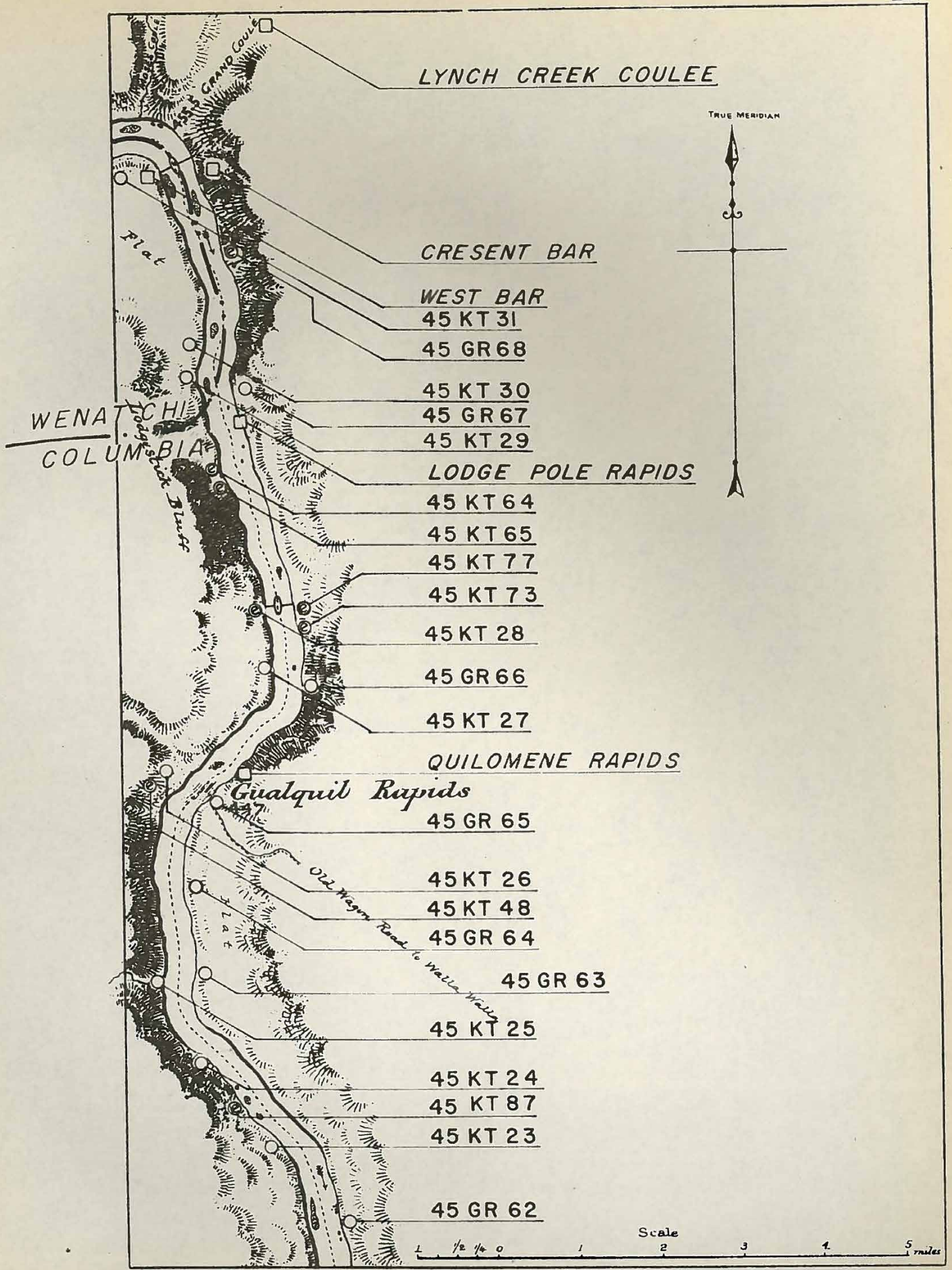
PLATE NO. 17

17.


COLUMBIA
WENATCHI
Bishop Rock
ROCK ISLAND CREEK
kawa'xtcin (R-1)
Sunken Rock
469
Rock Island Rapids
ROCK ISLAND DAM
Sixth camp –
Lv. 10-7-1881
Bar of Rocks
NIXON RAPIDS
Bad Ripple
45 DO 2
TRUE MERIDIAN
45 CH 4
45 CH 1
tapi'skin (R-1)
45 DO 1
MOSES COULEE
Cabinet Rapids
463.5
Little Creek
Magnificent Columnar Basaltic Bluffs
Victoria Rock
Bar
Bar
Flat
CAPE POINT
45 KT 33
45 KT 32
Scale
mile 1 ½ ¼ 0 1 2 3 4 5 miles



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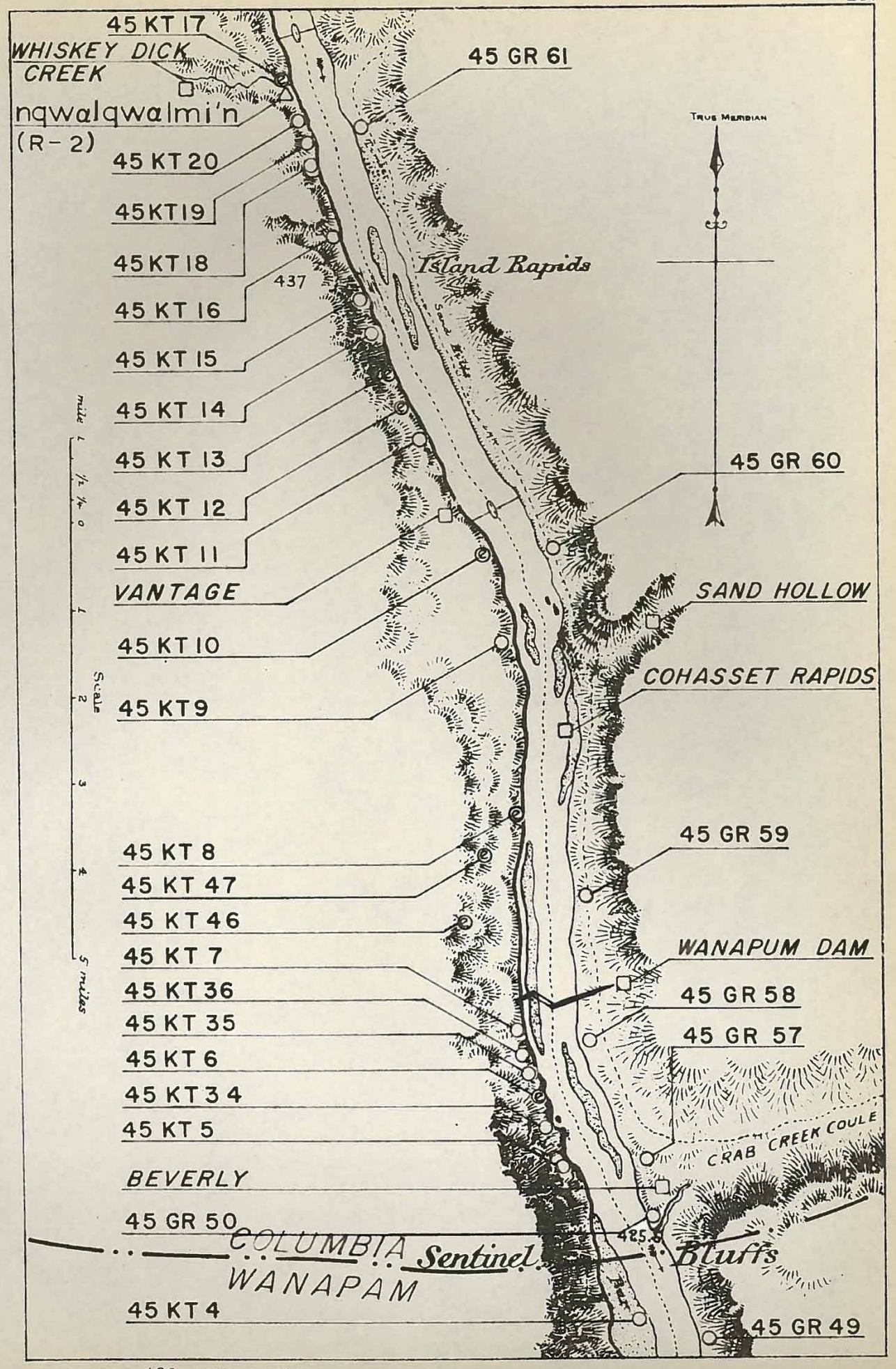

