

Chiefs

C. Hart Merriam  
Papers  
BANC MSS  
80/18 c

Charles H. Chamberlain, who was gold-mining from 1849-57, in a statement of his recollections of California, given to the Bancroft Library, says:

"In early days, the Paulo Indians on the Mokelumne were ④ hostile, and we had to watch them, but they made no attack. About '56 and '57, Joaquin was rather troublesome around Columbia ((Tuolumne Co.) at Saw Mill Flat and he started to burn it at one time, and a lot of us went over one night to guard it. He was a celebrated murderer."

Charles H. Chamberlain, Statement of, p. 4, MS, Bancroft Library, 1877.



NAMES OF SHOSHONEE CHIEFS  
(In Nevada in 1853)

<u>Band</u>	<u>Name of Chief</u>
West of Thousand Spring Valley	Too-ke-mah
On Humboldt River (numbering 500)	Ne-me-te-kah
At first crossing on Humboldt River (numbering about 200)	Paut-wa-a-raute
Near Stony Point (numbering about 450)	Oh-hah-quah
<u>Bannacks</u> , on Humboldt River	Te-ve-re-wena

J. H. Holeman, Indian Agt. Utah Territory in H. R. Ex.  
Doc. 1, 33d Cong., 1st Sess., 443-447, 1854.

Marin, Chief of Lacatuit Indians

Chief of Lacatuit Indians, Marin County, between 1815  
and 1824.

--History of Marin Co. 88, San Francisco 1880.

Lecatuit

(For further account, see slip on ~~Indians~~ of Marin Co.)

CHIEF'S NAME

L. K. Wood and party while exploring the vicinity of Humboldt Bay in 1849 were visited by an Indian chief at Humboldt Point. His name was Ki-we-lat-tah. A friendly and quiet Indian.

Leigh H. Irvine's History of Humboldt Co. p. 38, 1915. Historic Record Co., Los Angeles.



## Chiefs of the Shasta Indians

<sup>p. 120</sup> "The tribe was broken up into distinct bands, each having its chief. That in Scott valley <sup>p. 121</sup> was ruled by Tyee John, son of the old head chief; at Yreka, Old Tolo, always a firm friend of the whites; in Shasta valley, Tyee Jim; on the Klamath, Tyee Bill; on Siskiyou Mt, Tipsu Tyee (the hairy chief); in Rogue River valley, Tyees Sam and Bill".

- History of Siskiyou Co. 120-121, Oakland, 1881.  
By Harry L. Wells.

(For further account, see slip on Shasta Indians.)



Chief of Si-yak-um-na tribe, Jose Jesus.

Spoken of as the "celebrated chief of the Si-yak-um-na tribe", in 1841- 1842. --Frank T. Gilbert in History of Placer Co. p. 32, Oakland, 1882.

Also ~~chief~~ Ho-za Ha-soos. --Ibid 34.

Mention is made of "Estanisloa, the former chief of the Si-yak-um-nas". --Ibid 34.

(For more detailed information, see slip on Si-yak-um-na tribe.)

## INDIANS OF UTAH TERRITORY

"Some of the bands of the Utahs are the Utahs proper, now under Arapeen and San-e-ette; Yampah Utes, under White Eye; Timpanogas Utes, under Peteet-neet and Washear; Pe-ar-a-wats; Pau-van-tees, under Kanoshe; Pah Utes; and Piedes."

—Route from Liverpool to Great Salt Lake Valley, Ed. by

James Linforth, 104, London, 1855.



Maures'-to, Chief of the Ya-che-kum-nas

Maures'-to, the last chief of the Ya-che-kum-nas, and  
his rancheria, where Stockton now stands, called Yá-che'-co.

- History of San Joaquin Co. 13, Oakland, 1879.

By Col. F.T. Gilbert.

Thompson & West, Pubrs.

(For further account, see slip on \_\_\_\_\_).

Chief Tolay

"The road from Lakeville over the mountain, between Petaluma and Sonoma creeks, passes former Lake Tolay, of which Padre Altimira, in his mission-founding expedition in 1823, said: 'We found on said hillock, a little further on, the large lake of Tolay, so called after the chief of the Indians, who in former times settled there.'"

--Robert A. Thompson: Historical & Descriptive Sketch of Sonoma Co. 52, Phila. 1877.

*Def. Chief*



## Indian Chiefs

"Chief among the Sonoma tribes was Solano and his band whom Padre Altimira found in the Valley of the Moon... After the passing of the mission and during the military regime, General Vallejo found the unusually intelligent Chief Solano a valuable assistant in handling the bands throughout Sonoma."

Tom Gregory: History of Sonoma Co. p. 52, Los Angeles, 1911.

Historic Record Co.

## INDIAN CHIEFS

\*Among the Indians who were educated at the Missions, two became prominent — Stanislaus, at the Mission of San Jose, after whom Stanislaus River and county were named; and Yoscolo, at the Mission of Santa Clara. They were educated by the Fathers. Both showed ability and promise in their youth. Yoscolo when 21 years of age was made the chief of the whole body of Indians at the Mission, responsible of course to the Padres for the management of them. In this position he displayed tact in the control of the Indians.\*

—Wm. Heath Davis: Sixty Years in California, 334, San Francisco, 1889.



Chiefs of the Mo-kel-kos tribe.

The Mo-kel-kos, whose territory extended from the Mokelumne River and Dry Creek on the north to near Stockton on the south, "had 4 chiefs, all of whom were of one family: Senato, Soweno, Antonio, and Maximo. The last named is still living on the Megerle ranch near Lockeford".

—Geo. H. Tinkham: History of Stockton, 21, San Francisco 1880.

(For further account, see slip on Mo-kel-kos.) San Joaquin Co.)

Marin, Chief of Lacatuit Indians

Chief of Lacatuit Indians, Marin County, between 1815  
and 1824.

--History of Marin Co. 88, San Francisco 1880.

(For further account, see slip on Indians of Marin Co.)



Sem-Yeto, Chief of the Suisuns.

Afterward the chief, Sem-Yeto, received the baptismal name of Solano. —History of Solano Co. 17, San Francisco 1879. (Wood, Alley & Co. Pubrs.)

In 1817 when a military expedition was exploring the country, they were attacked by the Suisun tribe, then headed by their chief, Malica. —Ibid 17.

(For further account, see slip on Suisuns.)

Chief of Chocuyens, called Sonoma.

Chief of the Chocuyens in Sonoma Valley was called Sonoma by Jose Altimira, the priest in charge of the mission established there in 1824. Later the tribe took the name Sonoma.

—Robt. A. Thompson: Historical & Descriptive Sketch of Sonoma Co. 8, 17, Phila. 1877.

"This tribe [Chocuyens] was subject to a great chief named Marin de Licatiut, who made his headquarters near Petaluma". — Ibid 17.

(For more detailed account, see slip on Sonoma Co. Indians.)

Chief's Name.

Francisco Solano was head of all the tribes from Bodega Bay to the Sacramento river. His original name was Sam Yoto, but the mission fathers at Sonoma caught him, baptized him, and gave him the name of their mission.

Tom Gregory: History of Yolo Co., p.10, Los Angeles, 1913.



Al-wī'no, Chief of the Má-chā'-kos

—History of San Joaquin Co. by Col. F. T. Gilbert, 14,  
Thompson & West, Pubrs. Oakland, 1879.

(For further account of Ma-cha-kos, see slip on *Mokelumne River Indians*.)



Mewan

Ah-ä-moon and Alino, Chiefs of the La-la tribe

--History of San Joaquin Co. by Col. F. T. Gilbert. 13,  
Thompson & West, Pubrs. Oakland, 1879.

(For further account of the La-la tribe, see slip on Mokelumne River  
Indians.)

Deaf. chief

Jot, Chief of the Wy-cows

"Jot was the chief of the Wy-cows contemporaneous with  
Sioc". — Wills S. Green: History of Colusa Co. 33, San Francisco,  
1880.

(For further account, see slip on Wy-cows).

**Chief Ki-we-lat-tah**

Chief of the tribe of Indians near the southern part of  
Humboldt Bay.

--History of Humboldt Co. 90, San Francisco, 1882.  
W.W.Elliott & Co. Pubrs.

For further account of these Indians, see slip on  
Indians of Humboldt Co.(narrative of L. K. Wood).



## Chiefs of Klamath River Indians

Among the Indians who may be regarded as chiefs in the Klamath River tribe were Ken-no-wah-i, or 'Trinity Jim', Zeh-frip-pah, who lived on the Upper Klamath, Mo-roo-kus, and Kaw-tap-ish, on the Lower Klamath."

-History of Humboldt Co. 152, San Francisco, 1882.  
W. W. Elliott & Co. Pubrs.

For further account of these Indians, see slip on Indians of Humboldt Co.

C H I E F

Alwino, chief of the Mā-chā-kos.--

History of San Joaquin Co. by Col.F.T.

Gilbert, 14, Oakland, 1879.

CHIEF OF WALLAS

Old Manuel, chief of the Wallas, lived at  
Knights Ferry.-- History of Fresno Co. 167,  
San Francisco, 1882. W.W.Elliott & Co.Pubrs.

Manuel, chief of the Wallas



Chief's name

"Ten Bears, the old (Yamparica) Comanche chief." --

Dr. W.E. Doyle, Indian Forts & Dwellings,  
Ann. Rept. Smithsonian Inst. (for 1876)  
p. 463, 1877.

CHIEF'S NAME

"Mah-wey, (Shaking-hand,) chief of the Castcha-techka  
(Buffalo-eater) band. <sup>of Comanche</sup> -- Dr. W.E. Doyle, Indian  
Forts and Dwellings, Ann. Rept. Smithsonian Inst.  
(for 1876) p.464, 1877.

Co-shack-a-ma , head chief of Apache-Mojaves  
died Sept. 25, 1868. -- 'Guardian', Oct. 3, 1868



**POMOAN CHIEFS**

Gen. M.G. Vallejo and Salvador  
Vallejo in Bancroft Library MSS give  
accounts of or mention Pomoan chiefs  
*of Pomoan & Wintun stocks*  
as follows:

Peregrino, Zamay and Tuerto (Pomoan?  
South of Clear Lake and NE of Suysun).--  
Salvador Vallejo, Narrative of  
Ancient Days in Calif., 86, 1874.

Succara (Satiyomies): M.G. Vallejo,  
Hist. Calif., 3: 22-27, 1875.

## MOKALUMNE CHIEF, POLOK

Leonard Kip in 1850 published a small pamphlet on his recollections of the gold mines of California, where he worked for some months the preceding year, in which he includes notes on the Indians near the mines on the Moquelumne River.

At one time he states that his party hesitated to go to a new mine because the Indians in its vicinity comprised a tribe deadly hostile to the whites, and their chief, named Polok, was notorious as an unrelenting enemy.--

Leonard Kip, California Sketches, p.43,  
1850.



## INDIAN CHIEFS

Domingo, in 1839 chief of rancheria Gulmich apparently in Tulare Lake region.

Lisesh or Licesh, in command of Indians from 5 rancherias who captured Domingo's rancheria of Gulmich for the Spanish in 1839. The Indians from each of these 5 rancherias were led by their own chief, two of the chiefs being named Tachi and Telamini.

Inocente Garcia, Hechos Historicos de Calif.,  
MS, Bancroft Library, pp. 75-76, 1878.



## CAJUENCHE CHIEF

Antonio Francisco Coronel (who settled in California in 1834) in Recollections dictated for the Bancroft Library states that in 1839 Coyote was the name of the chief of the Cajuenes.

Antonio Francisco Coronel, Cosas de California [California Affairs], MS, Bancroft Library, p. 189, 1877.

## CHIEFS ANTONIO GARRA & JUAN ANTONIO

Maj. Gen. H. J. Bean in a letter to Gov. John McDougall of California, dated Rancho del Chino, Jan. 1, 1852, says:

"I have made two expeditions into the mountains as far as San Geronimo, on the first of which I succeeded in getting possession of the chief Antonio Garra, the ringleader of all the present difficulties; on the second expedition I brought away with me 11 Indian prisoners, 5 men and 6 women and children belonging to the tribe of Antonio Garra, whom I secured through Juan Antonio, chief of the

Cahuillas. -- Maj. Gen. H. J. Bean, letter to Gov. John McDougall, dated Rancho del Chino, Jan. 1, 1852. Copy in Hayes' Scrapbooks, Bancroft Library, 39:18.



THE UTE CHIEF WAH-KER  
(Several spellings on record)

Wahker, a leading war chief of the Ute from the middle forties until sometime before his death (on January 29, 1855) is reported to have planned, in the summer of 1850, a massacre of the Mormons at Fort Utah.

¶ He was a bitter enemy of the Shoshones and planned a campaign against them, but Brigham Young would not consent. --Peter Gottfredson, History of Indian Depredations in Utah, pp. 35-36, 1919.



## CHIEF OF THE MOQUELEMES

Jose Maria Amador (who was a soldier in the San Francisco Company from 1810-1827 and who took part in many campaigns against the Indians), in Recollections given to the Bancroft Library, states that Heleno was the chief of the Moquelemes who aided them in a campaign against the Indians in 1828.

Jose Maria Amador, *Memories sobre la Historia de California* [Memories about the History of California], p. 37, MS Bancroft Library, 1877.

## LASSIK

Chief Lassik, sometimes called Sol-che-che but whose correct name was Sa-tah-bin-tah, originally came from Blocksburg and was a member of the Kos-kah-ting or Blocksburg tribe.

(Information from Fred Maj, a Tsen-nah-ken-nes, commonly called Ni-lak-ka.)



## OWENS VALLEY CHIEFS

W.A. Chalfant in his 'Story of Inyo (1922) gives information on the following chiefs or leaders of Owens Valley Indians in their struggles against the settlers (1861-1865):

Captain George or Chief George leader of Indians in midsouthern part of valley. Rancheria on George Creek, west of present Manzanar townsite.--pp. 100, 124, 125, 133, 134, 137, 140, 143, 148-9.

Joaquin Jim Fresno renegade, outlawed by his own people; "leader of the tribe in southern Mono, which then included the valley as far south as Big Pine Creek."-- pp. 100, 107, 148, 154, 190.

Chief Dick & Chief Little Dick signers of treaty with settlers, Jan. 1862, p. 100.

Chief Shondow, slain in spring 1862, p. 102.

Chief Butcherknife, slain April 1863, p. 144.

Chief Bigfoot, p. 159.

Joe Bowers, pp. 179-180.



**OLAMENTKO CHIEF**

Gualiuela or Gualinela, Chief of  
Tiutuyo, rancheria of 43 Indians at  
Bodega Bay in April 1833. Account in  
M.J. Vallejo, letter to Gov. Figueroa,  
May 6, 1833. In Documentos para la Historia  
de Calif., MSS Bancroft Library, 2: 141-2,  
1833-1834.

Carded

JOSÉ ZAPATERO, CHIEF OF TULARE INDIANS

The 'Evening Star', Nov. 9, 1851, speaks  
of José Zapatero, one of the principal  
captains of the Tulare Indians".

Hayes Collection [Scrapbooks, Bancroft Library]  
Vol. 39, p. 118.

place of paper?

POEWIN CHIEF, JESUS LOUAILE.

The Baptism Records of Sonoma Mission, record  
June 7, 1835, Jesus Louaile, 44 years old, "Chief  
of the rancherias Ansac and Lihuay".

Libro de Bautismos de la Mision San Francisco  
Solano, 1824-1839, Original MS, Bancroft Library.



Menaki, Chief of Lileek people.--Gifford, Pomo L

Lands on Clear Lake, p. 78, 1923.

EL-LEM CHIEFS MENTIONED BY GIFFORD

Balakkak. .El-lem chief. Gifford, Pomo Lands  
on Clear Lake, p.83, 1923.

Gucibuk. . .El-lem chief.--Gifford, Pomo Lands  
on Clear Lake, ftnote. p. 83,

Tsebik . . .p. 88,

Cotboi. . . p. 88.

Wilbak. . . p. 88.

Tceptcebi. . . 89.

**CHIEF POKATELLO OF IDAHO**

**Chief Pokatello (often spelled Pocatello) of the Idaho Bannet is mentioned as escaping after the battle on Bear River, Jan. 29, 1863.**

**Peter Gotfredsen, Indian Depredations in Utah, pp. 113, 279, 1919**



## RAPHERO, A MOKELKO CHIEF

Frank T. Gilbert, in his History of California (1513-1850), states that when Captain John A. Sutter marched to Monterey to aid General Micheltorena in January 1845, he took with him about "150 Indians armed with muskets, under the leadership of Raphero, a

Mokelko chief." --Frank T. Gilbert in Gilbert, Wells, and Chambers, History of Butte County, California, Vol.1, p.45, 1882.

Patwin

GRAND ISLAND CHIEF 'Him Boo

Justus H. Rogers in his 'Colusa County, Its History and Resources,' publishes a biography of Hon. C. J. Diefendorff, in which he gives the following note:

"While acting as Deputy Indian Agent, [379] he [Mr. Diefendorff] was appointed by Chief 'Him Boo' to give instructions to his son Capitan Bill. The old chief called his people around him just before his death and gave Diefendorff in charge of them. To this day the older Indians on Grand Island salute Mr. Diefendorff as 'Him Boo.'

Justus H. Rogers, Colusa County, Its History and Resources, p.379, 1891.



"CO-CO-TU-PA," CHIEF OF THE  
McCLOUD AND PIT RIVERS

The Red Bluff Semi-weekly Independent,  
May 23, 1864, publishes the following:

"This morning our town was somewhat  
enlivened by the appearance of about 150  
Indians, in warlike trim. They come from  
Pit River, Shasta and Cottonwood, and are  
on their way to chastise the Yuka tribe,  
who murdered 'Co-co-tu-pa,' Chief of the  
McCloud and Pit Rivers, about 4 weeks since.  
They are all friendly Indians, and bear a  
document to that effect from Major Reading.  
They are principally armed with bows and  
arrows.--Red Bluff (Calif.) Semi-weekly Inde-  
pendent, May 23, 1864.



Carded

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weeks since. They are all friendly  
Indians, and bear a document to that  
effect from Major Reading. They are  
principally armed with bows and arrows.--  
Red Bluff (Calif.) Semi-weekly Independent,  
May 23, 1864.

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LALAC, KLAMATH LAKE CHIEF

The San Francisco Chronicle, May 20,  
1854, reprints the following from the  
Yreka Herald, May 13, 1854.--

"It is rumored that old Lalac, a  
Klamath Lake chief, is on his way with  
a thousand warriors to help clean out  
the Shastas. He may, perhaps, have  
50. Tyce Bil, the Shasta chief, is  
camped near this place with a few  
warriors, and says he will fight them."  
--San Francisco Chronicle, May 20, 1854  
(from Yreka Herald, May 13, 1854).