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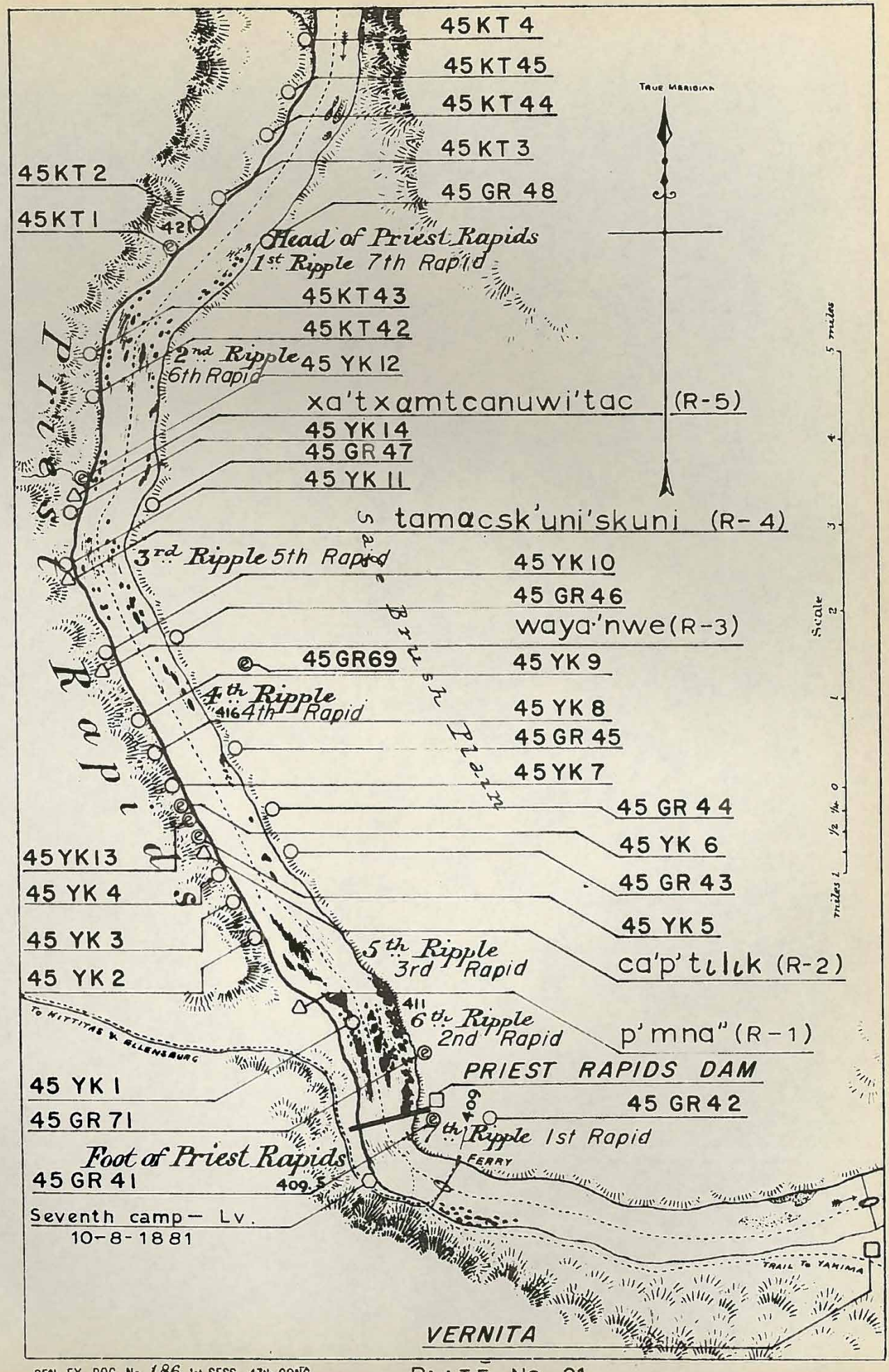

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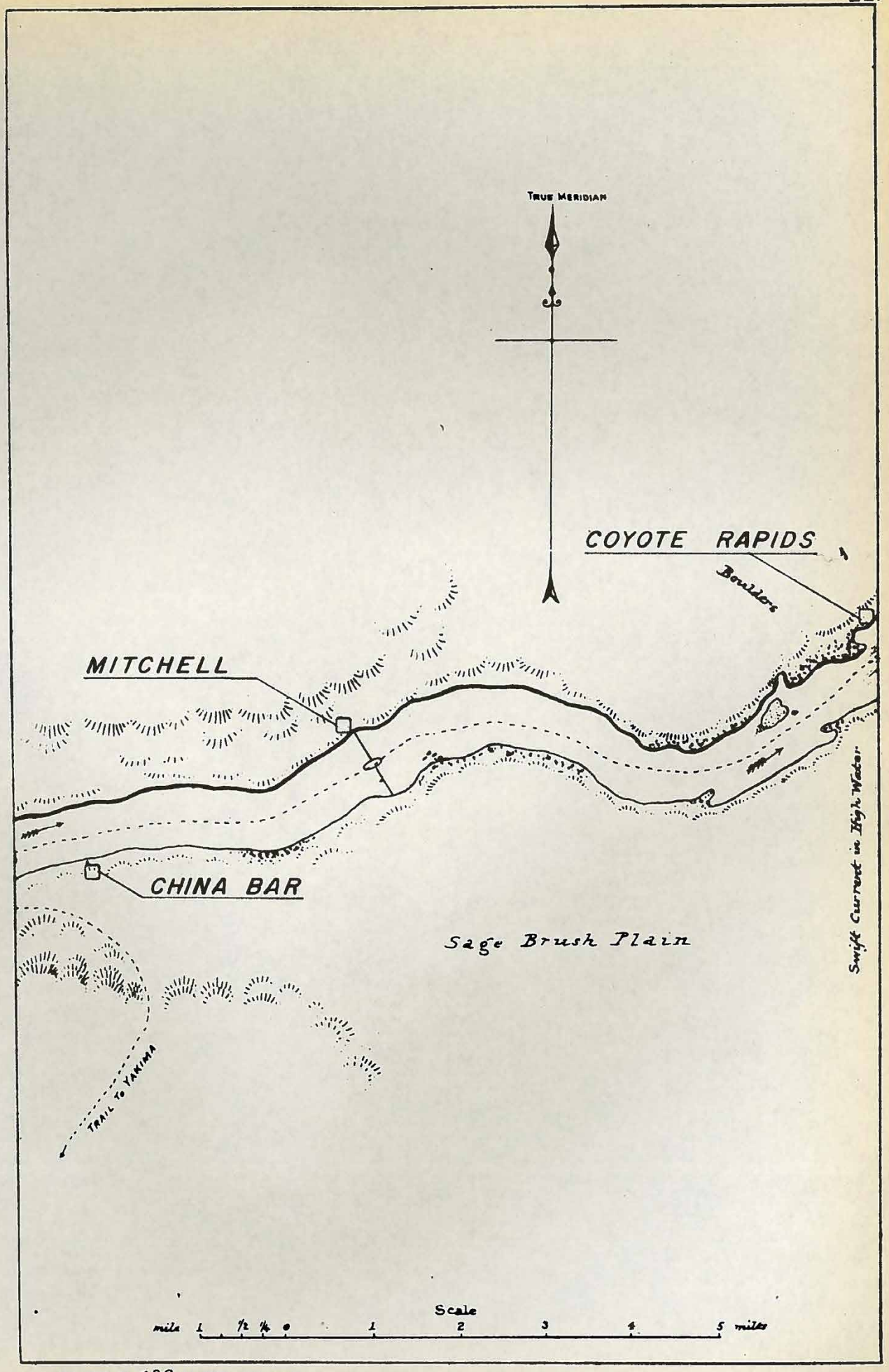

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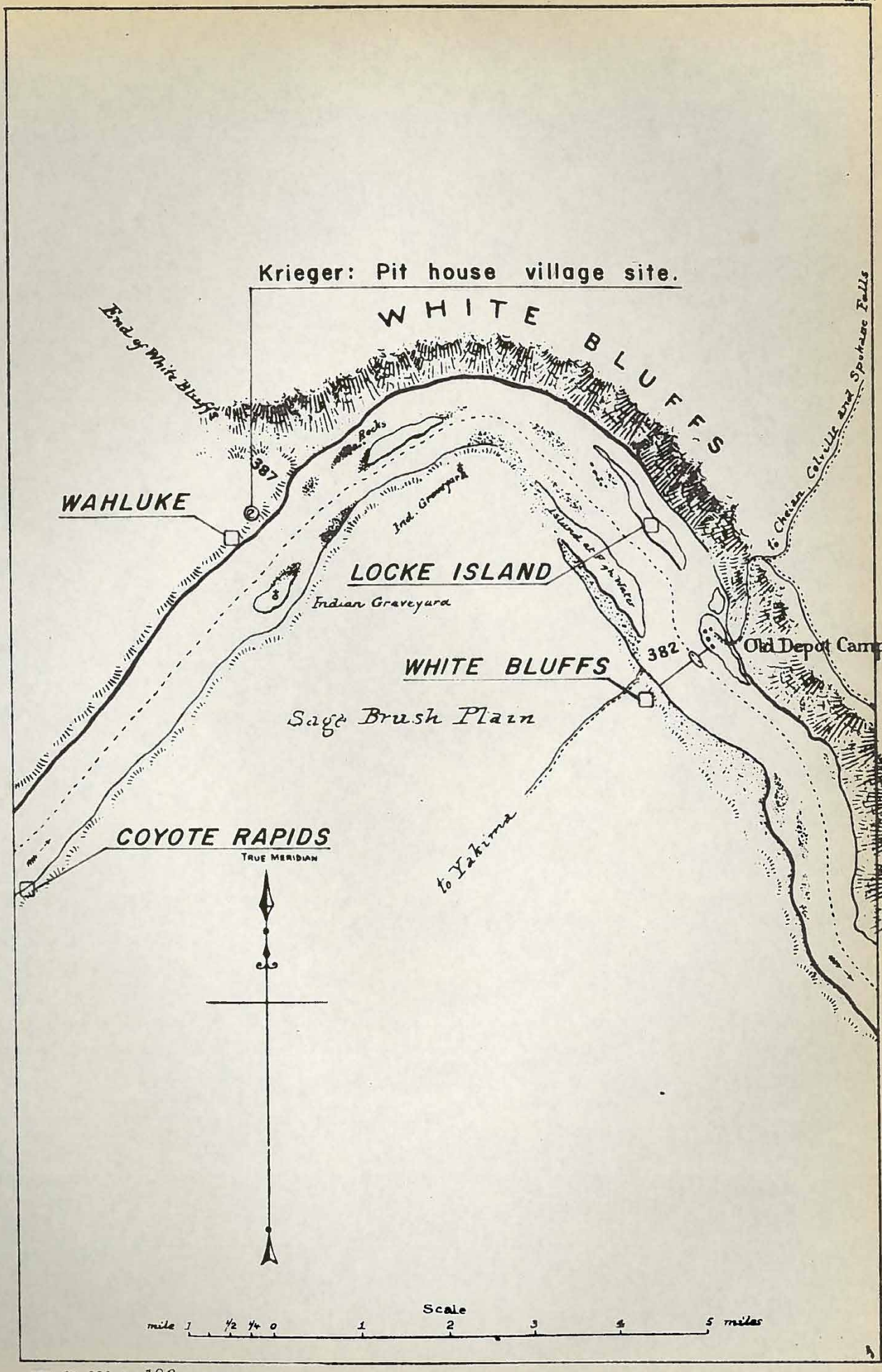
PLATE NO. 22

22.


Krieger: Pit house village site.
WHITE BLUFFS
End of White Bluffs
387
WAHLUKE
Ind. Graveyard
Rocks
Island at high water
LOCKE ISLAND
Indian Graveyard
to Cheney, Colville and Spokane Falls
Old Depot Camp
382
WHITE BLUFFS
Sage Brush Plain
COYOTE RAPIDS
TRUE MERIDIAN
to Yakima
Scale
mile 1 1/2 1/4 0 1 2 3 4 5 miles