## PIT RIVER INDIANS ON KLAMATH RESERVATION

A. S. Gatschet, in his 'Klamath Indians of Southwestern Oregon' (Contr. N. Amer. Eth., Vol. 2, Pts. 1 & 2, 1890) states that 'Pit River Charley' was "headman of the few Pit River Indians settled on the Klamath Reservation" and that his lodge was a mile south of the Agency buildings.--Pt. 2, p. 268.

Also, that there were "only two Pit River families living on the whole reservation".--Pt. 1, p. 62.



Name of Chief of Tu'kuari'ka band of Shoshoni.

Hoffman states: "The present head of the band [Tu'kuari'ka] Tendoi, being also chief of the tribe. By birth he is a half Banak - or more properly Panai'ti."

Proc.Am.Philos.Soc., XXIII, 298, March 8,  
1886.

INDIAN CHIEF

"Sorum, the head of the Wallipies"-----  
letter from D.H.Smith to A.Pinart, Hardy-  
ville, Arizona, Sept.10, 1816, MSS. no.  
34994, Bancroft Library, ~~Cop.~~

## SAN LUISEÑO RANCHERIAS AND CHIEFS

A certificate given by Thomas H. Bush, county judge of San Diego, given to a delegation of Indians and published in the San Diego Union, July 7, 1870 reads in part:

"On this day before me present themselves Marcello Colures, Juan de Dios, Jose Maria Moro, Pablo Ta-bu-ca-ma-lis, (Carlos Ayal, Antonio Palejos, Bruno Cuasita) Anastacio Gayo, Francisco Solano, Juan Uba, Joaquin Ucawitch (proxy for Manuel Largo), Captains of Pala, San Ysidro, Potrero, La Joya, Agua Caliente, La-pichi, Aquanga, La Puerta Chiquita, Puerta de la Cruz, Temecula, Vallecitos, Pawii: and declare that the people have elected for General, Olegario Sali. . ."

This clipping from San Diego Union, July 7, 1870 is in  
Hayes Collection, vol. 38, p. 112 - Bancroft Library.  
(Scrapbook)



## POOEWIN CHIEFS

Gen. M.J. Vallejo and Salvador Vallejo in Bancroft Library MSS give accounts or mention of Suisun <sup>& other</sup> <sup>& bands</sup> chiefs, as follows:

- Charace (Latatoys) -- M.G. Vallejo, Hist. Calif. 1:151-6, 1875.  
Coupay (Assatoys) -- Ibid 1:151-6.  
Coupay 2d (Pistoy) -- Ibid 1:151-6.  
Guailo (Charuptoy) -- Ibid 1: 151-6.  
Guecuch (Cherutoys) -- Ibid 1: 151-6.  
Lakay (Topaytoys) -- Ibid 1:151-6.  
Malaca (Suisun & adjacent rancherias) -- Ibid 1:151-6.  
Motti or Moti (Yoloytoys, 1817) -- Ibid 1: 151-6.  
Myum Yeto (Chiutoys) -- Ibid 1: 151-6.  
Rulpula Ibid 3: 14, 1875.  
Sam Yeto (Suisun) Ibid 1:8  
Solano (Sonoma) Ibid 3:14. Also Salvador Vallejo, Narrative of Ancient Days in Calif. 37-91-98, 1874.  
Zampay (Yolotoys) Salvador Vallejo, Narrative of Ancient Days, 87-95, 1874.



## MEWAN CHIEFS

Gen. M.G. Vallejo and Salvador Vallejo in Bancroft library MSS give accounts <sup>(name of)</sup> of ~~or mention~~ Mewan chiefs <sup>in SF Bay region</sup> as follows:

- 1 Gualiuela or Gualinela (Tintuya rancheria at Bodega<sup>Bay</sup>).-- M.G. Vallejo, Documentos para la Historia de Calif., 2:141, 1833-1834.
- 2 Marcelo ("celebrated chief of the Cholgone and Solbone tribes who lived on Mt. Diablo).-- M.G. Vallejo, Hist. Calif., 1: 146, 149, 1875.
- 1 Merin (Licatiut).-- Ibid 1: 144-5, 148-9, 1875.
- 2 Narciso (Ocheames).-- M.G. Vallejo, Hist. Calif., 4:38, 125, 1875. ("Lachymas" tribe spoken of as "Narcisos".-- Salvador Vallejo, Origen de los Indios de Calif., 4, 1875).
- 1 Pomponio (Licatiut).-- M.G. Vallejo, Hist. Calif., 1:148-9.
- 1 Quintin (Licatiut).-- Ibid 1: 146-8.



HOO PAH CHIEF AH-ROOK-KOOS

The Daily Alta California, November 8, 1851, publishes a letter from one of its correspondents. "T.J.R." dated Scott's Valley, October 24, 1851, giving the "tribes or bands" with whom Col. Redick McKee, Indian Commissioner, had succeeded in making a treaty, in which he gives the following 12 bands comprising the Indian nation known as the Hoo paha or Trinity Indians and controlled by Chief Ah-rook-koos:

O-ka-no

Kas-lin-ta

A-gar-it-is

Ta-hail-ta

Up-la-goh

Sock-kail-kit

Wee-la-pooth

Tash-wan-ta

Ka-la-te

Wish-pooke

Pates-oh

Me-em-na

Daily Alta California, Nov. 8, 1851.



## SHO KUP, CHIEF OF THE SHOSHONES

The Red Bluff (Calif.) Independent, August 20, 1861, and Dec. 31, 1861, gives the following notes on Sho-kup, chief of the Shoshones:

"Sho-Kup, chief of the Shoshones, the largest and most influential of the tribes of red men between the Sierras and Salt Lake, will shortly visit this city [San Francisco], guest of the Overland Telegraph and Mail Companies. Sho-Kup is a great chief, and in connection with Winnemucca, controls the destinies of both the mail and telegraph. He has evinced the most friendly disposition toward both enterprises, and it is asserted that no troops will be required between this and Salt Lake, as implicit confidence is placed on the friendship of Sho-kup. 2--Red Bluff (Calif.) Independent, August 20, 1861 (from San Francisco Call).

"The Territorial Enterprise announces the death of Shokup, Chief of the Shoshones. He was a noble old fellow, and noted for his friendship for the whites. His successor is hostile to encroachment upon the territory of the tribe by the pale faces, and may give the settlers of Nevada Territory some trouble."--Red Bluff (Calif.) Independent, Dec. 31, 1861.



## CAHUILLA CHIEFS

Major S.P. Heintzelman in reports of an "expedition against the Ca-hui-ya and other Indians, living in the mountains east of Agua Caliente, and west of the desert", 1851 (MSS, Old Files Division, War Dept) gives notes on the following important Indians and chiefs:

"Antonio Garra, the chief at Agua Caliente, and belonging to the Cow-wie tribe numbering 3000 warriors, had invited all the Indians in Southern California, and some in Lower California to join him in driving out the Americans."--Letter to Adj. General, Dec. 3, 1851 (H 473 1851).

Juan Bautista, "chief of a village a few miles higher up [than the village of the Coyotes 15 miles east of Agua Caliente] in a branch cañada".

"We killed several Indians: Cha-pu-li, the chief of the [Coyote] village, and Ce-ci-li, Antonio Garra's principal councillor."--Letter to Capt. F. Steele, Dec. 21, 1851 (H 35 1852).

"Razon's village, 2 days' journey on the desert"[from the Coyote Village].

San Isidro Indians: Juan Bautista or Coton; Lewis, the Alcalde of Agua Caliente; Francisco Mocate, Captain of San Isidro; Jacobo or Qui-sil.--Letter to Capt. F. Steele, Dec. 30, 1851 (H 35 1852).



## KLAMATH LAKE CHIEFS

A. S. Gatschet in his 'Klamath Indians of Southwestern Oregon' (Contr. N. Amer. Eth., Vol. 2, Pts. 1 & 2, 1890), gives information concerning the following Klamath Lake chiefs:

Ben, subchief at Yainax.--Pt. 2, p. 26.

Dave Hill (Lúldatkish, Wawáliksh, Wawaliksh-Skafatko), subchief and interpreter at Klamath Agency.--Pt. 1, p. 6; Pt. 2, pp. 25-8; 201, 477-8.

Kildamtoh (Old Brave, Captain George), Klamath Lake warrior.--Pt. 2, p. 130.

Lánk-Tobán (Long John), subchief.--Pt. 2, p. 181.

Lelékash (Leléks, Léléksh, Shmókaltko). Head-chief. Signer of 1864 treaty.--Pt. 2, pp. 186 & 335.

Lílo, (Lílu).--Pt. 1, p. 62; Pt. 2, p. 191.

Link River Jack, subchief.--Pt. 2, p. 191.

Littlejohn, Chief of Lake Indians at Yainax.--Pt. 2, p. 191.

Mbúshaksháltko (Poosaksult).--Signer of 1864 Treaty.--Pt. 2, p. 212.

Núksam ('Dried Fish'). Signer of 1864 treaty.--Pt. 2, p. 249.

Skatiagitko (Skiatic). Signer of 1864 treaty.--Pt. 2, p. 323.

Tatapkaksh (Tatetpas, 'High Cheek Bones').--Signer of 1864 treaty.--Pt. 2, p. 393; Pt. 1, p. xxxvi.



## SNAKE INDIAN CHIEFS.

A.S.Gatschet in his 'Klamath Indians of Southwestern Oregon' (Contr. N.Amer.Eth., Vol.2, Pts. 1 & 2, 1890), gives information concerning the following chiefs of Snake Indians:

Kiletoak, headman of Yahúshkin tribe; signer of treaty of 1864.-- Pt.2, p.156.

Nhítsá-Tsúks (Nhítsatko-Tsúks; 'Dry-leg').-- Pt. 1., p.32; Pt. 2, p.246.

Panaina (Pauline, Paulini, Palihi), Chief of Walpápi band of Snake Indians.--Pt.1, p.lxi; Pt.2, p.258.

Ochoho, Snake chief living in Surprise Valley, Calif.--Pt. 2, p.345.

Tohaktot, Yahúskin Indian, Chief of Snake Indians at Yainax.--Pt. 2, pt. 427.

Tchatchaktchaksh, Snake chief who deserted from Klamath Reservation accompanied by his warriors. Pt. 2, p. 429.



## MODOK CHIEFS

A.S.Gatschet in his 'Klamath Indians of Southwestern Oregon' (Contr. N.Amer.Eth., Vol.2, Pts. 1 & 2, 1890) gives information concerning the following chiefs of Modok Indians:

Bāntcho, Modok warrior.--Pt.2, p.26.

Bogus Charley, Chief of exiled Modoks in Indian Territory. So called because his father lived on Bogus Creek, Calif.--Pt.2, p.26.

Bostin Charley (Boshtināga), Modok warrior.--Pt. 2, p.27.

Captain Jack ( Kintpuash, Kreintpoos, Keintpoos) Principal leader in Modok War 1872-73.--Pt.1,p.46, lixi; Pt.2, pp. 99 & 131-2.

Johnson, head chief of Modoks at Yainax.--Pt.2,p.99.

Kiūkamtch ('Old Conjurer'), War chief of Klamaths and Modoks.--Pt.1,p.26; Pt.2, p.135.

Kuatilak (George K.), subchief of Modoks at Yainax.--Pt. 2, p. 156.

Ndsakiaks (Chuckeiox), Signer of Treaty of 1864.--Pt. 2, p. 234.

Skontchish, John.--Pt. 2, p.320.

Skókatk, chief.--Pt. 2, p.323.



NAMES OF "SHOSHONEE" CHIEFS  
(In Nevada in 1853)

<u>Band</u>	<u>Name of Chief</u>
West of Thousand Spring Valley	Too-ke-mah
On Humboldt River (numbering 500)	Ne-me-te-kah
At first crossing on Humboldt River (numbering about 200)	Paut-wa-a-raute
Near Stony Point (numbering about 450)	Oh-hah-quah
<u>Bannacks</u> , on Humboldt River	Te-ve-re-wena

J. H. Holeman, Indian Agt. Utah Territory in H. R. Ex.  
Doc. 1,33d Cong., 1st Sess., 443-447, 1854.



Midos

CAPT. WEMAH'S CAMP

GRASS VALLEY

In 1851 L. M. Schaeffer visited an Indian camp near Grass Valley called "Capt. Wemah's Indian camp".

"Their encampment was located in a lovely valley, through which ran a never-failing stream. Their council house was in the centre of the camp; around it were the wigwams, constructed of bark, each having a hole in the centre of the roof, through which issued the smoke from the fire beneath."

-L. M. Schaeffer: Sketches of Travels in South America, Mexico, and California, 119, 1860.

"Chief Wolupe, next in rank to Capt. Wemah." -Ibid, 171.



## TUOLUMNE CHIEFS

Adam Johns<sup>on</sup>, who gives a vocabulary of the "Tuolumne tribes, or bands of Indians residing on the Tuolumne river," says:

"Cornelius is their 'great chief.' Under him there are six sub-chiefs, or captains, belonging to different ranchoras, which contain from 50 to 200 Indians, men, women, and children. The names of those sub-chiefs, or head men are as follows:--'Cypriano,' of the 'Nu-mal-tachee' band; 'Mul-latte-co,' of a band of the same name; 'Nu-mas-se-can-no,' of the 'A-pang-as-se;' 'La-pap-poo,' of the 'La-pap-poos;' 'Haw-haw,' of the 'Ap-laches;' 'Ty-poxe,' of the 'Si-yante' band, known as the Typoxies."

Johns<sup>on</sup> adds that the vocabulary given [pp.408-412] "is common to all these bands except the Haw-haws, who have resided farther in the mountains."

--Adam Johns<sup>on</sup>, in Schoolcraft, Indian Tribes, IV, 407, 1854.



## UTAH CHIEFS

Brigham Young, in his account of the Shoshone-Utah treaty of Sept. 3, 1852, at Salt Lake City (?), mentions the following as present on the part of the Utahs: Wachor Sourette Antazo, [apparently, from what follows, three chiefs], <sup>and</sup> Anker-howwitch "Arrow-pine being sick". Later speaks of "Wachor" and of "Sow-er-ette", the latter "being the chief of the Uinta Utahs."

--Brigham Young, in Schoolcraft, Indian Tribes, IV, 596,  
1854.



## SHOSHONE CHIEFS

Brigham Young, in his account of the Shoshone-Utah treaty of Sept. 3, 1852 (at Salt Lake City?), mentions the following as present on the part of the Shoshones: Wah-sho-kig, To-ter-mitch, Watche-namp, Ter-ret-e-ma, and Pershe-go.

--Brigham Young, in Schoolcraft, Indian Tribes, IV, 596, 1854.



CHIEFS

In the Army Medical Museum, No.963 is "Cranium, with part of the skeleton of a Pah-Ute brave, from a rock-grave, Beaver, Utah.....The Mormons give Nabbymunok as the name of this brave." Mark Sibley Severance and H.C.Yarrow : Notes Upon Human Crania & Skeletons Collected by the Expeditions of 1872, 1874; [Wheeler] Survey W. 100th Meridian, Vol.VII Archaeology, 393-394, 1879.



## YUBA CHIEF

CALIFORNIA

In a summary of California history in the Annals of San Francisco, is an illustration showing "Wahla, chief of the Yuba tribe, --civilized and employed by Mr.S.Brannan," beside "a partly civilized Indian" and "a wild Indian." From daguerreotypes by Mr.W.Shew.

--Annals of San Francisco, by Frank Soule, J.H.Gihon, and Jas.Nisbet, 52, 1855.



## CHIEFS NAMES.

In his journal of November, 1846, Edwin Bryant writes: "Messengers were sent . . . to the Indian chiefs on the San Joaquin river and its tributaries, to meet me at the most convenient points on the trail, with such warriors of their tribes as chose to volunteer as soldiers of the United States. . . . I rode forward, on the morning of the 17th, to the Michelemas river; (twenty-five miles from the Coscumne,) where I met Antonio, an Indian chief, with twelve warriors. . . . The names of the warriors were as follows:- Santiago, Masua, Kiubu, Tocosso, Nonslo, Michael, Weala, Arkell, Nicolas, Heel, Kasheano, Estephen. . . . On the 18th we met, at the ford of the San Joaquin river, another party of eighteen Indians, including their chiefs. Their names were -- Jose Jesus, Filipe, Raymundo, and Carlos, chiefs; Huligario, Bonefasio, Francisco, Nicolas, Pablo, Feliciano, San Antonio. Polinario, Manuel, Graviano, Salinordio, Romero, and Merikeeldo, warriors."

Bryant: What I Saw in California, 359, 1848.



INDIAN CHIEFS

NEVADA, UTAH

Lieut. Geo. M. Wheeler in a report of a reconnaissance through S & SE Nevada notes the following Indian chiefs:

Blackhawk, leader of some 200 Shoshone Indians who were tilling the land in Snake Valley;

Big Horse, Gosiute Chief, who with a band was at Deep Creek, to the N of the Snake Range;

Blackhawk, Pahvant chief;

Toshob, chief of the Utes or Piedes bands on the Muddy, known to have been the leader of the Indians engaged in the Mountain Meadow massacre;

Tercherum, principal chief of the Pah-Utes or Water-Utes.

Lieut. Geo. M. Wheeler, Preliminary Report of Reconnaissance through S & SE Nevada in 1869,<sup>4</sup> 36-37, Washington, 1875.



An unknown writer in a letter from San Andreas,  
*Calaveras County,*  
California, dated October 18, 1856, states:

"I became acquainted with some of the chiefs  
such as P-tonki, who was the greatest chief of the  
Tulares, Panwache, and Fredericka, the latter a Mission  
Indian. . . . .

The tribe of Indians around here are fine  
looking athletes of a more than medium hight. Their  
lingo is less of a guttural than the sea-coast tribes.  
I think there are about 200 in the vicinity. Old 'Polo'  
used to be their chief. Polo and his tribe were, in  
1850-51, horse-thief Indians. Polo was killed in 1852,  
on the Moquelumne river, by an ex-lieutenant of  
Stevenson's regiment."

--A. S. Taylor, California Farmer, Dec. 7, 1860.



I S H A C K, HEAD KLAMATH <sup>River</sup> CHIEF

(Yurok & Karok)

"The most important" of the chiefs signing treaty at forks of Klamath and Trinity Rivers, Nov. 4, 1851.--Gibbs, in Schoolcraft, Indian Tribes, III, 166, 167, 173, 1853.



## DEATH OF YOSCOLO (Olhonean)

Clemente Espinosa, soldier at Monterey in 1836, in notes given to the Bancroft Library, 1877, speaks as follows of the death of Yóscolo. Espinosa said he was with the soldiers and Indians that pursued him.

"Yóscolo died in a hand to hand combat with a chief of (2) the tame Indians of Santa Clara, called Silvano. Afterward this Indian was treated with much consideration by Lieutenant Mariano Estrada, administrator of Santa Clara." [Note says that the remainder of Espinosa's story is in accord with that of Franco. Palomares]

Translation from  
Clemente Espinosa, Breves Notas Historicas, pp. 2, MS, Bancroft  
Library, 1877.



## MEWAN CHIEFS

Card

The Daily Alta California, May 31, 1851, gives the following notes concerning the chiefs of the tribes who signed the treaty at Dent's crossing on Stanislaus River, May 28, 1851, by which they were located on a tract between Stanislaus and Tuolumne rivers.--

"Old Cornelius, of the Tuolumne tribe, has been given a league of land covering the tract he has been living on and cultivating for many years. The following is a list of the tribes and their several chiefs:

Ose-Trinidad, of the We-chil-la's; Yu-it-kah, of the Su-kah's; Pah-ke-no, of the Koto-plo-nemis; Fillipe of the Chappah-sims; Yu-nil-lo of the Sag-wam-nis.

These tribes are about 1000 strong."--Daily Alta California, May 31, 1851.



## UTAH CHIEFS

Brigham H. Roberts, Assistant Historian of the Mormon Church, in a History of the Mormon Church (published serially in 'Americana' 1909-1915) gives notes on Utah chiefs as follows:

Walker, "Utah Indian Chief", pp. 69-70, 81-83.

Arapeen, Walker's brother and successor, 71, 268.

Sowiette & Unhoquitch, 71.

Little Chief, "Ute", 68.

Chief ~~Stick-in-the-Head~~ or Opecarry (Timpany Utes)  
68, 74.

Old Elk, 74.

Parowan (Utah chief in vicinity of present settlement, for whom it was named).

Peteenet, Piede chief, 81, 83.

Canarraah, Piede Chief, 82.

Goship and Wanship (in mountains east of Salt Lake Valley) 69.

San Pete, 83.

Brigham H. Roberts, Americana, 8: pp. 67-72, 74-76, 81-83, 268, 1913.

For full notes see copy of Roberts' account in Shoshonean file.



## CHIEFS OF UTAH TRIBES

Much material of interest relating to the depredations, and in several cases also to the deaths, of the various chiefs who annoyed the Mormons in the fifties and sixties, may be found in Peter Gottfredson's 'History of Indian Depredations in Utah', 1919.

Among the more important Ute chiefs mentioned are Wakker, Arrapene, San Pitch, Black Hawk, Kanosh (Pahvant), and Tintie (sub-chief).

The following references to chiefs and sub-chiefs may be useful:

Antero: 300

Arrapene (Ara-pene, Arropeen, Yenewoods): 46, 120, 129, 130, 162-63, 319, 320.

Black Hawk: 172, 185, 189-191, 201, 203 (wounded), 206, 211, 245, 254, 256, 274, 289, 306.

Black Hawk War: 129, 144, 153.

Death (1869 or 1870): 226-228.

Douglas: 300

Elk: 30

Kanosh (Chief of Pahvant subtribe or band): 72, 151, 153, 155, 156, 183, 274.

Kona: Battle Creek, 25.

Little Chief (Chief of Timpanogos Utes): 18-19.

Little Soldier (fight at Pleasant Grove, Utah): 115, 117.

Neshequan (war chief of Pahvants): 63, 66-73.

Naraquta (Tooele Valley): 41.



Chiefs of Utah tribes 2

One-Carry (Stick in the head): 30.

Parrades: 300

Petstneest (Chief Spanish Fork band): 104.

Poganeah (Fish Captain): Burrville and Fish Lake, 327.

Roman Nose, Battle Creek: 25

San Pitch (Sanpitch): 113, 137, 151, 155, 174, 181, 187, 188  
(killed April 18, 1866, Birch Canyon near Maroni), 319.

Saxiatte, Sau-e-ett, (Spanish Fork): 151, 153, 155.

Soy-ok-soo-bat: 156.

Stick-in-the-head (Chief of Timpanogos Utes): 19.

Tabiona: 327-29.

Tabby: 151, 156, 162, 254, 274, 296, 300, 302, 319.

Tintie (Subchief in Utah, Cedar, & Tintie Valleys in 1856):  
100, 101, 104, 107.

To-kavana: 300.

Wahkar: 35, 43, 46, 47-53, 78, 83-84, 317.  
Born in 1815, Spanish Fork, 317--.  
Died Jan. 29, 1855, 47, 84.

Wandrades: 300

White Eye (12-mile Creek near Menti): 130-131.

Gottfredson, 'History of Indian Depredations in Utah', 19



## CHIEF KOSSUS

The California Indian Commissioners of 1851-52, G.W. Barbour, Redick McKee, and O.M. Wozencraft, in a report dated "Camp near Graysonville, San Joaquin River, February 17, 1851", addressed to Hon. Luke Lea, Commissioner of Indian Affairs, state:

"runners were started out to bring in the principal chief and the captains of the tribe known as the Stanialaus or Kossus Indians. On the 14th, the chief Kossus and the greater number of his captains had assembled; a long talk was had, and it was finally agreed that, within four months, a final treaty should be entered into. This tribe numbers about four thousand persons, divided into some thirty bands, or rancherias, as they are called, extending from the Calaveras river on the north, to the Tuolumne river, on the south."

Senate Dec. 4, pp. 56-57, 1853



CHIEFS OF RANCHERIAS  
MENTIONED IN BOOK OF BAPTISMS OF SAN FERNANDO MISSION

Rancheria	Chiefs
Achoicomihabit [On site San Fernando Mission]	Spanish name Jose Vicente, age 35 in 1802
Apevit	Spanish name Desiderio, age 55 in 1802
Atamobit	Puussa, Spanish name Simon, age 60 in 1804
Cacuycuyjavit	Tubacumanicua, Spanish name Juan Jose, 43 in 1804
Chibuna	Yataguopia, Spanish name Apolonio, age 35 in 1811
Coaybet	Quiya, Spanish name Pedro José, age 34 in 1804
Cuecchao	Alaguo, Spanish name Cemeterio, baptized in 1811
Jotojouvit	Suynuit, Spanish name Anastasio, age 20 in 1804
Mapavit	Spanish name Rogerio, age 60 in 1803
Mojubit	Spanish name Timotes, age 60 in 1802
Pabutan	Genunaxiguissasu, Spanish name Julio, 39 in 1811
Quissaubit	Spanish name Benevenuto, age 26 in 1803
Sujuiyojos	Jotolo, age 40 in 1811.
Taapu [On site Tapo Rancho, near Simi, So. Ventura County]	Palasuit, Spanish name Salvador, age 46 in 1804
Tochaburubit	Tubupuariguissu, Spanish name Matias, baptized in 1804



San Fernando Mission 2

Rancheria	Chiefs
Tochonanga	Sewyeuyeminasu <sup>1</sup> baptized in 1799
Tochonabit	Spanish name Jose Maria <sup>1</sup> baptized in 1799
Vysabut	Spanish name Condido, age 25 in 1802.

<sup>1</sup>Probably Indian and Spanish name for same man.

TREATY OF CAMP UNION NEAR YUBA RIVER, JULY 18, 1851

Tribe

Chief

Das-pia

Wee-mar

Ya-ma-do

Oi-ta

Yo-la-mir

Wal-le-pie

Wai-de-pa-can

Ka-ma-la

On-o-po-na

Man-arek

Mon-e-da

Wal-lem-hook

Wan-nuck

Yu-me-an

Nem-shaw

Was-hi-na

Bem-pi

Ti-co-la

Sa-cum-na

Yo-lo



TREATY OF BIDWELL'S RANCH, AUGUST 1, 1851

Tribe

Mi-chop-da

Es-kuin

Ho-la-lu-pi

To-to

Su-nus

Che-no

Bat-si

Yut-duc

Sim-sa-wa

Chief

Lack-y-an

Mo-la-yo

Wis-muck

We-no-ke

Wa-tel-li

Yo-lo-sa

Yon-ni-chi-no

So-mie-la

Po-ma-ko

TREATY OF READING'S RANCH ON COTTONWOOD CREEK, AUGUST 16, 1851

Tribe

Noi-na

Noe-na

Y-lac-ca

No-me

Noi-me

Oy-lac-ca

Chief

Ois-no

Chip-chin

Cha-oo-sa

Chip-cho-chi-cas

Nem-ko-de

{ Num-te-ra-re-man  
Pan-te-las  
Do-hi-wi-cka-la  
Num-te-re-nuck



TREATY OF CAMP COLUS, SEPTEMBER 9, 1851

<u>Tribe</u>	<u>Chief</u>
Colus	Sci-oac
Willays	Ho-oak
Co-he-na	Louis
Tat-nah	Hoo-ka-ta
Cha	La-look
Doc-duc	Mi-ka-la
Cham-net-co	Wi-te-bus
Toc-de	Co-ne

TREATY OF CAMP LU-PI-YU-MA, AT CLEAR LAKE, AUGUST 20, 1851

<u>Tribe</u>	<u>Chief &amp; Captains</u>
Ca-la-na-po	{ Ju-lio Cha-co-da-no Pe-bor-quer-to Mah-co-me-a Koy-wy-nol-yo Kai-a-dan-o
Ha-bi-na-po	{ Pri-e-to Chee-no Kah-loose
Da-no-ha-bo	Ku-kee
Mo-al-kai	{ Moh-shan Yah-tza Tee-bee
Che-com	{ Cal-i-a-him Hal-le-toc Co-to-lo-yah Chu-te-yan
How-ku-ma	{ Chi-bec Sac-con Che-kai
Cha-nel-kai	Con-chu
Me-dam-a-dec	Co-e-u-e



[Hopland Valley]

TREATY OF CAMP FERNANDO FELIZ, ON RUSSIAN RIVER, AUGUST 22, 1851

Tribe

Chief & Captains

Sai-nell

Chas-kan  
Ous-tin  
Cal-vi-ha  
Ka-wa-low  
Sa-ken  
Ke-yo-hom  
Ka-e-su-a  
Yo-ki-am

Yu-ki-as

Ko-yo-to-was-sa  
Cal-no-ya  
Ka-a-tan  
Cha-o-la  
La-win  
Ka-ba-din

Mas-su-ta-ka-ya

Cal-pel-la  
Cal-leel-tem  
Por-din

Po-no

Chi-bem

TREATY OF CAMP, IN SCOTT'S VALLEY, SHASTA CO., OCTOBER 6, 1851

<u>Tribe</u>	<u>Chief &amp; Captains</u>
O-de-i-lah	I-shack E-eh-ne-qua Pi-o-kuke Sa-nak-a-ha
I-ka-ruck	Tso-hor-git-sko Che-le-na-tuk
Ko-se-tah	Ada-war-how-ik Quap-sow-a-ha
Ida-kar-i-waka-ha	A-lat-se-wak-a-na Ida-kar-i-wak-a-ha
Wat-sa-he-wa	Ar-rats-a-cho-i-ca
E-eh	An-na-nik-a-hok Sun-rise



Add to list of Indian chiefs:

- San-Pitch - a principal chief of the Utahs p.561  
Little Soldier -- chief of the Shoshones p.561  
Benj. Simons -- sub-chief of the Sho-sho-nes p.561  
White-eye -- a Utah chief p.562, 565  
Arapeen-- a chief of the Utahs and brother of San-Pitch p.563  
Son-a-at -- a chief of the Utahs p.565  
Wash-a-kee -- / principal chief of the Snakes p.564

Mess. & Docs. H. R. 35th Cond. 2d Sess. Ex. Doc. no.2  
1858. Rept. Commr. Indian Affairs.



Add to list of Indian chiefs:

Ka-nosh, chief of Pah-vants, a small tribe in the vicinity of  
Fillmore, south of Salt Lake, Utah.

Statement of Maj. J. W. Powell before Comm. Ind. Aff.  
H.R.Mis. Doc. 86, 43d Cong. 1st Sess. p.6, Jan. 1874.



La Lakes

Lutuamian

La Lakes: Humboldt Times, Dec. 4, 1858 mentions La Lakes  
as Klamath Lake Indian chief.

Chanchilla

Chief

Chief oi-yah'-ne.

maifan ~~uh.ah~~ Te'-ye-ah (Te'-ezah)

||

~~Tealume hewah a'-ezah~~

hahabne }  
+ wifa } Cha'kah\*    fahf mi'yum

Names of Chiefs concerned in land names:

S. Ex. Sec 4. October. 1853

Muella } 69  
Tiposey }

Nai-yak-qua 74, 93, 96

Tom-quit 75, 93

Koshich 93

Kat-chu-la 93

Cho-kit 93

Co-tum-si 93

#Po-ho-leel 93, 94

Pan-a-mach 93



## Mokelkos chiefs

They had 4 principal chiefs, brothers, of whom Sen-ā-to the oldest lived at Staples Ferry; Lo-we-no at Woodbridge; An-ton-io on the Calaveras; and Max-i-mo the youngest near Benedict's Ferry (until death of Sen-ā-to, when Maximo moved to Staples). - Col. F. T. Gilbert in Hist. San Joaquin Co. (Oakland, Calif. by Thompson & West), p. 13, 1879.

Utah chief Walker born on Spanish Fork River, Utah Valley  
about 1808. Indian name of Spanish Fork 'Pequi-nary-no-quit'.

Brygha H. Roberts in Hist. Mormon Church, Vol. 8, 70, 1913.

Died January 29, 1855 at Meadow Creek near Fillmore & succeeded  
by his brother Arapeen (2 years younger).



Old Chief Juanita Segundo

of San Ysidro

Said in 1925 to be 90 yrs old but

looks ~~and~~ only 65

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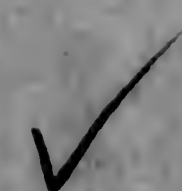
## INDIAN CHIEFS

"Among the Indians who were educated at the Missions, two became prominent - Stanislaus, at the Mission of San Jose, after whom Stanislaus River and county were named; and Yoscolo, at the Mission of Santa Clara. They were educated by the Fathers. Both showed ability and promise in their youth. Yoscolo when 21 years of age was made the chief of the whole body of Indians at the Mission, responsible of course to the Padres for the management of them. In this position he displayed tact in the control of the Indians."

—Wm. Heath Davis: Sixty Years in California, 334, San Francisco, 1889.



## Indian Chiefs



"Chief among the Sonoma tribes was Solano and his band whom Padre Altimira found in the Valley of the Moon... After the passing of the mission and during the military regime, General Vallejo found the unusually intelligent Chief Solano a valuable assistant in handling the bands throughout Sonoma."

Tom Gregg: History of Sonoma Co. p. 52, Los Angeles, 1911.  
Historic Record Co.



## DEFEAT OF ZAMPAY, CHIEF OF THE YOLOITOIS

José de Jesus Vallejo (a native of San José born in 1798) in *Reminiscences of California* dictated for the Bancroft Library, writes briefly of the overthrow of the Indian chief Zampay, head of the Yoloitois.

"Alvarado was governor of California for a term of 6 [136] years [1836-42] during which time the troops were repeatedly called out to subdue revolutionary movements and to repel the heathen Indians. Celebrated among these was the Indian Zampay, the great chief of the Yoloitois, who after being wounded, was taken alive by a soldier by the name of Manuel Cantua, who lassoed him and prevented him from defending himself. The glory of the campaign conducted against Zampay is due largely to Francisco Solano, who beforehand had secured the cooperation of several of Zampay's chiefs, who when the hour of battle arrived, escaped and left him almost alone, when a large number of Indian soldiers, Suysunes and Caynameros went to fight Solano's forces. The soldiers that attacked Zampay were commanded by Capt. Salvador Vallejo, and the allied Indians served under the orders of Solano, without whose aid nothing could have been accomplished."

Vallejo also notes that the secularization of the ex-missions of San Rafael and San Francisco Solano "had caused [141] a general uprising of the Caynameros, Suysunes, Licatiuts, Napajos, and other Indian tribes."

José de Jesus Vallejo, *Reminiscencias Historicas de California* [Historical Reminiscences of Calif.], pp. 136 & 141, MS; Bancroft Library, 1874.



Clothing

C. Hart Merriam  
Papers  
BANC MSS  
80/18 c

## SEA OTTER SKINS AS CLOTHING OF SANTA BARBARA CHANNEL INDIANS

Dr. Gustav Eisen, in his Account of the Indians of Santa Barbara Channel, derived mainly from their writings of Cabrillo and Viscayno, speaks thus of the clothing of the natives of the Santa Barbara Channel:

"The men go entirely naked, but in time of cold they use long capes of tanned skins of sea-otters, and some mantles of the same skins cut in long strips, which they twist in such manner that all the fur remains on the outside; then they weave these strands one with the other, forming a weft, and give it the pattern referred to."--Account of Indians of Santa Barbara Islands, California, by Gustav Eisen, PhD, Prag 1904., p.19.



Extract from 'History of San Bernardino and Riverside Counties, California', Brown and Boyd, 1922.

Clothing and implements.

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"The Indians of the coast were not like the Hopis of the interior and the dwellers of the Pueblos, who are able to spin and weave and make blankets and other fabrics, for on the coast where they used anything for clothing or comfort it was mostly the skins of animals or in some cases the bark of trees. Nets such as were used in catching fish and small animals were made from the fibre of the nettle and fish hooks, needles, and such articles in common use were made of bone and in some cases of shell."

pp. 307-308,

FOX

ESKIMO of POINT BARROW, ALASKA (Uses of parts of blue & white fox for purposes other than food)

Hohn Murdoch: 9th Ann.Rept.Bur.Eth.for 1887-88, 1892.

Clothing .....pp.110,118,142

Fox-head tool-bag ..... p.189



C L O T H I N G

SERI INDIANS, Tiburon Island

W J McGee: 17th Ann.Rept.Bur.Eth.for 1895-96:

p.224<sup>\*</sup>-232<sup>\*</sup>, 1898.

Arizona Snowshoe

Females figures a 'Snowshoe frame'  
found in 'Painted Kiva House', near  
Grand Nat. Park. — Smiths. Misc.  
Colls., vol. 72, No. 15, fig. 73, p. 69. 1922.



M.P.H.

Extract from 'History of San Bernardino  
and Riverside Counties, California,' Brown  
and Boyd, 1922.

clothing and implements.

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Viscaino speaking of the Indians he found up the coast (he did not go further north than Cabrillo and Drake) said: "The Indians are of good stature and of fair complexion, the women being somewhat less than the men in size and of pleasing countenance. The clothing of the people of the coast consists of the skins of sea walrus or other animals abounding there which they tan and dress better than is done in Castile. —They possess also flax like that in Castile, hemp and cotton from which they make fishing lines and nets for rabbits and hares. They have vessels of pine wood, very well made, in which they go to sea with fourteen paddle men of a side, with great dexterity even in very stormy weather."

p. 312.

## CLOTHING AND BODY PAINTING OF MONTEREY INDIANS

La Perouse, on his visit to Monterey Bay in September 1786, states: "The women's dress consists of a cloak of stag's-skin, badly tanned. Those of the Missions generally convert them into a little jacket with sleeves, which with a small apron of rushes, and a petticoat of stag's-skin that covers their loins, and reaches half down the leg, forms their whole attire. Young girls under nine years old have only a girdle, and the boys are totally naked.