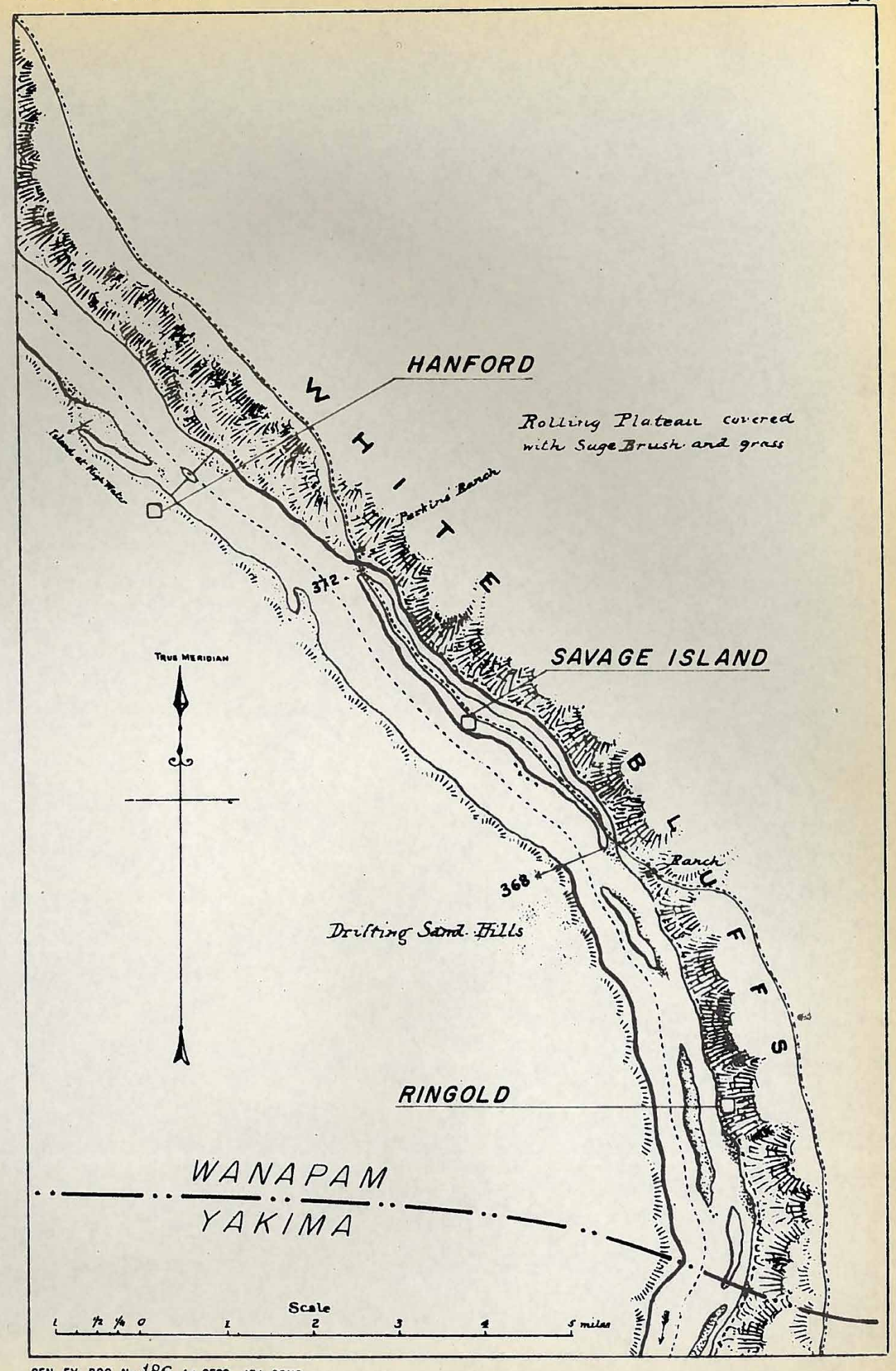


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PLATE NO. 24

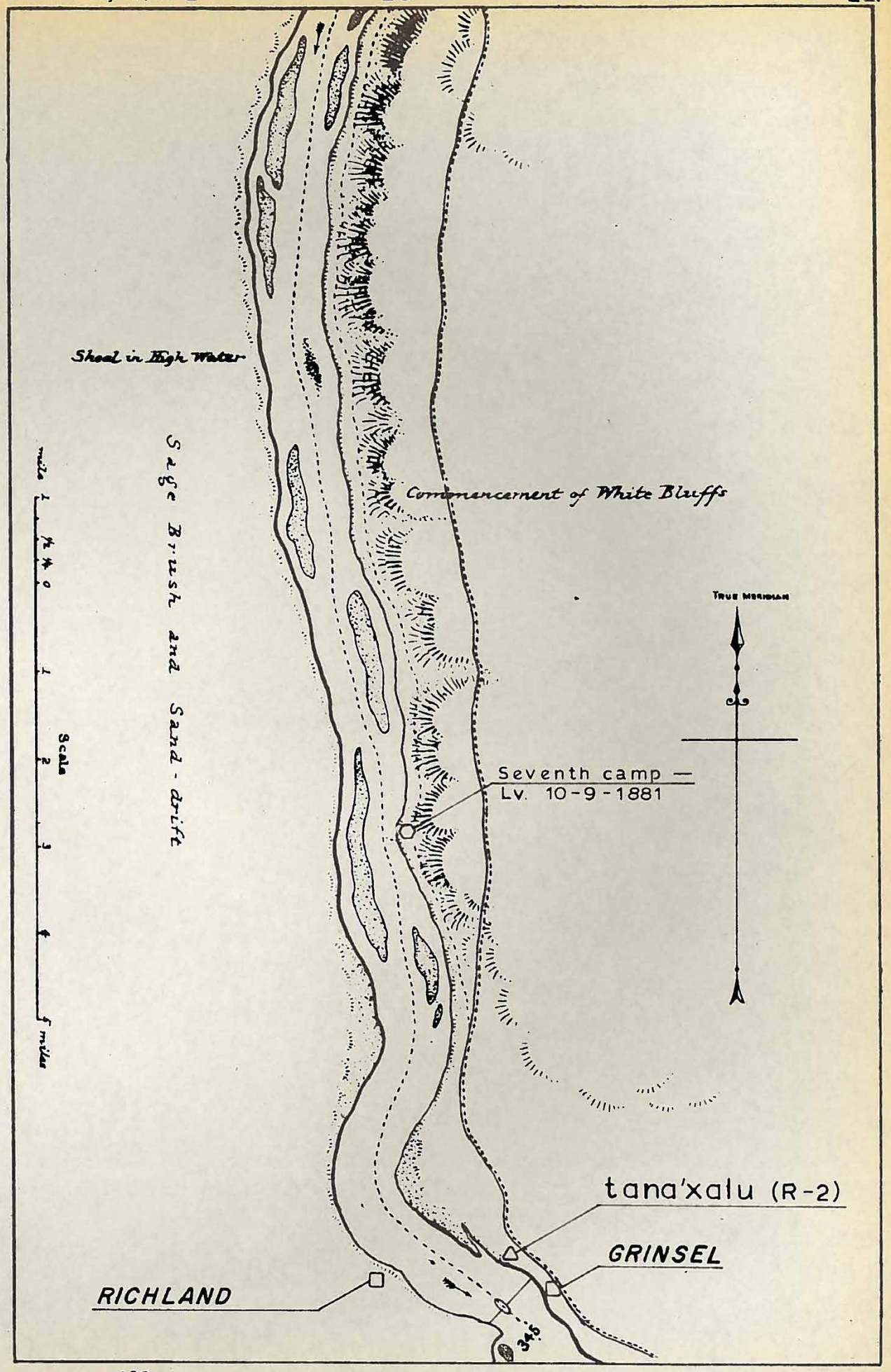

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PLATE NO. 25

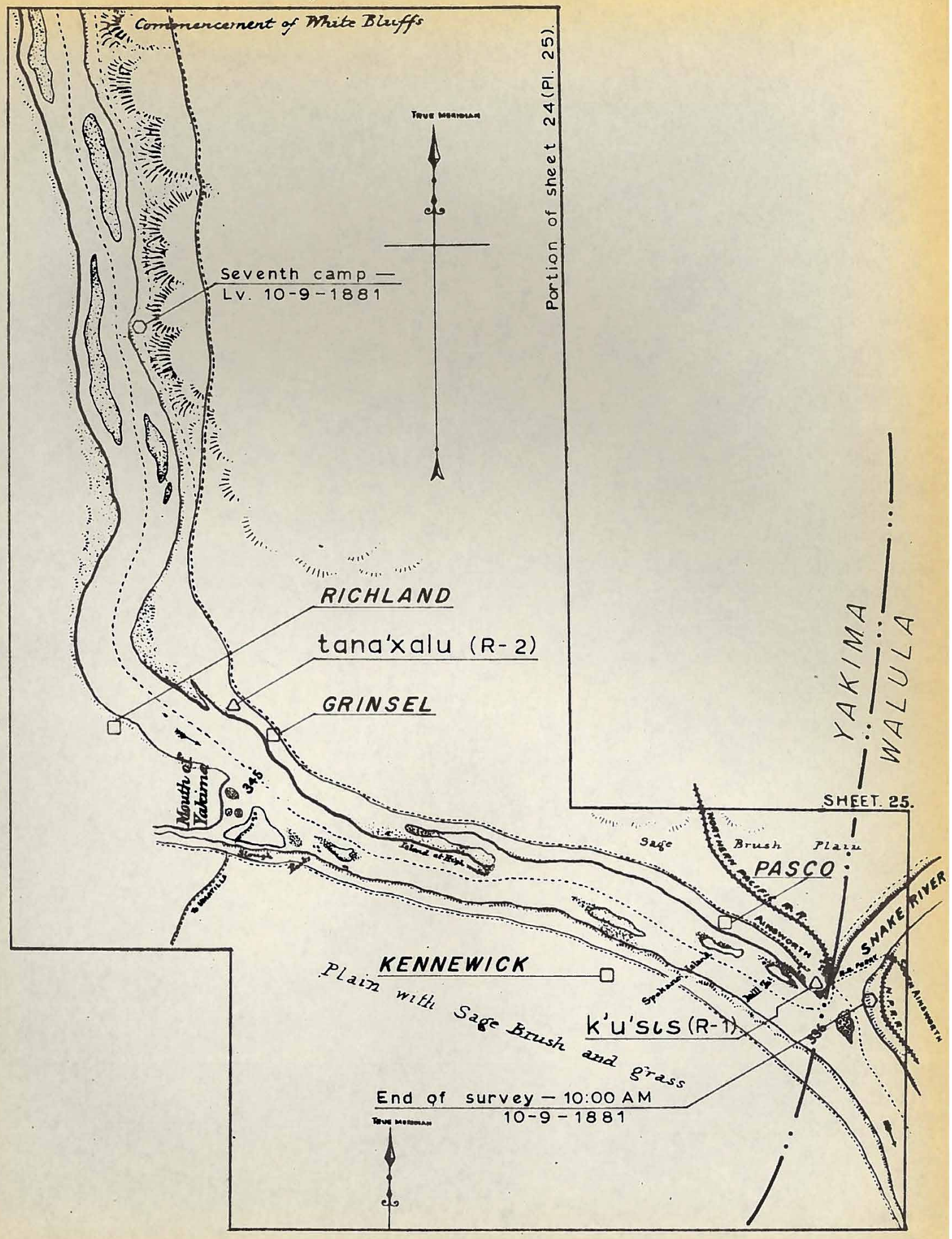
Commencement of White Bluffs
Portion of sheet 24 (Pl. 25).
TRUE MERIDIAN
Seventh camp —
Lv. 10-9-1881
RICHLAND
tana'xalu (R-2)
GRINSEL
YAKIMA
WALULA
SHEET. 25.
Mouth of Yakima
345
Sage Brush Plain
PASCO
NORTHERN PACIFIC R.R.
AINSWORTH
SNAKE RIVER
KENNEWICK
Plain with Sage Brush and grass
k'u'sis (R-1)
End of survey — 10:00 AM
10-9-1881
TRUE MERIDIAN