The hair of both men and women is cut four or five inches from the roots. The Indians of the Rancherias having no iron utensils, perform this operation with fire-brands, and paint their bodies red, changing it to black when in mourning. The missionaries have proscribed the former, but have been obliged to tolerate the black, these people being so strongly attached to their friends, as to shed tears when reminded even of those who have long been dead, and feeling offended, if their names are inadvertently mentioned in their presence."--

Voyage of La Perouse, Vol. 1, p.214, ~~text and foot-~~  
~~note~~ London, 1798.



While traveling on Columbia river , in April 1836,  
Rev Samuel Parker states: "The Indians came to our encampment,  
who were as miserable objects as I have ever seen. They  
were not more than half covered with tattered skins of  
rabbits patched together; and were emaciated with starvation.

Parker: Expl. Tour Beyond Rocky Mts. , 1838.

[3rd Ed. 275, 1842.]



Humboldt tells us that among the Caribs the young girls are painted red and are almost naked. He then goes on to say: "Among the different nations of the old and new worlds, the idea of nudity is altogether relative. A woman in some parts of Asia is not permitted to show the tips of her fingers; while an Indian of the Carib race is far from considering herself unclothed if she wear round her waist a guajuco two inches broad. Even this band is regarded as less essential than the pigment which covers the skin. To go out of the hut without being painted, would be to transgress all the rules of Carib decency."--Humboldt's Personal Narrative, Vol.3, p.75, 1885.



EFFORTS TO CLOTHE INDIANS OF PENINSULA OF  
LOWER CALIFORNIA

"As it was not in keeping with Christian modesty for the Indians to go naked, after the custom of the pagans, the missionaries had to provide the clothing. For this purpose the fathers kept sheep and raised cotton. They also taught the neophytes to spin, weave, and to make their own clothes. The necessity for this is well illustrated in the writings of the Mexican Jesuit, Miguel Venegas (1758): "The dress throughout the whole peninsula, from Cape San Lucas to the last mission of San Ignacio, was uniform; for the males, whether children or adults, went at all times totally naked . . . The women, though in some parts they went naked like the men, according to father Ferdinando Consage, who observed that this custom prevailed in the bay of Los Angelos, between the last mission of San Ignacio and the Rio Colorado, yet they in general shewed a great attention to . . . decency . . . even their infants of the female sex were not without a proper covering!"

"The efforts of the missionaries, however, do not appear to have been appreciated, for: "The men however were such strangers/<sup>to</sup>that virtue, that they looked upon those

principles as ignominious and disgraceful, which required their being cloathed; and, accordingly, in the several missions and settlements, formerly made in California, when the fathers or soldiers offered the Indians cloaths, they either refused them, or afterwards threw them away. Indeed, their idea with regard to cloathing, was so different from the rest of the human species, that, according to Father Juan Maria de Salva-Tierra, they were highly affronted . . . not being in the least sensible of any indecency from their being naked; and it caused among them as much laughter, to see one of their countrymen cloathed, as a monkey dressed like an officer would among us; of which the fathers had a diverting instance; a missionary, lately arrived at his mission, cloathed two little boys, which he entertained in his house, first to teach him the language, and afterwards to serve him as catechumens. The father himself was at the pains of cutting out, making, and fitting the cloaths for them. When the lads first went abroad in their new dress, it occasioned such indecent mirth, that the boys, ashamed at being thus the ridicule of their countrymen, pulled off their cloaths, and hung them on a tree. But being unwilling to shew



themselves ungrateful to the father, and at the same time to avoid being reprimanded, they determined to divide his kindness, going in the day time naked, among their relations, and at night dressed themselves to return to the father!"

—Early History of Cotton Cultivation in California, E. Philpott Mumford,

Calif. Historical Society Quarterly. Vol. VI, No. 2. pp 161-162

June, 1927.

Clothing (Female) Indians Southern Cal  
(Bancroft)

The women and children (female)  
wore a petticoat of skins; with a  
heavy fringe reaching down to the  
knees; In some districts they also  
wear short capes covering the breasts.  
(Brespi, in Doc. Hist. Mex. series.  
14 tom VI - p. p. 291-2 -)

also  
see Ind. p. 312 -

On the coast and formerly  
on the islands seals furnished  
the material.  
(Strights' Eng. Encyc. Nat. Hist. Vol. IX - p. 299.)

The more industrious and  
wealthy embroidered their  
garments profusely with  
small shells.



• Clothing (Male) Indians Southern Cal.

(Pancroft)

A short cloak of Deer skin or rabbit skins sewed together, suffices the men for clothing for they think it no shame ~~before~~ to be naked before the white race came amongst them. The ordinary cloak descends to the waist.

(Fogas in Nouvelles Annales des  
voy. 1844 tome 1 page 172 - )  
also

Marmier notice in Bryants voy.  
in Cal. p. 229.



An account of the discoveries of Francis Drake in 1579, along the Pacific Coast, somewhere between 38° and 44° latitude, from June 17 to July 23, but probably a little north of 38° lat.

"Before his departure Drake made a journey up into land.

. . . . "The inland we found to be farre different from the shoare, a goodly country, and fruitfull soyle, stored with many blessings fit for the vse of man: infinite was the company of very large and fat Deere which there we sawe by thousands, as we supposed, in a heard; besides a multitude of a strange kinde of Conies, by farre exceeding them in number: their heads and bodies, in which they resemble other Conies, are but small; his tayle, like the tayle of a Rat, exceeding long; and his feet like the pawes of a Want or moale; under his chinne, on either side, he hath a bagge, into which he gathereth his meate, when he hath filled his belly abroad. . . . the people ate their bodies, and make great account of their skinnes, for their kings holidaires coate was made of them." --Bancroft, Hist. of California, I, pp. 83-84, 1884.

✓ [Footnote] -- World Encompassed, 131-2. "We found the whole country to bee a warren of a strange kinde of Conies, their bodies in bignes as be the Barbary Conies, their heads as the heads of ours, the feet of a Want, and the taile of a rat being of great length: under her chinne on either side a bagge. *Famous Voyage.*" -- p. 84.



## A PELICAN ROBE FROM TIBURON ISLAND

An account of recent exploration work on the Peninsula of Lower California by Edward H. Davis in the interest of the Museum of the American Indian, Heye Foundation, New York, states concerning a pelican robe:

"It is of six pelican breasts in a double row of three each. It is joined with a strip of buckskin, and makes a 'blanket' over six feet long, very soft and downy on the top side. It is now used for covering by the Indians, but formerly it was used as a wrap-around garment. The quills stick through making the under side very scratchy, which in the opinion of Davis saved the wearers a lot of work."

-- Etta Mae Wallace, San Diego Independent, Jan. 25, 1927.



## THE KOBOO INDIANS OF SACRAMENTO VALLEY

Justus H. Rogers in his 'History of Colusa County', published at Orland, California, in 1891, has a good deal to say about the Sacramento River Indians, particularly those who live in the neighborhood of Colusa. The greater part of his statements reflect the usual bias and ignorance of the whites concerning the Indians ~~of their neighbor-~~ hood. Nevertheless, some of his observations appear to worthy of record. Concerning their dress and ornaments, he writes:

"In dress they were Edenic in its primitiveness. [31] Upon the coming of the white men among them, the males of the Colus tribe were naked, only arrayed in that climate, concerning which the modern Californian has to endure so much good-natured badinage. Among the females there was an effort, and, literally, it might well be termed a transparent one, at hiding their shame with a rude netting made of wild hemp and sometimes of a bunch of tule hanging down in front. Beads were worn round the necks by both sexes, and were much coveted. Shells also were esteemed in making up their costumes. A head-piece made of woodpeckers' feathers, set off with small shells, made its wearer a perfect beau in swell aboriginal circles, while with her ears dangling black and white checkered bones the squaw took on the airs of an irresistible flirt." - J. Rogers, *Colusa County, Its History & Resources*, p. 31, 1891



Lt. Emmons tells us that the Tahltan Indians "wear crowns of grizzly bear claws". [p.44]

He goes on to state: "The black bear and the grizzly are both abundant throughout the mountainous districts. They are hunted both for the flesh and the pelt; the claws are worn as headdresses and as necklaces, and the teeth are used as knife sharpeners and worn as charms. Bears are speared or shot in their hibernating holes, which are scented by the dogs, and during the salmon season they are killed about the streams. But deadfalls and snares are more effectual. The former are constructed of heavy tree trunks weighted with others and baited with fish or meat; the latter are set in the trails and attached to a tossing pole, as shown in the illustrations."

-- G. T. Emmons: The Tahltan Indians, p. 72, Phila. 1911.

Picture of deadfall, p. 76.



## RABBIT ROBES MADE BY NORTHERN PIUTES

The Pacific Tourist, a transcontinental guide book published in 1876, gives the following description of the method by which the Piutes make rabbit robes:

"The traveler has doubtless noticed the gray fur robes, [p.200] which adorn the persons of a large number of the Indians seen on the road west of Ogden. These robes are a curious piece of workmanship in some respects. They are not made of whole rabbit-skins sewed together, as wolf and coon-skin robes are made. When the rabbits are skinned, their hides are at once cut into narrow strips with the fur on. These strips are sewed together until the right length for a robe is secured, and then they are twisted like a rope — in fact, become fur ropes. These are used the same as 'filling' in wooden or cotton cloth, as distinguished from the 'warp.' You can press your fingers through these robes at pleasure — the threads of the 'warp' being from one to three inches apart. This warp is made from the sinews of animals, from the bark of willows, or from the wild hemp which the Indians gather for this purpose. It is very stout and very durable, and is not perceptible as you casually examine one of these robes. The Indians value a rabbit-skin robe very highly, and much prefer them to blankets, though it takes a good deal of time and patience to make one. This work, however, is all done by the squaws, and is taken as a matter of course by the 'bucks' of the tribe."

The Pacific Tourist, 200, 1876.



Clothing

Extract from 'Diary of Miguel Costanso with the Portola Exped. of 1769-1770, Pub. Acad. Pacific History, 1911.

Dress and Ornamentation.

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" . . . In the afternoon the leaders and caciques of each town [Pueblo de la Isla and two other towns] came, one after the other, adorned according to their custom -- painted and decked with feathers, having in their hands some split canes with the motion and noise of which they marked time for their songs, and the rhythm for the dance, so regularly and so uniformly that there was no discord."

[About a day's travel south or southeast of San Luis Obispo]

## Bishop Told How Indians Got Clothes Free Off Trees

**H**OW Indian women of Florida got their clothes free off the trees (not fig trees) is revealed in a rare letter by a Spanish bishop, 1675, a translation of which has just been issued by the Smithsonian Institution.

This letter, sent by Bishop Calderon of Cuba to Queen Mariana in Spain, is pronounced one of the few eye-witness accounts of conditions in aboriginal Florida.

"The women wear only a sort of tunic that wraps them from the neck to the feet," wrote the bishop, "and which they make of the pearl-colored foliage of the trees."

He added it "costs them nothing except to gather it."

Reporting statistics carefully to his queen, he said:

"Four thousand and eighty-one women, whom I found in the villages naked from the waist up and from the knees down, I caused to be clothed in this grass, like the others."

There were 13,152 Christianized Indians in the four provinces he visited, the bishop reported. He found them fleshy and large of build, but not much interested in work. They were clever, however, and quick to learn any art they saw done, and had made large churches of wood, with careful workmanship.

These old Florida Indians, described in detail by the letter, were soon to die out, and it has not been supposed that they had so high a culture as the bishop's observations now reveal.

The letter has come to scientific attention through discovery of a copy in archives of the North Carolina State Historical Commission.

*Science News Letter, January 2, 1937*



## THE ORIGIN OF CLOTHES

PRIMITIVE man and his wife first took to wearing clothes in order to keep off stinging flies, sharp-billed mosquitoes, cooties, fleas and other lively pests. This simple answer to the puzzle problem: "How did we come to wear clothes, anyway?" is advanced by Dr. Knight Dunlap, professor of psychology at Johns Hopkins University.

"Crawling and flying pests are with primitive man abundantly and very intimately," Dr. Dunlap points out, in a paper to appear in the first issue of a new scientific publication, *The Journal of General Psychology*.

Skins or cloth might be wrapped tight around the body for protection against stings and bites, but this is confining and in warm climates impossible.

"Much more efficient protection is afforded by hanging strings, leaves, strips of hide, animals' tails and similar articles so that they will flap with the movements of the wearer," he says. "In other words, the best fly chasers are exactly the garments most characteristic of savages and primitive man. These afford protection without undue warmth or exclusion of ventilation.

There have been but four theories of the origin of clothing. These are: First, the modesty theory (covering up the body); second, the immodesty theory (making the body mysterious and alluring); third, the adornment theory, and fourth, the utility or protection theory, with which Dr. Dunlap's explanation fits. "Clothing itself is not modest, or immodest," he says. "Any degree of clothing, including complete nudity, is perfectly modest as soon as we become thoroughly accustomed to it."

"The fly protections we have customarily used on our domestic animals are exactly of the types of primitive human clothing which have baffled the early anthropologists."

*Sci. News, Science, Nov. 18, 1921.*

*Southern Workman, June 1912.*



## REMARKABLE FISH-SKIN GARMENTS

BY LILLIAN E. ZEH



**A**MONG the most unique and wonderful garments worn at the present day are the curious fish-skin dresses worn by the wealthy ladies of the Gold Indian tribe, living along the Amur River in East Siberia. Though at present living in a primitive state and unable to either read or write, yet these people are producing most astonishing ornaments, designs, and embroidery work, equaling if not surpassing the handiwork of our best modern artists. The accompanying photograph shows a well-to-do Gold mother and



daughter dressed in their odd and fantastically ornamented fish-skin gowns. The dress is composed entirely of several layers of fish skin, the undermost representing the skin of the garment proper, the uppermost showing the ornaments in their cut-out forms. Between these two layers is inserted a middle one which serves as a background, throwing out distinctly all parts of the ornaments. The pieces of fish-skin forming the ornaments are generally colored blue. The front and back of the dress is adorned with these cut-out pieces of fish-skin sewed with fish-skin thread.

A combination design of the cock and fish are the two forms generally employed for ornamentation. The former plays a predominant part in the ornamental art of all the Amur peoples, and is more frequently reproduced than all other animals put together. To be skillful in needlework is regarded as a merit, and increases exceedingly the value of a girl in the eyes of her father, who, a careful calculator, includes the amount brought in from this talent in the purchase price of his son-in-law. On the other hand, men strive to possess a woman experienced in this line of work. Marriage is a commercial matter, and the bride in nearly all cases is purchased outright from her father. The price is furs, Chinese stuffs, and sometimes money; one hundred rubles, about fifty dollars, will obtain the best looking needlewoman in the community. A man can buy as many wives as his purse will allow, three being about the limit.

The question may arise as to whether people who are able to produce such fine ornamental work may justly be classified among primitive tribes. The Gold tribe is certainly promising, and sometime or other will undeniably advance to the rank of a civilized nation, if only the Russian Government will continue to lend its assistance in improving the living conditions of this intelligent tribe, which numbers so many highly gifted individuals.





## The Rabbit-Skin Blanket

ANISHINABE



THE occasional references and inquiries in *Rod and Gun* regarding the rabbit-skin blanket only serve to back up the writer's contention that there is "something in it" deserving of further mention.

Here's a real camping convenience. Point number one in its favor: It is warm and comfortable—an important item to those who have to hit the trail in the off season. It is light—another consideration in outfitting for backwoods work. It is cheap, too, in a rabbit country. As a matter of fact, it is usually a by-product after your rabbit has been killed and eaten. The chap who is travelling rapidly might not be able to save up rabbit skins to make a blanket; but he can, occasionally, buy one already made. Let him not forget, however, to wash or fumigate it. The trapper, on the other hand, or any one living for a time in one place, could make one of the blankets quite easily, the method being extremely simple.

The weave is quite, open—rather the contrary to what one might suppose. The average mesh, when flattened out, would measure easily from an inch to an inch and a half in length. I would suggest that an inch mesh is open enough. Experimentation might show that a closer mesh is desirable. The meshes in an ordinary Indian-made blanket are close enough, at any rate, to give it a fairly uniform texture and to make it warm, although the fingers can be poked through it anywhere.

The warmth, I presume, comes largely from the air-spaces or pockets amid the wisps and bunches of fur. The only objection I have ever heard to the blanket is on account of the loose hairs which are sometimes snuffed up; but this can be entirely removed by placing the blanket

between sheets of cotton, first having stitched these together all around the edges, leaving only room enough to insert the blanket, which is then laid out flat, after which it is stitched through the whole three thicknesses, here and there, after the style of a bed comforter. This will give you a sleeping-robe which will compare not unfavorably with the eider-down article and is considerably cheaper. This is surely the original Arctic sleeping-robe.

The rabbit-skin blanket is made

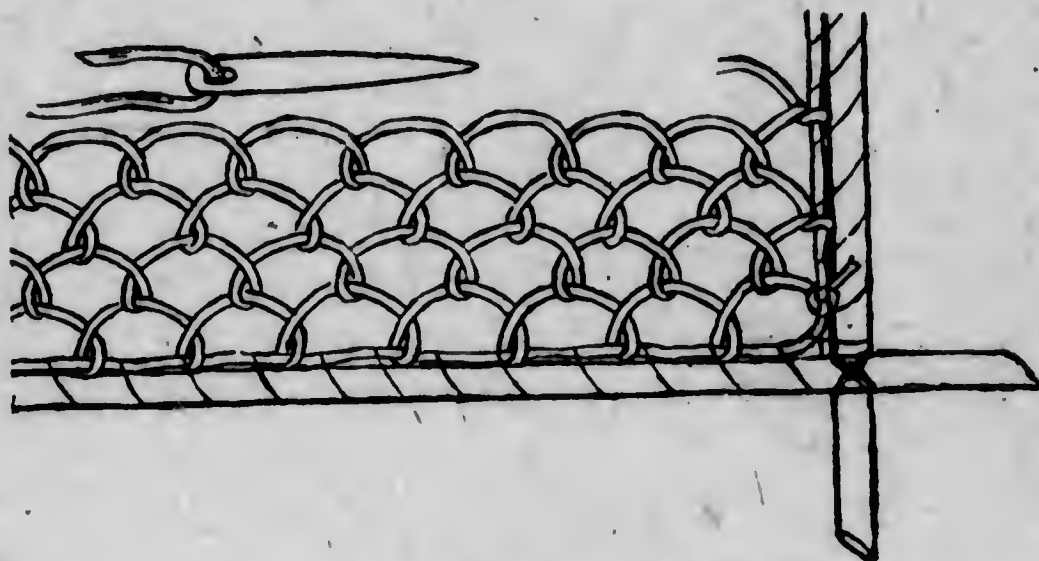


Diagram of rabbit-skin blanket weave and needle used. In the actual blanket the spaces are filled with fur.

by the Indians of Canada practically from coast to coast. We find it among the hardy Montagnais and Cree of northern Quebec, where cloaks and caps for winter wear are made in the same manner. The Ojibway use rabbit-skin in exactly the same way, and much the same description applies to the Chipewyan, Slaves, Dog-ribs, Yellow-knives, the Loucheux of the Mackenzie River region, the Kutchin tribes of Alaska, and many of the tribes of British Columbia.

The weave, I believe, is practically the same everywhere, with very slight differences in working methods. Here is the Ojibway way of going at it: First catch your rabbit. Slash the skin down the inner side of each hind leg and across until the cuts meet. Next pull the skin off inside out, like a glove. Pinch the lower end of the skin in the angle behind your knee and begin cutting spirally downward from nose to tail, making the strips



fully, one and one-half inches wide. Next coil the skin up like a rope and give a little stretching by inserting the hands or a couple of sticks into the coil and twisting. But don't twist too hard. Next, roll the strips up into a ball, just as your mother or grandmother used to wind up carpet rags. An average-sized skin should make a strip one and one-half or two yards long. It will take considerably over 150 rabbit-skins to make a good-sized blanket.

There appear to be several ways of suspending or framing the blanket in weaving. One is to simply have a single stick or pole the width of the blanket and a little more. The straight strip for the upper edge is wrapped or lashed to this by catching it under a cord which is wound round and round the stick. The latter is then suspended to the limb of a tree or to a nail for convenience in working. The Montagnais way is to make a rectangular frame of light poles the size of the blanket. This, I think, would be the best for a beginner. A string, either of cloth or rabbit-skin, is lashed to the inner side of the frame all the way around, to form the margin of the blanket. A strip is threaded into a very large wooden needle and the weaving is begun by making the end of the strip fast, say to the upper left-hand

corner of the marginal or edging strip. A series of loops is then made horizontally from left to right, by catching around the edging strip at the top, giving the strip one turn around itself, as shown in the cut, and so on with each loop, until the right side of the frame is reached. The loops are made not more than one and one-half inches wide. A similar loop is now taken around the string, representing the right-hand edge of the blanket, after which the looping is continued from right to left, the loops being caught into the row of loops above until the left side of the frame is reached, when a turn is made around the left-hand marginal string and the looping continued towards the right. Row after row is added in this manner until the blanket is finished.

The technical term of "lace" weave is sometimes applied to this style of weaving. Beside its use in blanket-making, the Slave Indians, Chipewyans, and other tribes living in northern Canada, employ it in the weaving of very neat and nicely-decorated game-bags. The material in this case, however, is not rabbit-skin, but a very fine "babiche" or deer-skin cord. The mesh, too, is much finer than in the blankets, being not more than half an inch wide.

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### A TAME MINK

Editor *Rod and Gun In Canada*.

Last summer I was fishing for salmon on the Jacquet River in New Brunswick. The trees and bushes on this river for the greater distance come quite close to the water's edge, but there are quite a few places where there is a narrow sandy beach. I was casting my fly at one of these places and had the Gaspe skiff in which I came down the river, hauled up on the sand. There was a space of ten or twelve feet between the trees and bushes and the water.

I had caught a salmon at this particular spot and thrown it up on the beach and then the boatman had put it in the skiff, where there were several other salmon and trout.

Just then a mink came out of the woods

and tried to climb into the skiff, but found the side too high for him. He then went smelling around where the salmon had been lying on the sand. Finding nothing, he went back to the skiff and climbed in. He hauled away at a salmon, but just then I chased him out and he went back to the woods. In a few moments he came out again and came right up to my feet as I was standing near the skiff. He looked up at me and then climbed into the skiff again. I am sorry now that I did not let him carry off a trout, but I shooed him off, and he made for the water and swam across the river. I am satisfied that when he came up to me, that he would have taken a trout of my hand, if I had offered it to him.

Very truly,

Geo. D. Hencken.

New York, U.S.A.



Dec. 1919

Great White Spirit, and find this place. One man, feet freeze, can go no more. Friend, him stay too. No leave. Two suns, three moons, maybe, one man him die. Friend try go back. Go one sun, and moon find him back by dead partner. Next day him start again, travel one sun, when moon look down him by dead man once more. Friend try next day, go half sun, freeze where him stand. Him skookum. White Spirit yell "Hello" ever since. Great White Spirit call you, call me. Hyas Tyee and King George man no more see sun. When sun look down me see Hummingbird, me see Ponoka."

I could get nothing more out of him. He sat mumbling and gnawing his fingers. Then I seemed to sink into oblivion.

I remember nothing more until the sun was shining in my face the next day. Two Indians were standing over me pouring something down my throat, and I thought at first I was

~~back on the river bank with Jackson bending over me. Where was Jackson?~~

The Indians who had come back from one starting point at the river just in time to save my life, pointed mutely to something under a blanket.

Hummingbird and Ponoka had beckoned Jackson to the Happy Hunting Grounds—The Hyas Tyee was dead.

(Note.—The narrator of this story said there was no question about his hearing the word "Hello." He had made enquiries as to the explanation, and concluded that the sound came from glaciers and mountain peaks not far away. As the glaciers moved a bit they scraped and echoed, and the sound was like the word "Hello." Jackson's story of the two white men was authentic. They had been found as stated, and footprints in the snow showed that the one had travelled in circles trying to find his way back to camp.)

*Rabbit-skin Blankets*

## Indian Blankets

ROBERT G. HODGSON

**I**N the North Country a rabbit skin blanket is the magic word among Indians and white men, for worth and comfort. Although formerly used extensively by trappers of the north to-day, woollen blankets and sleeping bags are taking their place, even if they are inferior in every way.

These blankets are made of rabbit skins, by squaws, (I never knew a white man to make one, as the process, like many Indian processes, seems to be known only to the Indians) and the method of making is a very laborious one. The rabbit skins are first of all dried, then cut into the right sized pieces, wet, frozen and worked alternately. This procedure is continued for an indefinite period, until the skins are properly ready to be made into blankets. When complete they are the warmest and lightest apparel that has ever been made. Their lightness was of great value where a man had to limit his

pack down to the barest necessities and they are so warm, man can sleep comfortably in them even in the cold arctic regions where, if a woollen blanket of the same weight were used, he would be apt to freeze. White men





who trap or follow other similar activities in the cold north will pay fabulous prices to secure one, almost any price an Indian cares to ask and even then he considers himself very fortunate in having secured it.

The reason of their scarcity is due to the rapid decrease of both rabbits and the Indians. In the north a plague strikes the rabbits every seven years and they die off so fast and in such large numbers that where they were formerly very numerous, by spring there is scarcely one to be found, seldom even a dead one. By the next season, when this disease is over and rabbits are again in evidence they are in such small numbers as to make it impossible for the Indians to secure many for their blanket making, it taking a large number for one blanket. Although

they continue to increase they have only begun to assume normal proportions when the plague again overtakes them causing their numbers to be much depleted at all times. The cause of this is not known but it has been noticed that at each season when this disease becomes rampant the lynx, which practically lives on rabbits, also decrease in numbers and whether they also die or only migrate is not known.

There is not the slightest doubt of the value of these blankets nor of the Indians' appreciation of them for in as much as Indians are very fond of money it is a rare thing nowadays for them to part with one. The one shown in the photo was owned by an Indian and he refused absolutely to sell it although he knew he could secure for it any sum within reason.



H.R.H. The Prince of Wales, K.G. (with duck), Sir Godfrey Thomas, Bart., private secretary, Lord Claud Hamilton, D.S.O., and a party of Indian guides at Cameron Falls

—Courtesy of Canadian National Railways



or bread, you can use this bowl as an oven by covering it with the larger plate.

The pork and bean can is cut to 4 inches in height, except for a 1-inch strip at one side. Turn back the edges around can and strip as done with the mixing bowl. Hammer them flat and then bend the strip out and down to form the handle. The rolled edge keeps your handle from collapsing when the cup is filled. A better tin cup could not be bought—and this one has the advantage of nesting.

Additional cups can be made in the same way. Two will fit in your smaller pail, or you can use slightly smaller sizes to make them nest.

Now set your cooking outfit up. You will find that each unit nests within the larger ones, all being contained in the largest pail. Your knives, forks, spoons and matches all will have space around the edges. Coffee, sugar, salt, pepper, and what have you can be dropped in as well. If you have ever had to scrape these items out of your pack, you will appreciate the convenience of this space.

For many men, who have to tote their duffle several miles from railroad to a favorite camp, the tin-can cook kit is a boon. It cuts down a lot of bulk, leaving room in a smaller pack for other necessary articles, such as an extra blanket or pair of pants. Don't say you have never stepped into a deep water hole! Waders go just so high, you know. And breakage on bottled goods is greatly reduced when set solidly between the cans. (I always did hate to have corks come out of, well, olive bottles when rolled in a pair of trousers.)

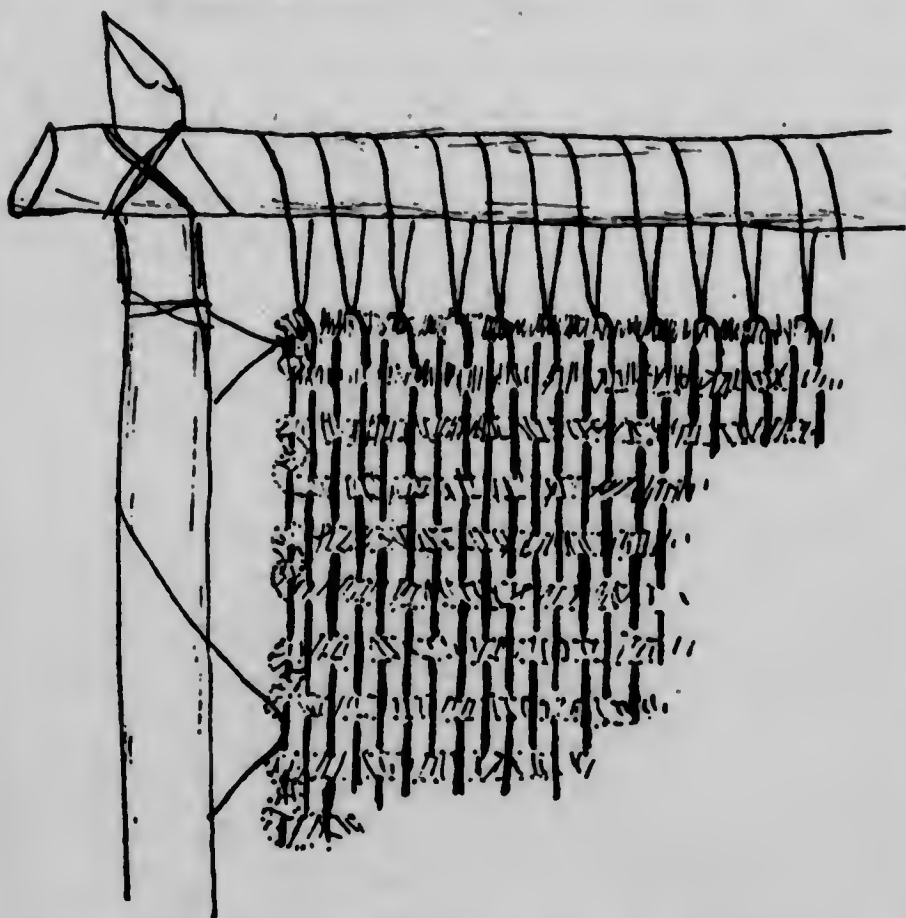
With ordinary care, the set will last an entire season. Careful washing and wiping after each use will keep it in good condition through several years.

Here's luck!

*Outdoor Life May 1933.*

### The Rabbit Skin Blanket

**B**EFORE the white trader brought in his stock of woolen fabrics, Indian tribes north of the Great Lakes made coats, pants, shirts, caps, mittens, socks and blankets



Drawing shows how blanket is woven, not how finished job looks. Thongs of fur will, of course, be pushed close together until they touch

from winter-caught rabbit skins. Warmer clothing never existed but with the usual imprudence of primitive folks, the Indians abandoned their own handicraft for that of the white man and eagerly traded their rabbit skin blankets for his gaudy striped covers that did not afford one-third as much protection against the cold. While the rabbit skin blanket had faults—it was heavy and bulky and shed constantly—it is doubtful if any manufactured sleeping equipment surpasses or even equals it for comfort in very low temperatures.

From sixty to eighty skins were used to make a blanket of 4-point size (6½ by 6 feet) depending upon the closeness of weave and mesh and the size of the rabbits. The Indian opened the pelts up the belly, fleshed and trimmed them, pulled them out flat and then he or rather his squaw cut each hide into a single long strip which varied in width from ½ inch on the thicker back to a full inch on the thinner flanks. The hides were not tanned but were stored outside in the cold until enough had been accumulated to make a blanket.

Should any camper wish to make one of these rabbit skin blankets, he had better give the skins a slight tan to keep them soft and also to stop some of the shedding. One easy method is to make a paste of laundry soap, oatmeal and a little water. Flesh the hide and coat the flesh side with this paste. Let stand for twenty-four hours, scrape off the soap, wash hide well, pull it out, let dry and oil flesh side with neats-foot oil or wool fat.

Another method is to flesh hide and coat lightly with a paste made of powdered alum and water. Let stand twenty-four hours, wash well in soap suds, rinse in water and pull and stretch hide as it dries. Work carefully as rabbit skins are tender. When dry oil as above and when oil has penetrated, cut the hide into one continuous strip.

Then make a frame of poles or lumber similar to a modern quilting frame, having it one foot larger each way than the proposed blanket. Fill the frame with a backing of cotton cord, No. 7 or 9, lacing each loop of this filling to the frame with smaller twine as shown in drawing. Then weave the fur strips in this backing, weaving straight across from side to side, and going over and under alternate cords. Give the skin a slight twist after each loop to keep it curled like a tube with fur projecting on all sides. This is one of the secrets of the blanket's unusual warmth. A double twist about the edge cord will make the margin stronger.—M. H. D.

### A Ghostly Santa Claus

**T**HAT uncouth and unsavory bird, the turkey buzzard or turkey vulture, has a number of queer roosting habits. For one, it perches like a dark spectre on the chimneys of houses in the South, on cold winter nights, to warm its body at the rising smoke, and it has been seen to spread its wings out over the flue after a rain, to dry out its water-soaked feathers.—M. H. D.



Forest & Stream, Jan. 17, 1914.

*THE RABBITSKIN BLANKET.*

**O**NE of our contributors mentioned last week something about a rabbitskin blanket as a protection against cold. He preferred eiderdown to rabbit, but how many city sportsmen have seen or used either? The rabbitskin blanket is peculiarly a Northern product. It is popular from the Height of Land to Hudson Bay, and hundreds are being used today in trapping camps and Indian winter tepees over the Canadian wilderness. The method of manufacture is to weave strips of rabbitskin (white at this season of the year) into a criss-cross blanket of varying dimensions and thickness. The Indian women around the headwaters of the Ottawa and northward are adepts in blanket making, but only a few come to market through the medium of the Hudson Bay Posts. We do not recall that these blankets have been shown at any of the Sportsmen's Shows. It is only the man who fares far into the northern wilderness who has had the opportunity of seeing or using the most comfortable protection against cold that the ingenuity of the original inhabitants of this country have been able to produce.

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## A RABBIT SKIN BLANKET

To the Editor of FOREST AND STREAM:

I WOULD like to have some further information about making rabbit skin blankets and as you published a short article about them some months ago, I am in hopes you can give it. Recently I wrote to another magazine, but the only information they could give was practically the same that was published in FOREST AND STREAM some months ago. I would like to know several things about the blankets and they are these:

1. Are they made from a certain kind of a rabbit or are they made from any kind of rabbit skins?

2. Will you describe how they are made in such a way that any one reading the article can make one himself?

3. Where can one buy these blankets or quilts and what is the best size?

"An Old Friend."

Rabbit skin blankets are made from the skin of the snowshoe rabbit. The pelt is tanned—some prospectors only rub alum on them—and then trimmed to the shape of a square. It takes about 200 hides to make a good size blanket. These hides are then sewed together, generally by the squaws who live near the Hudson Bay stations, into rectangular shape, about seven feet long by six wide. Two Hudson Bay Company's four-point wool blankets are then placed one upon each side of the rabbit skin and stretched while the rabbit skin is allowed to remain as loose as possible. The edge is strongly sewn all around. This is said to make the warmest bed a man can get. This is the white-man's method of making the blanket.

The redskin prefers to cut his rabbit skin in a long strip commencing at the edge (after trimming legs, heat, etc.) and cutting in a circle to the center. Strips are cut about an inch in width, then the squaw stretches it from tree to tree until dry. When several are prepared they are sewn together end on end like old fashioned carpet rags, until a sufficient length is obtained, when the squaw proceeds to weave them into a blanket, somewhat like a basket weave. A variation of this method is a sort of



knitting stitch in which the strip is threaded by thumb and finger through the preceding row of loops.

The redskin cuts his blankets about four feet square and stretches them same as the other way when sewing together. We do not see how he manages to keep warm in his little blanket; perhaps he wants an extra light pack and so will forego a little warmth. A blanket built the first way will weigh about 25 pounds and makes a nice pack for a good-sized dog on a hunting or prospecting trip. The Indian method makes a much lighter blanket, but it is much less durable.