PLATE NO. 26

destroyed after they become inactive. The only source of information is to be found on the older maps. This feature was included since there is a definite correlation between ferry locations, ethnographic and archaeological sites.

Symons made his survey from boat in a very short time. The point of departure, plate 5, and the camps made enroute, Plates 7, 8, 9, 13, 15, 18, 25, and 26, are shown with an hexagonal symbol. The river provided a very fluid situation for travel (no pun intended). This trip demonstrates this as did Thompson in 1811 and the many voyageurs who travelled the river for the Hudson Bay Company. It creates a frame of reference when one considers the extent trading would be carried on in prehistoric time.

Chapter XI, The Geographical Nomenclature of the Columbia River Region, from the Symons report (Symons 1882, pp. 125-133) is reprinted as Appendix I of this paper. This is an interesting area of research that could be continued and would be very worthwhile.

The format followed in presenting the Symons' maps points up problems that have been known for some time. There is an ethnographic void in the Wanapum Reservoir area. There is a similar void archaeologically south of Priest Rapids. Time has never been on the side of the salvage programs.

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APPENDIX I

Report of An Examination of the Upper Columbia River and the Territory in Its Vicinity by Lieutenant Thomas W. Symons. 1882.

CHAPTER XI

THE GEOGRAPHICAL NOMENCLATURE OF THE COLUMBIA RIVER REGION

The subject of the geographical names of a country, their origins, meanings, modifications, changes, loss, and final adoption is one of absorbing interest, especially to the student who wishes to trace the history of his country from its earliest settlement to its full development.

The geographical names in this country of the Columbia are derived from the following sources:

1. Indian names.
2. Names given by the early navigators of Spain, England, and the United States.
3. Names given by the early explorers, as Lewis and Clarke, Bonneville, Fremont, and others.
4. Names given by the early fur traders.
5. Names given by the final and permanent settlers.

In regard to the first of these sources, it is of course highly desirable to retain, as far as possible, the names of places as given by the Indians. This is, however, often rendered extremely difficult, from the fact that the same thing may receive different names from different tribes, or even from the same tribe, and that Indian names often are simply generic, applying to all or many things of the same sort. As example may be cited the different names given to the Willamette by the different tribes living along it; the Snake, also, where it flowed through the Palouse Indian country was called by them the Palouse; where it flowed through the Nez Perce country it was called the Nez Perce, and through the Snake country the Snake. (Mullan) Indian names are often of such extreme length that people cannot be induced to retain them. Thus the Ne-hoi-al-pit-qua River has become changed, by common consent, into Kettle River, and is so called even by the Indians themselves. The settlers of a country rarely have sufficient regard for their savage neighbors to wish to retain their nomenclature, and the conesequence is it is soon completely replaced by one, as a general thing, very unpoetical and commonplace.

The Spaniards have left few names to commemorate their explorations along the coasts of Oregon and Washington. The names given by them, generally in honor of some saint or in commemoration of some church festival, have been replaced by others given by the English and American navigators who succeeded them.

Many of the names given by the early explorers still remain and will continue so to do. Where they are not Indian names they were generally given in honor of some public functionary, or some of their own men, or descriptive of some peculiarity or occurrence.

The names given by the early fur traders are chiefly French, as the voyageurs were mostly French Canadians, and are, as a general thing, descriptive, as for instance, the Des Chutes River or La Viviere aux Chutes, the river with falls; "Les Dalles des Morts," the Rapids of the Dead or Death Rapids, etc. These names have in many instances been changed into their English synonyms, as the Chaudiere has become Kettle Falls.

The names which are finally adopted and live, belong to all the preceding classes and to the last class, or those given by the permanent settlers. The great majority of these latter names refer to some characteristic, and as many places have the same characteristics it results that there are a great number of Willow, Rock, Trout, Mill, Salmon, and Cottonwood Creeks, etc. This multiplication of objects bearing the same name is a great inconvenience at times. Many names are given in remembrance of localities in distant States and foreign lands, as Portland, Albany, Damascus, etc., or in honor of some distinguished citizen of the world, as Colfax, Astoria, Mount Jefferson, Abert Lake, Vancouver, etc. Many are given in honor of the first or some prominent settler in the locality, as for instance Wilson, Creek, Prineville, Powell's Valley, Applegate Creek, Ritzville, etc.

Some names show in a high degree the poetical and religious aspirations of those giving them, as for instance Aurora, Zion, Sweet Home, Sublimity, Buttercup, Glad Tidings, Corvallis, etc.

In the works relating to the Columbia region I have found a great diversity in the manner of spelling certain names as well as in the names themselves, and as

there have been articles written about some of these names, and the proper mode of spelling them discussed, I give in the following pages such information in regard to them as I have been able to gather.

The proper and complete study of the geographical names of this region would take vastly more time and labor than I have been able to devote to it. It is to be hoped that some one may take up the subject and carry it to completion.

COEUR D'ALÊNE

This name, which literally translated means "heart of Awl", was applied to the Indians living about the lake which now bears this name, by the French voyageurs and partners of the Hudson Bay Company. These Indians used to come to Spokane House with the furs which they had gathered to trade. They brought them of such fine quality and in such quantity that the Hudson Bay Company deemed it desirable to establish a branch post among them, and made them a proposition to that effect. To it the Indians replied "No; that their country was so beautiful that when the white men saw it they would want it for themselves; that they were willing to come to Spokane House and trade, but that they did not want the white men to come into their country." They were, moreover, very sharp and cute at bargaining, and were considered the "Yankees" of the Indian race. The whites gave them the name of Coeur d'Alenes, "Awl-hearts," "Sharp-hearts," or "Pointed-hearts," as indicative of their characters as sharpers and cheats at bargaining, and on account of their persistent refusal to allow the white men to come among them. This origin of the name was given me by Father Eells, of the Chemakane Mission. It is about the same as that given by Lieutenant Mullan. Coeur d'Alene Lake was called by its Indian name of Sketch-hugh Lake, by Alexander Ross.