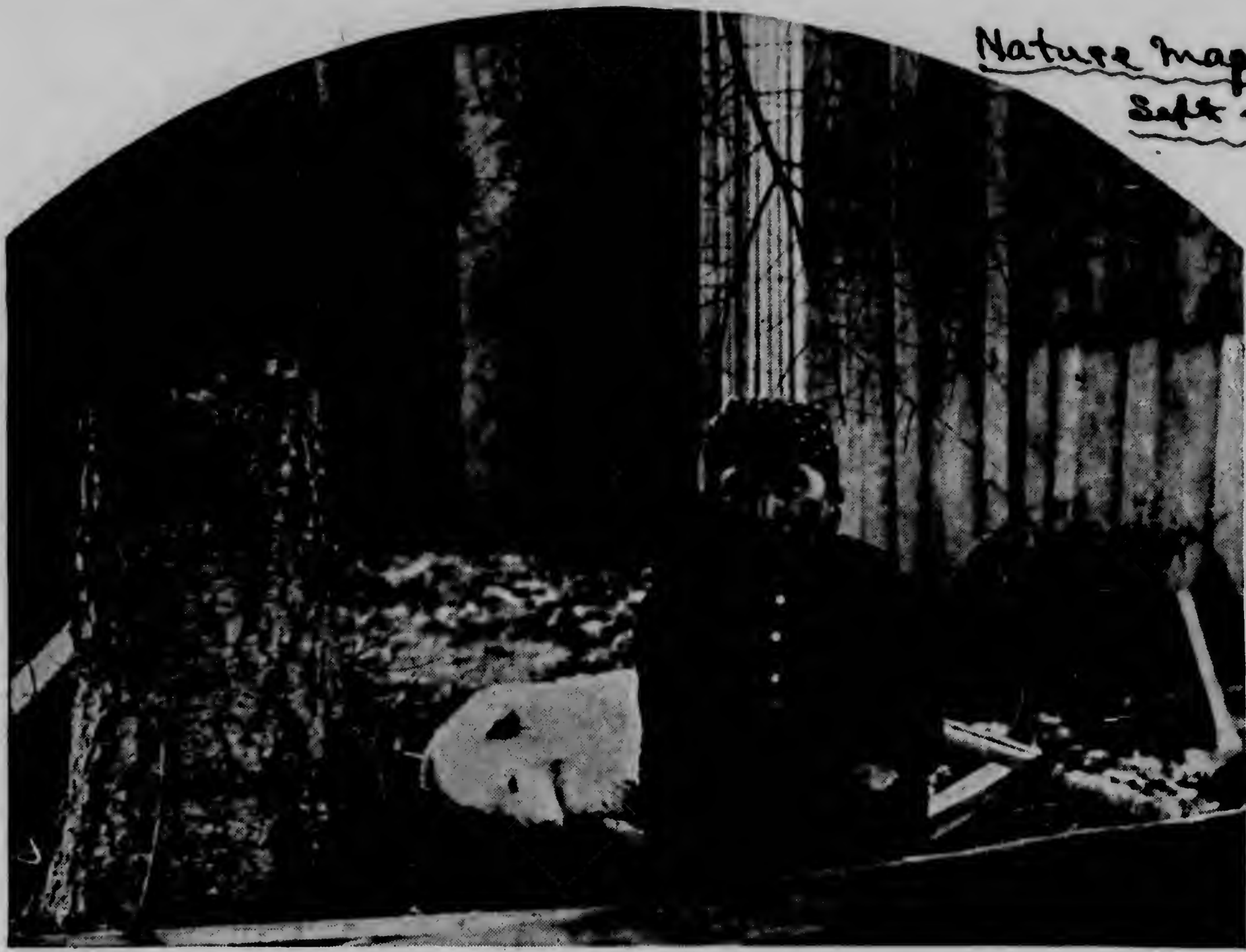
We doubt if one could purchase such a blanket, although it might be done through one of the Hudson Bay Company's posts. It is likely that any kind of rabbit skin would make a good blanket. It might be worth trying if one could get enough skins. [EDITORS.]

Not much like the Calif. & Nevada Indian rabbit-skin blankets

The redskin makes his blankets in a different way from the white man's. He cuts the skin in long strips and stretches them from tree to tree until dry. Then he sews them together end on end like old fashioned carpet rags. The Indian method makes a much lighter blanket, but it is much less durable.



*Nature Magazine*  
*Sept. 1929*



SHE KNEW OF THE DOGS THAT GAVE FLEECE  
*Jumbo, asleep beside her, is like them, but is, she said, a white man's dog*

# FLEECE-BEARING DOGS

They Have Passed But Traces of Them Remain

by Douglas Leechman

IT WAS on the Port Madison reservation, just a few miles from Seattle, that I first came across an Indian who could tell me something about the fleece-bearing dogs. She was an old woman; originally, I believe, of the Duwamish. Just a few minutes before, she had returned from the beach with a basketful of clams which were dug within less than a hundred feet of the house and she was now resting in the shade close by an unfinished dug-out canoe that her husband was working on. Old and feeble and surly she appeared.

Nearby slept her dog, who went by the very un-Indian name of Jumbo.

"Do you remember," I asked her, "the dogs whose wool the Indians here used for making blankets?"

"Yes, I remember hearing about them, though I never saw them. My mother knew them, and her mother, and they both made such blankets long ago."

"Were they dogs like Jumbo?" I asked curiously.

"Yes, like Jumbo," she replied, "they were white dogs, with long hair, but Jumbo is not one of them. He is a white man's dog, not an Indian dog."

Still, to be on the safe side, I decided to take Jumbo's picture as well as that of his mistress.

Most of the early explorers of the North Pacific Coast noticed the fine white woolen blankets that the Indians wore. The first true identification of the animal supplying the wool seems to have been made by Ledyard

who, in the Journal of Captain Cook's Voyage, speaks of the garments as being "principally made with the hair of their dogs, which are almost white and of the domestic kind."

It was in May, 1792 that Captain Vancouver came across these dogs. While at Port Orchard, on Puget Sound, he wrote: "The dogs belonging



WEAVING THE YARN MADE FROM THE FLEECE  
*Photograph of a painting by Paul Kane of this phase of Indian life*



to this tribe of Indians (at Port Orchard) were numerous, and much resembled those of Pomerania, though in general somewhat larger. They were all shorn as close to the skin as sheep are in England; and so compact were their fleeces, that large portions could be lifted up by a corner without causing any separation. They were composed of a mixture of a coarse kind of wool, with very fine long hair, capable of being spun into yarn. This gave me reason to believe that their woolen clothing might in part be composed of this material mixed with a finer kind of wool from some other animal, as their garments were all too fine to be manufactured from the coarse coating of the dog alone. The abundance of these blankets among the few people we met with, indicates the animal from whence the raw material is procured, to be very common in this neighborhood; but as they have no one domesticated except the dog, their supply of wool for their clothing can only be obtained by hunting the wild creature that produces it; of which we could not obtain the least information."

During the next month while farther north along the coast of an island, Whidby reported that he and his group saw "upwards of two hundred (people) some in their canoes with their families, and others walking along the shore, attended by about forty dogs in a drove, shorn close to the skin like sheep."

Hamilton Smith states that not all of these dogs were pure white. He depicts each as "with pointed, upright ears, docile, but chiefly valuable on account of the immense load of fur which it bears on its back, of white, and brown, and black colours, but having the woolly proportion so great and fine, that it may well be called a fleece."

Every other account seems to agree that the dogs were all white, and it is possible that those described by Hamilton Smith had been accidentally crossed with other dogs. In fact, it was the custom of these Indians to keep their flocks of dogs on small islands to prevent the breed from becoming mixed, a custom which implies that the dogs did not take to the water very readily. This trait is also said to be observable in the Eskimo husky; and lends some shadow of support to the theory that the two breeds are related. It is further recorded that these white, long-haired dogs never barked.

It appears that the wool from the dogs was nearly always mixed with other materials before use. Sometimes it was the wool of the mountain goat, also often used alone, sometimes duck's down, sometimes milk-weed fibre, and sometimes "wild hemp", *Apocynum cannabinum*. When down was used, each minute

feather had to be handled separately, the quill extracted and the remaining down rubbed into the dogs' wool.

Before using the wool from the dogs, it had to be cleaned. This was done with diatomaceous earth. A ball of this material, about the size of a man's fist, was heated in a fire of willow-wood. This reduced it to a powder, which was mixed with the wool. The wool was then spread out on a mat, moistened and beaten for a long time with a sword-shaped stick, which had the effect of removing all the natural grease from the hair.

The actual spinning of the yarn could then be under-

taken. A bundle of the wool being held in the left hand, it was fed slowly to the right hand and rolled into a yarn on the bare right thigh. The woman making the yarn was careful to keep it of the same thickness throughout, and allowed it to fall into a basket placed ready to catch it as it was twisted. Two separate basketsful were made in this manner. Then, taking the two threads at once, one from each basket, she rolled them about a stick in such a way as to form a large hollow ball, which could be undone from the middle.

The inner end of the ball was fastened to a spindle, which was about three feet long and provided with a heavy disc of wood or bone about a foot across. When the spindle was in use, one end rested on the ground and

the other was held by the left hand. The lower surface of the disc was struck with the right hand, causing the spindle to revolve, and the two threads were thus twisted into one, the resulting single thread being wound up on the shaft of the spindle as fast as it was made.

About 1866, J. K. Lord collected a number of blankets woven from this dogs' hair thread and sent them to the British Museum, and these are now among the very few specimens known. Most of them are white and have a loose fringe formed of loops of the weft threads. Sometimes they are ornamented with black zig-zag markings, but this does not imply the use of a black wool as black dyes were available.

It is quite possible that examples of these dog-hair blankets are still awaiting the ardent collector, for many of the Indians still have such remnants of their former glories hoarded up and after they have assured you several times that they have nothing left, will produce some totally unexpected treasure.

Strange things are done by the primitive tribes whose histories are hidden in the tangled jungles of the past. But as strange as any was the custom of shearing these Indian dogs, and the silent way in which it passed.



AN INDIAN BELLE

*Chau-u-wit, a Clallum chief's daughter, wearing dog-hair blanket*



# MAKING USE of 497

By...  
C. N. A. IRESON

## YOUR DEER HIDE

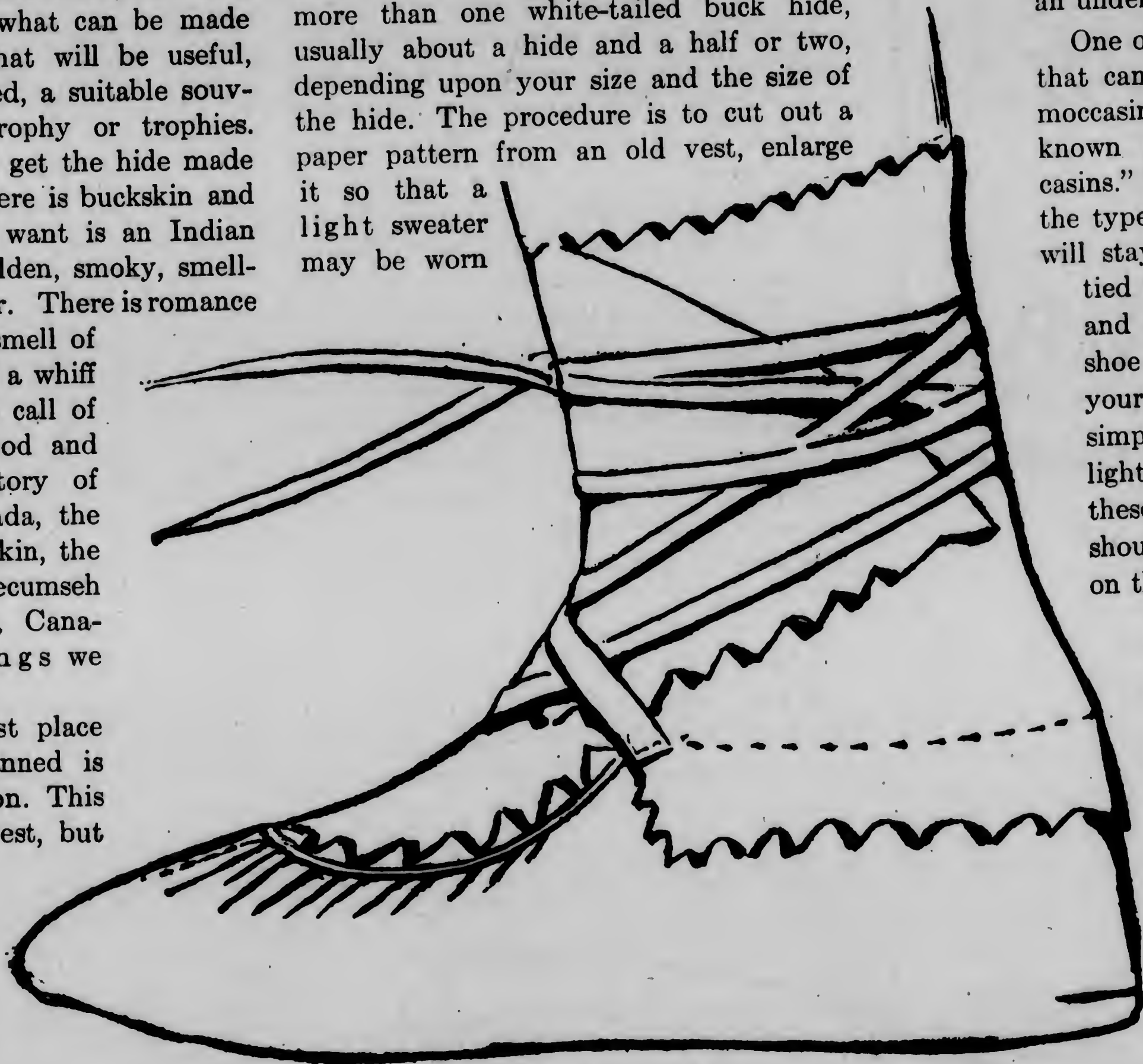
AT THE conclusion of every hunting season hundreds of deer hides are sold, given away or cast aside that could be put to practical use by those lucky enough to have shot them. Perhaps some of these hunters who so lightly cast them aside have good reasons for their apparent wasteful actions. Possibly they have had one tanned with the hair on which was used as a rug. If so, they soon found the brittle hairs breaking off and being tramped all over the house, much to the disgust of housekeepers. Naturally they said, "No more deer hides for me." If they had a good set of horns they were pleased; if not, they resigned themselves to the fate of having no trophy and hoped for better luck next year. This article will show just what can be made out of a deer hide that will be useful, ornamental if so desired, a suitable souvenir and a unique trophy or trophies. First it is necessary to get the hide made into buckskin. Now there is buckskin and buckskin. What you want is an Indian smoke tan, a clear, golden, smoky, smelling, smooth, soft leather. There is romance to that smell! "The smell of wood smoke at dawn," a whiff of which awakens the call of the wild in one's blood and conjures up the history of pioneer days in Canada, the days of fringed buckskin, the times of Pontiac, Tecumseh and Brant. In short, Canadian traditions; things we should remember.

If possible, the best place to get your hide tanned is on an Indian reservation. This is easily done out west, but there are many reserves in the east where the art is lost. To deal directly with an unknown Indian is not always satisfactory. I have had

a number of deer hides killed in Eastern Canada made into buckskin through Oliver Spanner, of Toronto, who sends them to an Indian settlement in Quebec. Most of these were very satisfactory. It is best to stretch, flesh and dry your hide before sending it, but they take them quite raw and turn out good work. A hide previously stretched and dried makes a larger

buckskin than one not so treated, but all when tanned are much shrunken from their original size. What you think is big enough for an overcoat in the raw will, when finished, make about a vest! It should also be mentioned that they take their time tanning them, it being a matter of months before the hide shows up! Once in possession, the question is what to do with it. There are several very useful articles, such as gloves, gauntlets, a vest or wind-breaker, all of which can be made in town. For city wear your gloves are best made by a glove manufacturer, but for bush wear it is cheaper to have them Indian made.

To make a good vest, that is, one that comes well down on the hips, will take more than one white-tailed buck hide, usually about a hide and a half or two, depending upon your size and the size of the hide. The procedure is to cut out a paper pattern from an old vest, enlarge it so that a light sweater may be worn



House shoe moccasin

underneath; also increase its length so that it protects the back about four inches lower than is done by most civilized vests. Once the pattern is cut, place it over the hide to see how far the leather will go. If satisfactory, wrap them both up and send them parcel post to some Indian woman who makes buckskin articles. If you don't know one, the Depart-

ment of Indian Affairs should be able to put you on the right track. Be sure and send suitable buttons, otherwise you will probably get the cheapest bone ones on the finished article. The vest shown in the diagram is quite fancily decorated with cut leather and colored silk work. It was made by an Indian woman of Georgian Bay, Ont., at a very reasonable price; just ten times cheaper than a city tailor asked for an undecorated garment! It is a bit fancy for general use, but I have had good use out of it this winter under a coat where it was not conspicuous. Its advantages are lightness and pliability; its disadvantages, inability to resist water and ease with which it is soiled, both of which are of small account in an under garment.

One of the most useful things that can be made are summer moccasins, more commonly known as "house shoe moccasins." The diagram illustrates the type. This Ojibway pattern will stay on the foot, whether tied with the thong or not, and makes an ideal house shoe or camp slipper. If your feet are tender, it is a simple matter to insert a light cork insole. Don't sew these in, because moccasins should not always be worn on the same foot, but changed over once in a while. They wear longer by so doing.

Take Indian moccasins made out of sheepskin, commonly sold at railway stations and in stores, are an abomination, the heel never staying on, but flopping out at right angles to the instep, tripping the wearer. In a few

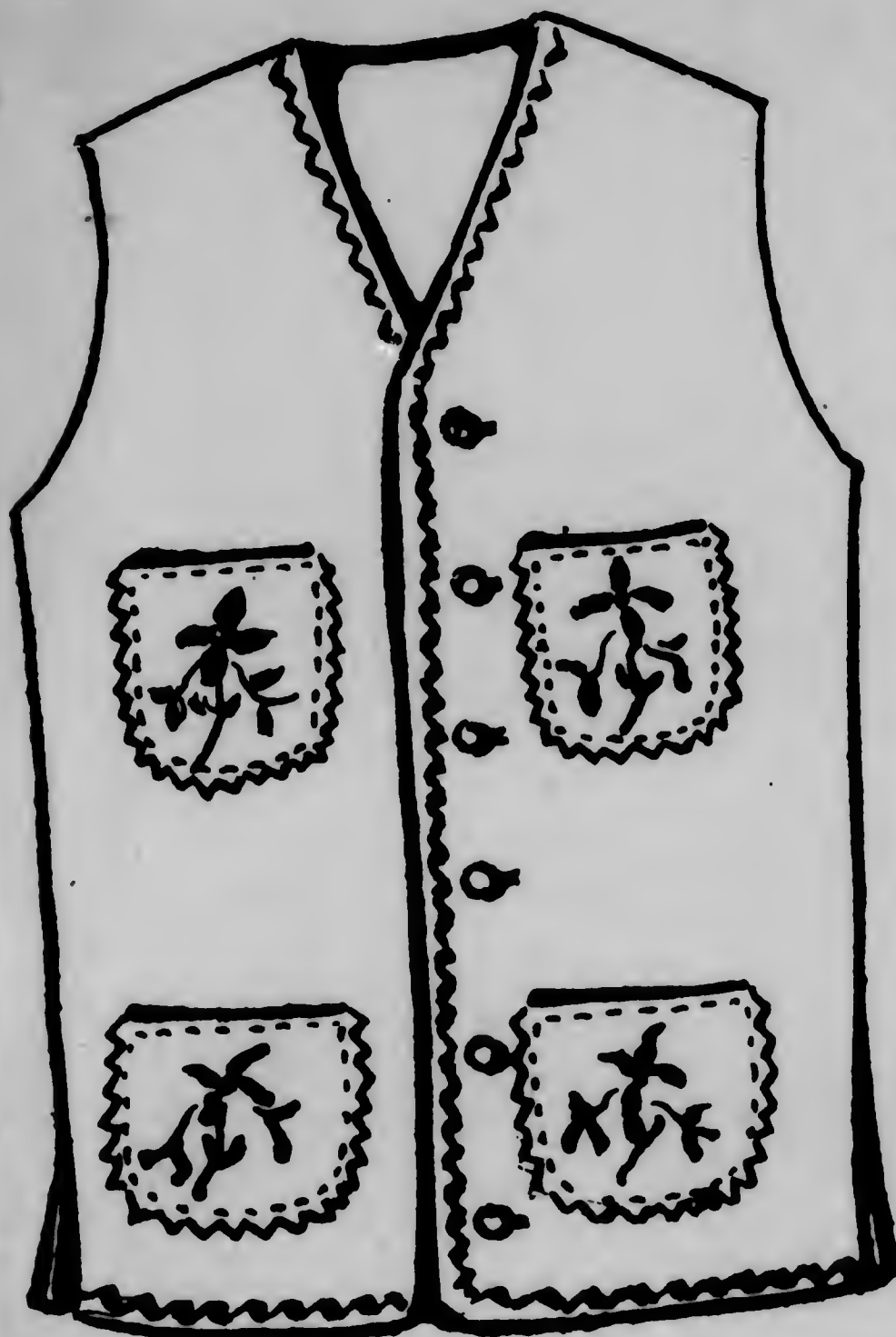
days the machine-made stitches break open and the purchaser wants no more of the red man's footwear. Small wonder! An Indian moccasin made out of genuine buckskin will last years. As I write, my feet are in a pair of Stoney moccasins from the Rockies that have been in continuous use as house shoes, camp and canoe slippers for twelve years. They are



still "going strong." I know of no more restful thing for the feet and no more useful trophy.

The other type shown in the diagram is for winter wear or general use. As can be seen, it has tops which are lapped over each other and held in place by two thongs wound around the ankle and tied in place. This is the original Indian idea and cannot be improved on. They have the advantage of having no eye-holes, which are the devil's own thing to thread with numb fingers on a cold, dark morning. Moccasins of this type are just the thing for winter sports, snowshoeing, tobogganing, etc. They run about eighty cents a pair and wear exceedingly well.

The proper procedure of getting the



Indian vest

moccasins to fit is to trace your foot, by placing it on a piece of paper, with a pencil, being careful that the pencil is at right angles to the ground so as not to make the diagram too large or small. For winter moccasins put on the requisite number of socks first. For house shoes trace the bare foot. Write your name and

address on the picture and state "with" or "without ornamentation"; also the number of pairs required.

The children especially will get quite a "kick" out of wearing moccasins made out of the deer that Dad shot, and what is more important to Dad when he comes home tired at night will be the muffled scurrying of moccasined feet instead of

the clattering shoes of scampering youngsters.

To conclude, a word of explanation of the symbolic patterns may not be amiss. The zig-zag cuts in the leather signify lightning, *i.e.*, speed. The floral decorations signify happiness. "Speed and happiness." There is more romance here than in our boots!

## Jack Miner Receives Valuable Gold Medal

IT HAS been announced that Jack Miner, the Canadian Naturalist, has been awarded the Outdoor Life Gold Medal of America. Ever since 1923 each year Outdoor Life has awarded the person accomplishing most in conservation in America a very valuable gold medal. For the year 1929, Jack Miner receives the medal, having been considered as doing the most along this line for the people of America. So successful is his sanctuary idea that in 1929 the United States copied his example to the extent of voting eight million dollars to be spent in their country building such sanctuaries in every state of the United States. When it was made known to Jack Miner that he was to receive this medal, worth several hundred dollars, and was the first person in Canada to ever receive such a medal from the United States, he said: "It is not the actual value of the medal that fills my heart, but to think the people of the United States would even consider little me when all I have done has been God's promise fulfilled when he said, 'Let man have dominion over all.'"

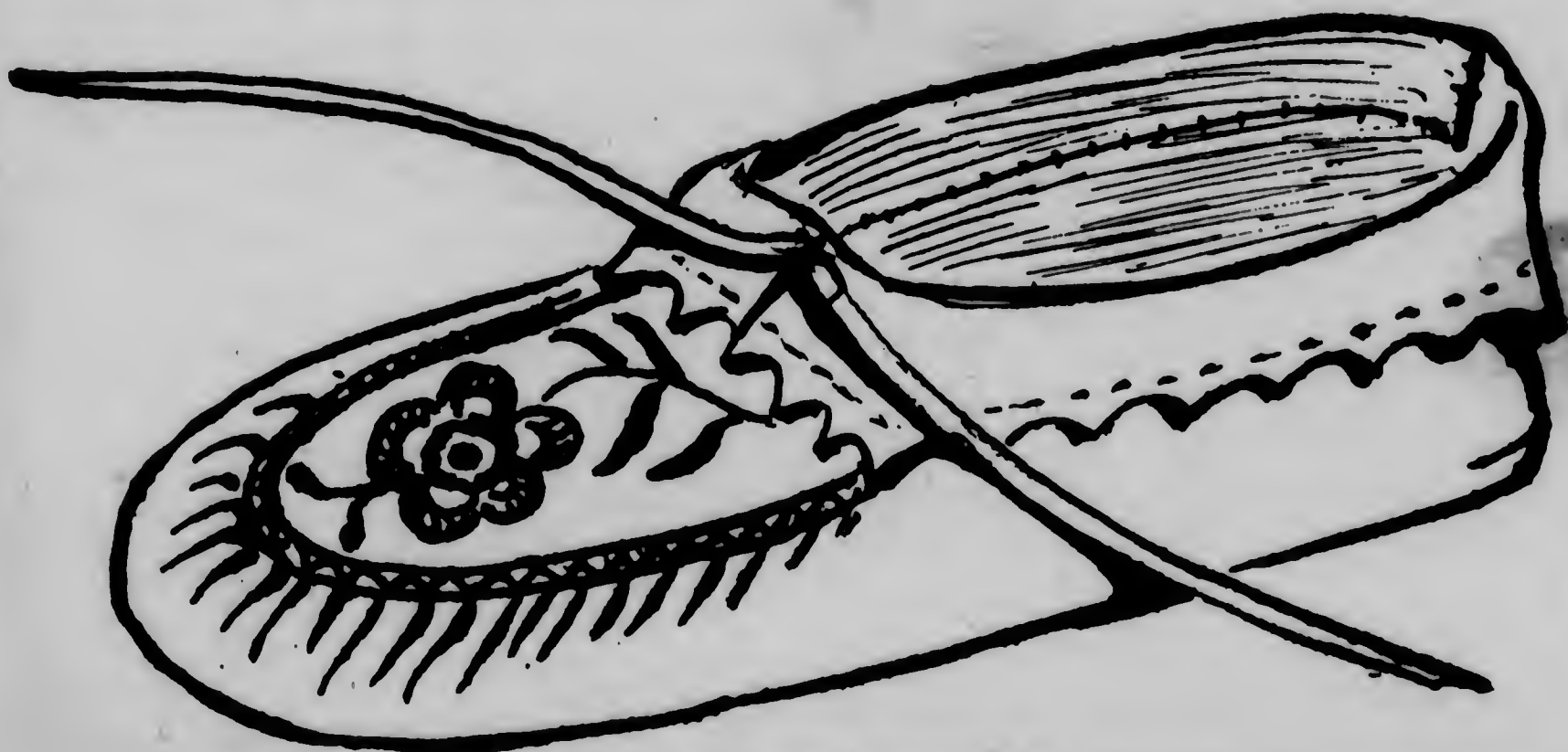
The judges for placing said medal were chosen from Pacific States, Middle States and Atlantic States. The one representing the West was Mr. J. P. Cruenin, Rod and Gun editor of the San Francisco Examiner, San Francisco, California. The one representing the Middle States was Judge George W. Wood, Supreme Court of Iowa, and national director of Izaak Walton League. The one representing the

Atlantic and Eastern States was Mr. Carlos Avery, president of American Game Protective Association of New York City, N.Y. After these three men had made their decision awarding medal to Jack Miner, the following was written as their reasons for so doing:

"Jack Miner, known throughout the world as the father of the waterfowl refuge idea, has done more than any other person to encourage the establishment of sanctuaries where migratory fowl may rest and breed. By his excellent example in harboring thousands of geese and ducks on his sanctuary in Kingsville, Ontario, where he started and maintained for many years at his own expense, by writing books and giving his talks at numerous large meetings, Miner has spread the story of the duck refuges, particularly small, protected spots that are so necessary along the migration routes.

"Through his untiring efforts and by his co-operation with sportsmen and other public-spirited individuals throughout the country, many duck, goose and swan sanctuaries have already been established and wherever one such refuge has been set aside and the sportsmen and general public see the results that are obtained, other groups in nearby communities are imbued with the idea of having similar waterfowl sanctuaries. In time, Miner's idea will be adopted along and near all of the migratory bird fly-ways, and the sportsmen will be the direct beneficiaries, for with the numbers of hunters growing rapidly, the present supply of waterfowl can be maintained only with sensible killing privileges and the creation of many refuges.

"Jack Miner has shown the way not with theories alone, but by excellent example of what can be accomplished toward perpetuating our ducks and geese and thereby providing for the pleasure of future generations of sportsmen, and this committee feels proud of this opportunity to give due recognition through Outdoor Life's annual award, to Jack Miner, the leader of the duck and goose refuge plan."



General purpose moccasin



collections - museums

C. Hart Merriam  
Papers  
BANC MSS  
80/18 c

**UNIVERSITY OF CALIFORNIA**

**MUSEUM OF ANTHROPOLOGY**

**THE HEARST COLLECTIONS**

**AT**

**PARNASSUS AND SECOND AVENUES**

**SAN FRANCISCO**

**GUIDE**

**TO SELECTED OBJECTS OF UNUSUAL INTEREST**

**UNIVERSITY OF CALIFORNIA PRESS**

**BERKELEY**

**1923**



UNIVERSITY OF CALIFORNIA  
MUSEUM OF ANTHROPOLOGY

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SYNOPTIC GUIDE

The Museum of Anthropology, devoted to the "History of Man and his Works," an integral part of the University of California, was founded by Mrs. Phoebe A. Hearst, organized in 1901, and opened to public exhibition in its present temporary quarters at Parnassus and Second Avenues, San Francisco, in 1911.

The collections comprise some 70,000 objects, about half of which are on exhibit, the remainder being stored on account of lack of display space. A complete catalog would fill volumes, and would be useless to any but professional students. About 5000 labels have been placed with the exhibited specimens, but even these require many hours to peruse. This guide has accordingly been prepared for the accommodation of visitors whose time is limited and who prefer to examine a small number of selected objects of unusual interest rather than to search these out among the thousands of other specimens.

The 175 works of art and objects of historical interest here described have been marked with their numbers in conspicuous red figures. Labels containing fuller information than could be included in this list, have been placed with many of the objects enumerated.

The museum is open to the public on Sundays and holidays from 10 to 5 o'clock, and on week days from 10 to 4, except on Mondays, when the building always remains closed.

## LIST OF OBJECTS

### IN FRONT OF BUILDING

1. Forty-three foot Haida totem pole—a coat of arms revealing the descent of a chief and his wife.

### PHILIPPINE EXHIBIT: MAIN VESTIBULE

2. Kris and barong, the fighting weapons of the warlike Moros.
3. Wavy kris, the most terrible of swords.
4. Beheading knife, part of the outfit of a chief's retinue.
5. Igorot head-hunter's shield—for defense, tripping, and decapitation.
6. Native brass helmet, a picturesque modern survival of sixteenth century Spanish armorial style.
7. Moro armor—a medley of primitive buffalo horn plates with civilized brass links.
8. Moro chief's gaudy and symbolic battle flags.
9. Filipino head-gear—a different hat for every tribe and station in life.

### MAIN VESTIBULE

10. Verestchagin's famous "Blowing from the Guns" in the Sepoy Rebellion, an unforgettable painting of one of the most dramatic incidents in history.

### EGYPTIAN HALL: ROOM 4

11. The God Osiris—Egyptian judge of the dead.
12. Splendid examples of the decorated mummy-case sarcophagi of Egypt.
13. An Egyptian girl who died 2100 years ago; mummy in bandages and coffin.
14. Original examples of the most completely lost of the great arts: Greek painting. Portraits of Greeks who lived in Egypt.
15. A precursor of the printing press: block letters for stamping, 250 A.D.
16. Ushabtiu—images of workmen placed in tombs to labor for the deceased in the next world.
17. Slender bracelets of flint, one of the difficult achievements of human industry.
18. One of the most perfect examples of Egyptian relief and hieroglyphic art: offering slab of Prince Wepemnofret.
19. The poor man's coffin in ancient Egypt: rods and baskets.
20. Alabaster jars, revealing the exquisite taste and workmanship of 5000 years ago.
21. Two-piece jar of stone, cemented so finely as scarcely to show the joint.
22. Mummy of sacred crocodile. Crocodile mummies of this sort often contain papyri with writing.
23. "Aaron's rod"—a mummified sacred serpent of the Nile.
24. Coffins of sycamore wood, joined with wooden nails.
25. Figured pots from the period before Egypt had Pharaohs, 5500 years ago. Paintings of ostriches prove that this bird was then not yet extinct along the Nile.
26. Sacred and symbolic Canopic jars, a set of four containing the viscera of a mummy.



27. Wooden model of ancient boat and crew, placed in a tomb for the use of the soul of the dead.
28. Head of Ka-nofer, one of the most perfectly modelled specimens of the Egyptian sculptor's art.
29. Realistic limestone statuettes of female slaves grinding grain; excavated at the Great Pyramids.
30. Sennew and his wife, of 2800 B.C.: a painted double statue. One of the finest and most lifelike examples of the art of ancient Egypt.
31. Rectangular offering sacrifice basin of Sennuw, priest of Cheops, builder of the greatest of the Pyramids.
32. Bowl of ultra-hard stone, with edges folded as if of wax.
33. Sacred crocodile mummy, with embalmed young on its back.
34. Mummies of sacred cats once housed in a temple precinct.
35. An intimate human reminder of the remote past—mummified foot of a high-born Egyptian girl.
36. Papyrus manuscript.
37. Stone head-rest, for use of the dead.

## ALASKA INDIAN COLLECTION: MAIN VESTIBULE

38. Life-sized carving of a medicine-woman, a funerary memento.
39. Dog sleigh, toboggan style, capacity 1000 pounds.
40. Dancing mask showing a human face paralyzed on one side, remarkable for its anatomical accuracy.
41. Wooden boxes used as cooking pots: made of a single board and bottom.
42. Ladle and individual dishes for serving hot grease at feasts.
43. Fighting armor of elk hide and of rods.

44. Wooden fish-hooks, a skilful device for taking halibut.
45. Pair of gigantic totem figures, supports for the door of a Kwakiutl house.

## MAIN STAIRWAY AND LANDING

46. Artistic locks, keys, hinges, and knockers wrought by the sixteenth century smiths of old Nuremberg.
47. Aztec hieroglyphic map-painting, depicting scenes from the conquest of Mexico by Cortez.
48. Philae, Egypt, from the Arabian Hills.
49. Madonna and Child, by an unknown painter. Typical of fifteenth century Italian art.

## PLAINS INDIAN COLLECTION: ROOM 11

50. War bonnet, typical Indian battle array.
51. Buffalo robe, the Indian's ceremonial garment.
52. White girl's scalp, taken and mounted by an Indian.
53. Satanta's shield, a historic weapon used in battle by three generations of warriors.
54. Complete working model of tepee.
55. Kiowa winter-count, one of the few authentic Indian calendars still in existence.
56. "Bullet-proof" ghost-dance shirt, stripped from a victim of the battle of Wounded Knee.
57. Blackfoot warrior's suit, with ermine and scalp trimmings.
58. Sioux Indian's suit, fringe of human scalps.
59. Blackfoot woman's dress—four pounds of buckskin and seven of beads.
60. Woman's dress, adorned with elk teeth.

61. Tomahawks—a set of specimens illustrating the evolution of this interesting type.
62. Group of smoking pipes, the Indian's symbol of religion, peace, fellowship, and council.

## ASIA COLLECTION: ROOM 12

63. The Thunder God of Japan in his most demoniac aspect.
64. Two-man "jingal" musket, still in use during the Boxer Rebellion.
65. Scimitars and helmets of old India, rivalling the world-famed steel of Damascus in keenness of blade and richness of pattern.
66. The Taj Mahal in perfect miniature of alabaster. The crowning glory of Saracenic Hindu architecture.
67. Chain armor from the Holy Land.

## GREEK AND ROMAN HALL: ROOM 13

68. "Square urn" for the ashes of the dead. The Latin inscription is translated in the label.
69. One of the largest "kraters" in existence—a wine mixing bowl holding 30 gallons.
70. Ancient portrait bust of Julius Caesar.
71. Augustus, founder of the Roman empire, and Trajan, the conqueror emperor, in contemporary marble.
72. Women milling, baking, and nursing—a rude picture of domestic life in Cyprus 4500 years ago.
73. Roman glass, made in Syria, the ancient center of the industry. The inimitable iridescence is produced by long burial.
74. Tear flasks, used by mourners as evidence of their grief.
75. Greek vases, from Athens—black figures on a red background.

76. Ancient Greek pictures of the famous Sphinx which devoured those who could not answer its riddles.
77. Greek leg armor: an unusually well preserved specimen.
78. Athenian vases—red figures on a black background.
79. Greek funeral jar to which human bones have become attached during cremation of the corpse.
80. Ancient small copy in marble of the gold and ivory statue of Athena made by Phidias for the Parthenon—the most famous piece of sculpture of antiquity. Such copies are rare.
81. "Strigil" or body scraper used by ancient athletes.
82. Bronze implement which has baffled archaeologists. Perhaps a spear thrower or boxing knuckle.
83. A Roman scale beam with a Cupid for a weight.
84. One of the largest of Greek wine cups.
85. A rare bit of Etruscan ingenuity—a stand with movable rings, the whole made of pottery.
86. Bronze shoeing of woman's wooden sandals—a lady's hobnails of 2500 years ago.
87. Etruscan altar hearth, a cook stove made of pottery.
88. Meat hooks for broiling, suggestive of instruments of torture.
89. The safety pin, one of the most ancient of modern necessities, invented about 2500 years ago.
90. A Roman camp cook's outfit, buried with him after his death from a spear thrust—note the hole in the breast plate.

## ANCIENT PERUVIAN HALL: ROOM 14

91. Peruvian agricultural implements—all of wood.
92. Pottery from the period of grandeur in southern Peru, marked by a heavy but free style of painting.