A. N. Armstrong, a writer on Oregon and Washington Territory, in a book written in 1856, gives the following explanation concerning the appellation Coeur d'Alene as applied to the "Skitsuish or Coeur d'Alene Indians":

> Amongst the first traders that visited this tribe was a Canadian of a close, niggardly disposition. The natives were not long in discovering this, and made in their own language a derisive remark respecting him, to the effect that "the white man had the heart of an awl," meaning that he had a contracted, illiberal disposition; the term awl being used by them as we sometimes use the word "pin" to denote a very trifling object. The interpreter rendered the sentence "Coeur d'Alene," greatly to the amusement of the trader's companions, and from that day to this the tribe has been known as the Coeur d'Alene Indians.

I am enclined to give the latter explanation credence over the former, as it seems to me more reasonable, and from the fact that the early traders did go among these Indians and trade with them and a mission was established on their lands, to which they did not seriously object.

Ross Cox, one of the first party of the Astorian fur traders to go into their vicinity, and whose book, published in 1832, gives about the first account of the country ever published, says:

The Pointed Hearts, or, as the Canadians call them, les Coeurs d'Alenes (Hearts of Awls), are a small tribe inhabiting the shores of a lake about 50 miles to the eastward of Spokane House. Their country is tolerably well stocked with beaver, deer, wild fowl, etc., and its vegetable productions are similar to those of Spokane. Some of the tribe occasionally visited our fort at the latter place with furs to barter, and we made a few excursions to their lands. We found them uniformly honest in their traffic, but they did not evince the same warmth of friendship for us as the Spokanes, and expressed no desire for the establishment of a trading post among them. They are in many respects more savage than their neighbors, and I have seen some of them often eat deer and other meat raw. They are also more unfeeling husbands, and frequently beat their wives in a cruel manner.

PALOUSE

This word seems to be a corruption of the French word pelouse — greensward, lawn, etc. It is very descriptive of the country to which it is applied, which is a rolling bunch-grass covered section. It is written "Pelouse" by many old writers. Nothwithstanding these facts there is a strong probability that the word from which it is derived is an Indian word. Lewis and Clarke call the Indians inhabiting the country to the north of Snake River in the lower part of its course the Selloat — pallahs. Pallahs and Palouse are very similar in sound. Alexander Ross, when about to start on a trip after furs, in naming over the Indians with him speaks of a Palooche, which is also similar to Palouse. Ross also speaks of the Indians living along Snake River as the Pallet-to-Pallas, the Shaw-ha-ap-tens, and the Paw-luch, etc. Pallas and Pawluch are very similar in sound to Palouse.

The history of the word would then seem to be that it is an original Indian word similar in sound to the French word pelouse, which, on account of the early inhabitants being largely French, came to be considered as the original word, and that this, in the course of events, was changed to the spelling now generally adopted, Palouse.

The names by which the Palouse River has been known, as given by different writers whose works I have consulted, are as follows:

Acqua-aye-seep.	Indian name. Mullan
Drewyer's River.	Lewis and Clarke
Pavilion River.	A. Ross
Pavion River.	Irving
Pelouse River.	Paul Kane
Paluce or Pavilion River.	Paul Kane
Palouse and Paloose.	Mullan
Pelouse.	Steptoe
Pelouse.	Wright
Pelouse.	Pacific Railroad Reports
Peluse.	Pacific Raloroad Reports
Pavilion River.	Rev. S. Parker
Paloose.	Armstrong

SPOKANE

Whether to put the final e on this word has been a much-discussed question, and has divided the people of the Spokane region into two parties. A majority, however, seem to desire the e, and so it will finally be adopted, in all probability, and go down to futurity. There seems to be about as much authority for spelling it one way as another. The only clew that I have been able to obtain to the meaning of the word is in the book of Ross Cox, where he speaks of the chief of the Indians of the region as Illim-Spokanée, which means the "Son of the Sun." From this, and from the nature of the country in which they lived, it is fair to infer that their tribal name meant something like Chidren of the Sun. They lived principally on the great sunny plains of the Spokane, while many of the neighboring tribes lived in the woody, mountainous regions of Coeur d'Alene, Pend d'Oreille, Kootenay, and Colville rivers.

I have been told by men long resident in the country that the original word was pronounced with a slight vowel syllable e at the end — Spokane-e. This vowel, indistinct at best, was soon dropped by the busy whites, who love not long names.

In an official Congressional report submitted January 19, 1822, and in one submitted May 15, 1826, the post at Spokane is called Lantou and Lanton. This is probably the same word as Lah-too, mentioned by Mullan as the Indian name of Hangman's Creek.

In speaking of the Astorian trading establishments these reports say: "One of these subordinate establishments appears to have been at the mouth of Lewis River (Fort Nez Perce or Walla Walla, where Wallula now stands); one at Lantou (Spokane House, near the junction of the Spokane and Little Spokane rivers); a third on the Columbia, 600 miles from the ocean, at the confluence of the Wantana River (Fort Okinakane); a fourth on the East Fork of Lewis River (I believe this was on the Clearwater at the mouth of Lapwai Creek, where the Indian agency now is, but I am not certain); and the fifth on the Multnoma (Willamette)."

The following are the methods of spelling the word Spokane, as adopted by different writers:

Spokan	Official transfer paper, Pacific Fur Company to Northwest Fur Company.
Spokan	Ross Cox
Spokane	War Department map, 1838.
Spokane	Commodore Wilkes
Spokein	Rev. S. Parker. This writer, who visited the country in 1836, says: "The name of this nation is generally written Spokan, sometimes Spokane. I called them Spokans, but they corrected my pronunciation and said Spokein, and this they repeated several times, until I was convinced that to give their name a correct pronunciation it should be written Spokein."
Spokan	Greenhow
Spokain	McVicar
Spokan	Nath. J. Wyeth's report, 1839.
Spokane	Robertson

Spokane . . . . . Thornton
Spokane . . . . . A. Ross
Spokan . . . . . Franchere
Spokan . . . . . Irving
Spokan . . . . . National Railroad Memoir
Spokan . . . . . Armstrong
Spokan . . . . . St. John
Spokane . . . . . Pacific Railroad Reports
Spokane . . . . . Mullan
Spoken . . . . . Robertson and Crawford

OKINAKANE

I have never been able to determine the meaning of this word. It has been spelled in a great variety of ways, and it is difficult to adopt a spelling which will be satisfactory to all. The above is the spelling as adopted in the Pacific Railroad Survey Reports and the Northern Boundary Survey Reports.

The Okinakane is called the Wantana River in Congressional reports in 1822 and 1826, referring to a military establishment at the mouth of the Columbia. The following show the modes of spelling the word by different authors:

Otchenaukane . . . . . Lewis and Clarke
Okunaakan . . . . . Official transfer papers, Pacific Fur Company to Northwest Fur Company.
Oakinagan . . . . . Ross Cox
Okenakan . . . . . Franchere
Okanagan . . . . . War Department map, 1838
Okanagan . . . . . Cushing's Report
Oknagan . . . . . Nathaniel Wyeth
Oknagen . . . . . Nathaniel Wyeth
Oakenagen . . . . . H. J. Kelly
Okonagan . . . . . Commodore Wilkes
Okanagan . . . . . Rev. S. Parker
Okinagan . . . . . Greenhow
Okanagan . . . . . Robertson
Okonagan . . . . . Thornton
Oakanagan . . . . . A. Ross
Oakanazan . . . . . A. Ross
Oakinacken . . . . . A. Ross
Ross says Indian name for Okinakane Lake is Sawth-le-lum-tak-ut.
Okinikaine . . . . . Warner
Oakinagan . . . . . Irving
Okanagan . . . . . National Railroad Memoir
Okanegan . . . . . National Railroad Memoir
Okinakane . . . . . Pacific Railroad Reports
Okanagan . . . . . Paul Kane
Okinakane . . . . . Northern Boundary Report

Okinakane . . . . . Mullan
Okinagan . . . . . McVicar
Oknanagans . . . . . Robertson and Crawford
Okonagan . . . . . R. M. Martin
Okanagan . . . . . Armstrong

NEZ PERCÉ

As applied to the Indian tribe, is a misnomer. Lewis and Clarke record their arrival among the Sho-pun-nish or Pierced Nose Indians, as they call themselves, No writer has ever accused them of piercing their noses, and it is certain that they never did so except in very isolated cases, if at all. They have been described by a number of early explorers, but this custom has never been mentioned. It is certain that they do not do so now.

FLATHEAD

As applied to the tribe of Indians inhabiting the country about the headwaters of the Columbia and Missouri, is a misnomer. These Indians never were guilty of the deforming habit of flattening the heads of their children. Many writers have described them and none have mentioned the custom, although it has been repeatedly described as being practiced by the Lower Columbia Indians. Their Indian name, as they call themselves, is Selish, according to most writers, the meaning of which I do not know.

The Rev. S. Parker, who traveled among them in 1835, says:

> I was disappointed in seeing nothing peculiar in the Flathead Indians to give them their name. Who gave it to them, or for what reason, is not known. The name given them by the Nez Perce, which is Sailep does not signify flathead.

COLUMBIA RIVER

The Columbia River was first called the Oregon, from the mention of the name by Carver.

In 1575, it was called Assumption Inlet by Heceta. In the charts of his voyage, soon after published, it was called Ensenada de Heceta, and Rio de San Rogue.

In 1789 it was called Deception Bay, by Meares.

In 1792 Gray called it the Columbia. Captain Clarke says that in 1805 the Indians called it the Shocatilcum, and another tribe called it Chockalilum, both being the same name, differently pronounced, in all probability. This Indian name very probably signifies Water-friend, or Friendly-water. In the Chinook language Chuck signifies water, and tillicum friend; hence the name Chuck-tillicum, or Schocatilcum.

SNAKE RIVER

The Snake River was called Lewis River by Captains Lewis and Clarke. Its Indian name was Saptin, or Sahaptin, Shoshone, Palouse, Nez Perce, or Cho-punnish River the name varying with the different Indian tribes inhabiting its bordering country.

YAKIMA

Yakima has been spelled a variety of ways:

Eyakema	Lewis and Clarke's report.
E-yack-im-ah. . . .	A. Ross
Ekama	National Railroad memoir.
Yackaman.	Ross Cox.
Yakima	Pacific Railroad Reports.
Tapetete.	Lewis and Clarke's map.
Tapatele.	Rector and Roberdeau's map.
Tapetelle	Finley's map
Eyakema	War Department map, 1838.
Eyakema	Robertson.
Yakima	Commodore Wilkes.
Eyakama	Paul Kane.
Yakima	Thornton.

DES CHUTES

Des Chutes River, called La Riviere aux Chutes by Fremont and the early settlers, and finally changed to Des Chutes River. Its Indian name was--

To-wah-na-hiooks	According to Lewis and Clarke.
To-war-nah-cooks	According to Finley's map.
To-war-na-he-cooks	According to Rector and Roberdeau.
Low-hum	According to Alexander Ross.

UMATILLA

Umatilla has been spelled as follows:

Umatallow	War Department map, 1838.
You-ma-talla.	Alexander Ross.
Umatallow	Alexander Ross.
Eu-o-tal-la	Irving.
Umatalla	Irving.
Your-ma-talla	Rector and Roberdeau's Map.
Umatilah	Fremont.
Umatilla	National Railroad Memoir.
Umatillah	Mullan.
Umatilla	Mullan.
Umatella	Rev. S. Parker.

HANGMAN'S CREEK

This beautiful creek took its detestable appellation from the fact that on its banks in 1858 Colonel Wright caused to be hung the Indians captured by him who had been guilty of murder and other crimes.

Its Indian names given by Mullan were Nedlewhauld, Nedhauld, Lahtoo, or Camas-prarie Creek.

It would be highly commendable to the people of the section if they would change the name from Hangman's to Lah-too or Nedlewhauld Creek.

ROCK CREEK

In Eastern Washington Territory Mullan says this was known to the Palouse Indians as the Wah-rum, and to the Spokanes as the Oray-tay-ous, and the upper part of it as the Sil-seip-o-vet-sen, or Sil-ray-poo-west-tsin.

UNION FLAT CREEK

Indian name, Smolde Creek, Mullan.

PINE CREEK

Indian name, Ingossomen Creek, Mullan.

STEPTOE BUTTE

Named for Colonel Steptoe, who was defeated on the Butte by the Spokane and other Indians, called Pyramid Butte in the Pacific Railroad Reports.
Its Spokane and Coeur d'Alene Indian name was E-o-mosh-toss, Mullan.

WENATCHEE

Called:

Wah-na-a-cha	. . . . .	Lewis and Clarke.
Pisscows	. . . . .	Alexander Ross.
Pisquouse	. . . . .	Pacific Railroad Reports.
Wenatshapam	. . . . .	Pacific Railroad Reports.
Piscous	. . . . .	War Department map, 1838.
Pischous	. . . . .	Commodore Wilkes.
Wainape	. . . . .	Called by some of the Indians, according to

Commodore Wilkes. None of the early writers called it the Wenatchee.

METHOW

Called, Methow and Buttle-mule-emauch or Salmon Fall River, by A. Ross, and Barrier River by Commodore Wilkes.

LAWYER'S CANON AND CREEK

Named for Lawyer, a head chief of the Nez Perces.

TACOMA

Tacoma is the Indian name for Mount Ranier, and signifies the Nourishing breast. This name was given it probably both on account of its shape and from the fact that it is a great center from which rivers flow in every direction, nourishing the land and supplying fish. This is the name of the highest and grandest mountain in Washington Territory, and it is the hope of many people that when a State is formed of the Territory it may receive the name of TACOMA.

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Editor's Note: No archaeological sites have been shown in the Wells Dam Reservoir. This is in deference to the National Park Service policy of not publishing this type of information until salvage operations have been completed. When the reservoir has been flooded, Plate 14 will be revised to show the archaeological sites and other data that may be available at that time.

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Next Meeting: Mr. Lloyd R. Bell, Supervisor of Interpretive Services, Washington State Parks & Recreation Commission, had been tenatively scheduled for the April meeting. Because of other commitments this meeting is being rescheduled for May. When a meeting date has been set, the members will be called advising them of the time and place.

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THE APPLICATION OF PHYSICAL TECHNIQUES TO AGE-DATING

Roy M. Chatters

ABSTRACT: The archaeochronologist has at his disposal the following methods of dating available: dendrochronology; geological varve dating; various chemical bone analyses; ultrasonic dating; thermoluminescent dating; neutron activation analysis; emission spectrography; and, radiocarbon (Carbon-14) dating. Radiocarbon dating is discussed in some detail. The cycle of C-14 production is outlined. Factors contributing to an accurate date and those introducing errors are stated.

Whenever any ancient relic is found, the first thing the discoverer is asked is "How old is it?" More frequently than not it is impossible to determine the absolute age, hence the scientist must be satisfied with a relative age date. One English investigator has stated that archeology without dates is like a train timetable without times, but that a printed schedule which tells the order of arrival of the trains is better than no timetable at all. The archeologist, the paleobotanist, and geologist are turning more and more to the physical scientist for aid in reducing the span which exists between the relative and the positive age of their research materials.

The archeochronologist now has at his disposal an increasing number of methods for ascertaining the relative ages of his several finds of presumed great antiquity or recent origin. Annual growth rings in trees were recognized as being significant in age-dating as far back as 1811 with dendrochronology reaching its apex in the classic work of Douglass in 1929. By this technique he was able to establish the prehistoric chronology of dwelling sites of pueblo Indians in the American Southwest with a high degree of reliability. Geological varve (layer) dating results from an analysis of the deposition of sediments found in lake beds dammed up by glaciers. The end of the last ice age in Northern Europe, according to the varve counting method, occurred 12,000 years ago. It is a well-established fact that the types of trees grown in a given area reflect the general climate of that region and on this basis a method of dating of tree remains by the microscopic examination of pollen in peat bogs has been developed. Bone dating has proven to be one of the most difficult age determinations to make, especially by the carbon-dating procedure, in part due to the time limitations (about 70,000 years) of the carbon-dating method and in part to the very low carbon content of bone. Bone analyses employing chemical procedures for uranium, fluorine, or nitrogen, make it possible to distinguish old bones from intrusions of new bone and it was by one of these methods that the Piltdown Man was proven to be a hoax. Ultrasonic dating of bone has found some application in distinguishing very ancient bone from modern bone, but little difference can be detected between 5,000 and 500-year-old bone specimens. The dating of pottery takes advantage of a phenomenon whereby it has been found that heat will release the strains set up in crystals damaged by radiation. This method which is undergoing a period of refinement is referred to as thermoluminescent dating. Several other means of dating pottery show great promise, to wit, neutron activation analysis and emission spectrography; the former

makes use of bombardment of an object by neutrons causing some of its constituents to become radioactive and the latter involves a spectrographic analysis of its chemical elements.

Radioactive methods are based upon the immutable nature of radioactive decay which is expressed in terms of the "half-life"--the time required for one-half of the energy of an isotope to decay away. For the most ancient objects associated with rock, the uranium dating method is used and for less aged, the potassium-argon method is employed. Rock with which the jaw of Zinjanthropus, an ancient man, was found was dated by the latter method and yielded a 1,750,000-year age date. A third radioactive dating method is that of beta-ray backscattering which makes use of the tendency of beta rays (electrons or positrons from the nucleus of an atom) to be reflected from an incident surface. This technique is particularly useful with pottery glazes containing metals but presupposes some prior knowledge of the types of glazes used at various times in history. The best known and most widely used dating method is that of carbon-dating and it is to this subject that the remainder of this article will be addressed.

Radiocarbon dating methods take advantage of the fact that when cosmic rays from outer space enter the earth's atmosphere neutrons are produced. These in turn collide with some of the nitrogen atoms in the air giving rise to radioactive carbon in the form of carbon-14 with a half-life of 5770 years. Carbon-14 and other forms of carbon atoms combine with oxygen in the air to produce carbon dioxide of which a minute proportion is radioactive carbon (approximately one atom of carbon-14 to one billion atoms of ordinary carbon). The radiocarbon is chemically the same as nonradioactive carbon, hence plants can use the radiocarbon dioxide in the air for photosynthesis just as they would "dead" carbon dioxide. Likewise, the carbon dioxide which is dissolved in the ocean becomes available to marine plants and animals for the production of food or shell as the case may demand. Thus, the radiocarbon formed in the outer atmosphere becomes incorporated in plant and animal bodies and continues to do so throughout the life of the organism. As a result of the normal life processes of food intake and excretion, a point is reached wherein a certain level of radioactivity per gram of carbon in the body of the organism is maintained. Numerous tests on many organisms have shown that the radioactivity due to radiocarbon results in approximately 15 atomic disintegrations (or counts) per minute per gram of contained carbon in the living tissues. At death, with no further metabolic uptake of carbon-14 from the environment taking place, the radioisotope will be yielded up by the remains at a definite rate of decay. If a sample of wood, for example, is found to produce seven and a half disintegrations per minute per gram of material, we assume that the specimen is about 5770 years old. For each additional 5770-year period we would expect to find our carbon-14 count to be reduced by another one-half, thereby providing a means of dating specimens of great antiquity.

In 1946 Willard F. Libby of the University of Chicago developed a solid carbon method for counting the disintegrations from radiocarbon-containing samples on the basis of which he later won the Nobel prize. He and his associates saw the potential of the method as a means of age-dating and in some of their experiments they included samples of wood from the tombs of the Egyptian kings Zoser and Sneferu who died within 75 years of 2700 B.C. and 2625 B.C., respectively. Libby's radiocarbon counts showed the life period of the two kings to have been approximately 4600 years prior to the date of the radiocarbon determination -- a remarkable check on an historically established event.

With these first test data providing the encouragement, Libby and others explored the many facets of radiocarbon dating with most encouraging results. Because of the difficulties inherent in the solid carbon detecting method, other investigators began to develop various techniques for counting radiocarbon. The next step was a procedure in which the radiocarbon was converted to gaseous carbon dioxide which was then counted in a suitable counting chamber. This method, while still used in some laboratories, has because of the demand for very high purity of the gas given way to methods in which the radiocarbon is converted to acetylene or methane gas. Due to hazards inherent in acetylene at pressures higher than atmospheric, the method is not used extensively. Many investigators now feel that the incorporation of the radiocarbon into the methane molecule prior to counting provides the ultimate means in radiocarbon detection and counting. As a result of the relative ease of preparation, the methane method has gained greatly in favor and is the method used at Washington State University's Radiocarbon Dating Laboratory.

All samples brought to a carbon dating laboratory are not equally suitable for counting. Experience has shown that charcoal and well-preserved wood are the most acceptable types of material with uncharred bone and antler of doubtful reliability. Bone and antler along with mammoth tusk have a very low percentage of contained carbon which necessitates the use of large samples for recovery of the carbon. Between these two classifications there is a fairly reliable group of materials used in carbon dating and which consists of such materials as peat, leaves, nuts, hair, skin, and leather. The carbon-14 content of sea shell is considered to be reliable if the shell is coarse-grained, but fine-grained, recrystallized shell is believed to be unsatisfactory.

Other factors which may account for erroneous dating results may arise from the presence in test samples of modern roots, rootlets, fungus growths and to carbonates and humic acids due to soil-water leaching into the test samples in situ. Also, improper collecting and preserving procedures can readily lead to undesirable results in the counting data. Radiocarbon dating laboratories must devote considerable time to the pretreatment of samples to eliminate the effects of as many of the above sources of error as possible. Further potential sources of error which must be taken into account in the final handling of the counting data are the effects of hydrogen bomb tests on the carbon-14 content of the air, and the dilution of the atmospheric carbon dioxide by large quantities of carbon dioxide from the burning of fossil fuels.

The carbon dating method, like others employed in age-dating of ancient objects, cannot tell one that a certain Egyptian king was born at nine o'clock in the morning on some date in 3000 B.C., but rather that he lived within a rather narrow span of time hundreds of years before the present. Dr. Edwin Olsen, an expert in radiocarbon dating, who is presently on the staff at Whitworth College, has so aptly stated the case in the following manner:

> "To some, radiocarbon dating may seem like the wonderous lamp which was Aladdin's; rub it and out comes the genie, his arms laden with enough chronologic information to light up the past as brightly as if we possessed a time capsule buried at the World's Fair in Cairo, year 2000 B.C. Others may consider the radiocarbon method much as the ancient Greeks viewed the Delphic oracle; he speaks and the matter is settled. But the more realistic are aware that scientific tools--such as radiocarbon dating--have a scope and a certainty which are only as good as the theory and measurements that go into them and the skill with which they are used."

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