93. Beautifully carved shovels, used ceremonially by the priests. The Incas dug the ground with wood, metal being too precious.
94. Period of early decadence, following the decline of the Tiahuanaco style. Designs degenerate into rudimentary forms.
95. The great Renaissance of ancient Peru. Art designs become marked by delicacy and fineness.
96. From bird to geometric figure—a study in the evolution of designs.
97. Art forms of the latest Peruvian nation, "The Romans of South America"—the Incas of Cuzeo, overthrown by Pizarro in 1532 A.D.
98. Evidences of the earliest known civilization in Peru: rudely incised pottery, probably over 3000 years old.
99. Ear studs as big as a watch, worn in the stretched ear lobe.
100. Whistling jar. An ingenious mechanical contrivance.
101. Wooden grave images—gods, spirits, or the deceased?
102. A mummy's arm—still showing the tattoo that once adorned the wearer.
103. Mummy taken out of its pot but still swathed.
104. Mummy entirely unwrapped.
105. Wrapped mummy in its burial pot.
106. A round coffin—immense burial pot of the Incas.
107. Corn, beans, peanuts, and other familiar foods of today as cultivated 2000 years ago.
108. "Idols," with face painting resembling spectacles.
109. A late decadence of civilization, especially visible in the crude, indecisive pottery wares of central Peru.
110. Remains of the potter's art decorated in the massive style characteristic of the ruins of Tiahuanaco in Bolivia and probably dating from an early time.

111. The great period of northern Peruvian art, characterized by lively scenes in free-flowing lines.
112. How the gods looked to the ancient Peruvians: a remarkable series of pottery images.
113. Fashions and occupations of centuries and thousands of years ago illustrated by finely modelled jars.
114. Human-faced bells of copper, worn as a cloak fringe by an Indian nobleman long dead.
115. Spondylus shells for ornament, imported into Peru from Panama—an evidence of aboriginal long-distance trade.
116. Pre-Inca "Pan's pipes," like those of the Greeks.
117. Prehistoric woman's work basket, giving a remarkable insight into the domestic life of the times.
118. The Inca "razor," a metal tweezers.
119. Kipus—an early attempt at records by means of knotted strings.
120. One of the finest pieces of textile art in the world: cloth woven with designs in the grotesquely majestic style of Tiahuanaco.
121. Complete embroidered blanket shawl. Inca fashion.
122. Scales, still balancing. The only examples of this invention in aboriginal North or South America.

## PACIFIC ISLAND COLLECTION: ROOM 16

123. One-man canoe, uncapsizable on account of outrigger.
124. Armor of coconut fibre, invented as protection against deadly shark-tooth armament.
125. Shark-tooth spears and swords, one of the most ghastly types of weapons ever devised.
126. Wooden bowl, remarkable for the ingenuity of the mending.

127. Admiralty Island spears, with razor-like points of volcanic glass.
128. War clubs from Fiji, a contribution to the galaxy of human fighting tools.
129. Wigs of human hair, bleached blond and worn by men as ceremonial head dress.
130. Ceremonial adzes from Mangaia, among the most elaborately carved of all utensils: interesting as a study in the evolution of designs.
131. Jade battle ax, notable for its finish.
132. Intricately carved masks worn in the rituals of the secret "ghost" societies.

## SHELLMOUND COLLECTION: UPPER LANDING

133. What the shellmound women sewed clothing and worked baskets with: bone awls.
134. Pipes—the medicine-man's badge.
135. Skulls, showing the fairly large brain case of the shellmound race.
136. How the inside of a shellmound looks—typical samples of different layers.
137. Two shellmound burials from near San Francisco—the skeletons in characteristic bent position.

## SOUTHWESTERN INDIAN HALL: ROOM 17

138. New Mexican storage jar—an example of what can be done in pottery making by the aborigines.
139. Kachinas or images used in ceremonies. Hopi Indians.
140. Bow, painted with human blood, from the band of the famous Apache chief Geronimo.

141. Stone mill used by one of the wives of Geronimo.
142. Cliff-dweller child's skull, artificially deformed in infancy.
143. Stone lasts for fibre sandals. Cliff-dweller.
144. Wooden hoes, perhaps the first agricultural implement invented.
145. Pottery made by coiling together long rolls of clay, a primitive method antedating the potter's wheel.
146. Rare examples of stone axes with original hafting.

## CALIFORNIA INDIAN HALL: ROOM 18

147. Stirrers for cooking acorn mush with hot stones in baskets. Note the burned ends.
148. Trunks for valuables. Dug out of logs; cylindrical for conveyance in round bottomed canoes; a unique type.
149. A sex difference in Indian table etiquette: men's and women's spoons.
150. Purses for shell money. Carved with stone tools from solid elk horn.
151. 13 by 10-inch door of "sweat-house." It was thought irreligious to use a larger exit.
152. The fire drill: two sticks that produce a spark.
153. Aboriginal "tooth-shell" money. Ten strings would buy a wife or quiet a murder.
154. Rare native knives of flint in the original hafting, still used in 1902.
155. Stuffed deerskins, displayed in dances. Possession of a white skin caused an Indian to be considered a Croesus.
156. California Indian woman's full dress—apron and hip skirt.
157. House framework of whales' bones used on treeless San Nicolas Island.



158. Sacred dance head-feathers from the California condor, the largest bird that flies.
159. Set of implements made by "Ishi" and his family, the last survivors of the Yahi or Southern Yana tribe of Tehama county.
160. Arrowpoints chipped by Ishi from obsidian and glass, with tools and materials to illustrate the process.
161. Doorway of native house, cut in a slab of redwood, and fitted with sliding panel.
162. Redwood canoe, hollowed out by means of fire and polished with stone tools.
163. One of the finest baskets ever made, 700 stitches to the square inch.
164. Basket worked on a foundation of copper wire.
165. Pomo bear-doctor's medicine basket, a unique piece.
166. An aboriginal mint: Pomo outfit for making shell money.
167. Famous feathered baskets of the Pomo Indians, a superb and distinctive local product.
168. "Big head" outfit, worn by impersonators of spirits in religious dances. Sacramento Valley.
169. Storage baskets for mesquite, a desert food.
170. Acorn storehouse, capacity 16 bushels. Sierra Nevada.
171. A perfect basket 10 feet in circumference.
172. Set of prehistoric baskets preserved in caves of Santa Barbara county.
173. Tule raft, the primitive style of boat used by most California tribes.
174. Large fish trap, scoop type, for muddy water.
175. Ancient burial jar with human bones and ashes from cremation. San Diego Indians.

MUSEUMS ASSOCIATION  
OF THE UNITED KINGDOM.

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BRADFORD MEETING, 1902.

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METHODS OF COLLECTING  
ANTHROPOLOGICAL MATERIAL.

BY

HARLAN I. SMITH,

AMERICAN MUSEUM OF NATURAL HISTORY, NEW YORK, U.S.A.

SHEFFIELD INDEPENDENT PRESS LIMITED, PRINTERS 21, FARGATE.

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## Methods of Collecting Anthropological Material.\*

BY HARLAN I. SMITH,

American Museum of Natural History, New York.

THERE are at least three distinct methods of collecting anthropological material that have been followed by the museums of this country. They aim chiefly at two totally different results,—first the increase, and second the diffusion of anthropological knowledge. Two of these methods may be defined as systematic efforts to produce these results.

The first method is a systematic attempt to secure material upon which to base original research that will result in the increase of knowledge. This may be called "research collecting."

The second method is an intelligent and aggressive attempt to provide specimens to systematically illustrate known anthropological facts or to diffuse existing knowledge. This may be called "synoptic collecting."

The third method is simply the amassing of a collection of objects which may be found casually, or which may be presented for preservation by persons not a party to any systematic effort or plan of the museum. This may be called "the preservation method."

Research collecting can be best carried on by the larger museums unless limited, for instance, to provincial areas; and the best results are attained by entrusting the work to individuals who will devote a considerable time to it, and not

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\* Presented at the Joint Meeting of the American Anthropological Association and Section H, Anthropology, of the American Association for the Advancement of Science, July 2nd, 1901.



only amass material for research, but master the existing knowledge of the subject and carry on the original investigations, so that they become authorities on the areas and subjects attacked.

Secrecy regarding the fields, applied locally and toward populations having vandalistic tendencies, may be advisable; but for economical reasons it is best to inform the entire profession of the areas and subjects being or about to be investigated. In this way unnecessary duplication of work, such as might happen if secrecy were employed, is avoided, and the energy of colabourers is reserved for some of the many other problems of original research awaiting attention. Such publicity, within the profession, should never cause loss to science, or raise the fear that sister educational institutions or honourable brother investigators will usurp the fields and subjects already being properly worked.

Parties who follow the research method may usually be made up advantageously of people native to the fields of research, and who know the country, its climate, customs, roads, &c. The scientific head may, of course, be an exception to this general rule, as also may be a photographer, cast-maker, or other special worker, in cases where the leader is unable to perform such duties.

The leader of such a collecting party should have charge of the unpacking, cataloguing, publication of the results of the research, arrangement of the specimens for exhibition as evidences of the newly discovered facts, and labelling of the research collections. The arrangement and labelling may often be facilitated by following the order and legends of the publication, or at least such reports should be referred to.

Research-collecting parties naturally must secure many specimens of each kind, and in some cases as many specimens as can be found. This is necessary to eliminate the element of chance or luck in finding evidences, and also to enable the student to determine the average type as well as to note exceptional objects, and for the study of variation. In the case of osteological specimens, this feature is of especial importance.

The publications, and specimens arranged with labels, which latter are needed as evidences of the increment of knowledge, constitute a synoptic collection illustrating known facts. After such a collection is completed for the institution financing it, the great mass of duplicate specimens may serve as a store from which to draw to supply sister educational institutions with synoptic collections for the diffusion of existing knowledge.

Synoptic collecting may be carried on by any museum, and may be either limited to provincial areas and few subjects by small institutions, or unrestricted by large ones. It naturally appeals to a greater number of people than the research method, as it serves to illustrate by actual objects the things shewn by pictures in text-books and other general publications. The best results are attained by enlisting the services of research collectors, who, being authorities, can select the best available specimens and avoid the expenditure of funds on other than typical material. If the illustrative specimens can be secured from among the duplicates of a research museum, the expenses of a trip to the field may be saved, thus a considerable sum can be reserved which may be used for securing a more extensive series, or a synoptic collection of some other subject. From the synopsis of the original research collection the method of arrangement may be copied, thus saving the useless labour of working it out again; and labels may be quoted, or possibly even secured, from the duplicates kept for replenishing soiled labels in the research collection.

In case any specimens which can not be obtained by this method the services of dealers may be enlisted; but if many specimens are required, a field trip will usually be more economical, especially if an experienced research collector can be secured to do the work on an economical side trip or even on a main trip. In nearly every case the labelling, which should be insisted upon, will give greater satisfaction if done by the research collector. Such a collector will often be glad to make a synoptic collection while on a research trip, so as to divide the financial burden of the expedition. Intelligent



persons native to a region, from which specimens are sought, may often be engaged to secure them at a reasonable expense, especially if they may do the work supplementary to their regular vocation.

The third method may diffuse or even increase anthropological knowledge or it may do both; but, it may be dismissed by the mere statement that, not being a systematic attack to produce such a result, it proves of any value only by accident. Its only commendable feature is, that occasionally it may be a means of preserving valuable objects that otherwise might be lost to the world.

It is evident, that for economy, efficiency, and accuracy in diffusing knowledge, the synoptic method of collecting should be replaced as far as possible by a method of exchange between institutions desiring synoptic collections and those making research collections. In many cases research museums can well afford to present synoptic collections, made up from the duplicates of their research collections, to the smaller museums, which are widely distributed, and thus able to widely diffuse the knowledge gained by the research museum.

The research method of collecting is certainly of the highest type, as it not only advances knowledge, but, with exchange, correspondence, and co-operation between museums, may furnish all the material results produced by the other methods.



*The honor of your presence is requested  
by the Board of Trustees at the opening of the  
Museum of the American Indian  
Heye Foundation  
Broadway at One hundred and fifty-fifth Street  
New York City  
from three until six in the afternoon  
of Wednesday, November fifteenth  
Nineteen hundred and twenty-two*



UNITED STATES CIVIL SERVICE EXAMINATION

ASSOCIATE CURATOR (ARCHEOLOGY), \$3,200 A YEAR

NATIONAL MUSEUM, SMITHSONIAN INSTITUTION

*Recd. Feb. 20, 1936-  
sm*

Applications must be on file with the United States Civil Service Commission at Washington, D. C., not later than March 16, 1936

The United States Civil Service Commission announces an open competitive examination for Associate Curator to fill the position of Assistant Curator. Vacancies in this position and in positions requiring similar qualifications will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion. The salary named above is subject to a deduction of 3 1/2 percent toward a retirement annuity.

DUTIES.--To conduct independent research in archeology and to prepare reports thereon for publication; to classify, describe, and take care of specimens in the Division of Archeology; to install exhibits and prepare texts and labels; and to serve as Acting Curator of the Division of Archeology in the absence of the Curator.

BASIS OF RATINGS.--Competitors will not be required to report for examination at any place, but will be rated on their education and experience on a scale of 100, such ratings being based upon competitors' sworn statements in their applications and upon corroborative evidence.

APPLICANTS MUST POSSESS THE FOLLOWING QUALIFICATIONS

1. They must be citizens of the United States.
2. EDUCATION.--They must have been graduated with a bachelor's degree from a college or university of recognized standing upon the completion of at least 118 semester hours.
3. EXPERIENCE.--Except for the substitution provided below, they must have had three years of responsible experience in American archeology.

CAUTION.--Applicants must show their experience in complete detail, by months and years, and distinguish between field, laboratory, and museum experience.

SUBSTITUTION OF ADDITIONAL EDUCATION FOR EXPERIENCE.--Each year of post-graduate study, the major portion of which was in American archeology, will be accepted in lieu of one year of the required experience up to a total of two years.

Additional credit will be given applicants who have had museum experience.

4. AGE.--They must not have reached their forty-fifth birthday on the date of the close of receipt of applications. This age limit does not apply to persons granted preference because of military or naval service, except that such applicants must not have reached the retirement age.
5. PHYSICAL ABILITY.--Applicants must be in sound physical health.

Remediable defects or curable disease will not exclude a person from examination, but proof that such defects have been remedied, or the disease, if any, cured, must be received during the life of the eligible register before persons otherwise qualified may be considered for appointment under civil-service rules.

Persons selected for appointment will be required to pass a physical examination given by a Federal medical officer. Failure to pass such physical examination will prevent appointment.



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2. Applicants who wish to claim veteran preference must file Preference Form 14 (blue) properly executed and accompanied by the documentary proof required therein.
3. Foreign-born applicants must submit with their applications proof of United States citizenship.
4. Applicants must submit with their applications their unmounted photographs, taken within 2 years, with their names written thereon. Proofs or group photographs will not be accepted. Photographs will not be returned to applicants.
5. Applicants must file with their applications a transcript of their college courses and credits, signed by the proper official of the college or university attended. If this transcript cannot be secured in time to file it with the application, it may be submitted later, but should be filed at the earliest practicable date.
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FINGERPRINTS.--Fingerprints will be taken of all persons appointed from this examination.

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Atlanta, Ga., New Post Office Building.	Seattle, Wash., Federal Office Building.
Boston, Mass., Post Office and Court-house Building	St. Louis, Mo., New U. S. Courthouse and Customhouse.
Chicago, Ill., New Post Office Building.	St. Paul, Minn., New Post Office Building.
Cincinnati, Ohio, Old Post Office Building.	San Francisco, Calif., 995 Market Street.
Denver, Colo., Post Office Building	Honolulu, T. H., Federal Building.
New Orleans, La., Customhouse.	-----
New York, N. Y., Federal Building, Christopher Street.	Balboa Heights, Canal Zone, Secretary, United States Civil Service Board.
Philadelphia, Pa., Old Post Office Building.	San Juan, P. R., Chairman, Puerto Rican Civil Service Commission.

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Issued February 17, 1936



# Corn Food

C. Hart Merriam  
Papers  
BANC MSS  
80/18 c

## P O N E

The term 'pone' is of Indian origin and was published by Smith as early as 1612 in his 'Map of Virginia' (p. 17).

William Gerard, in a paper on 'Virginia's Indian Contributions to English,' writes:

"Pone.--Among the Virginia Indians, a ball or flat round cake made of a paste of corn-meal and hot water, covered with hot ashes in a fire-bed until baked, and then immediately dipped in water to cleanse it, and afterward allowed to dry by its own heat; or, a similar cake or ball made of flour obtained from certain edible roots and seeds, and sometimes 'battered' with deer's suet (runga).<sup>✓</sup> (2) A kind of bread or cake made of corn-meal, milk, and eggs, and baked in a tin pan; called also 'corn pone.' (3) 'Sweet-potato-pone,' a kind of cake made by grating sweet potatoes, expressing the juice, mixing the residue with sugar and spices, and baking in a tin pan. 'Better than pone and molasses' is a homely simile used in reference to a thing considered superlatively good."<sup>✓</sup>

He quotes Norwood, 'Voyage of Virginia' (p. 47, 1649): "We made a good provision of Pone to bait on by the way." And gives the following quotation from Beverly, "Their [the poor people's] constant bread is Pone, not so-called from the Latin Panis, but from the Indian name Oppone."<sup>✓</sup>

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<sup>✓</sup>The cake or ball was sometimes put into a pot and boiled, and afterward laid upon a smooth stone and allowed to harden.

<sup>✓</sup>Am. Anthropologist, Vol. 9, pp. 102-103, 1907.

<sup>✓</sup>Ibid, ft. note p. 102, 1907.



In an account of the travels of Hennepin and his party in 1677-8 it is stated: "They crossed the eastern extremity of Lake Ontario . . . and pushed southward . . . towards Onondaga. . . Thence they proceeded eastward to the Oneidas, and afterwards to the Mohawks, who regaled them with small frogs, pounded up with a porridge of Indian corn."

Parkman: Discovery of Great West, , 1869. [7th Ed. 123, 1874.]



GRAINS USED BY INDIANS, EAST SHORE TULARE LAKE, CALIF.

The San Francisco Daily Pacific News of June 17, 1850 gives the following note on grains on eastern banks of Tulare Lake on a route hitherto unknown.--

"A gentleman just down from the Mariposa states that on entering the San Joaquin Valley, from Los Angeles, in September last, he passed along the eastern banks of Tulare Lake, by a route not traveled previously to that time. He found large and flowing streams emptying into the lake from the east, and numerous well-disposed Indians with their flocks of cattle and horses. The most singular objects that met his eye, were several varieties of grain which he believes to have never been met with before. One of these resembled barley, and grew in vast quantities, often covering areas of thousands of acres. Another variety was smaller, like millet, but no less beautiful. But the most singular variety of them all, and equally abundant, was what our informant termed pop-corn. He stated that the natives cut and threshed out large quantities of this, which he supposed they lay up in store. This grain they 'parch' like pop-corn."

San Francisco Daily Pacific News, June 17, 1850.



DRINK MADE FROM PARCHED CORN

"It is made by parching corn, and pounding it in a mortar to the consistency of coarse meal; a little sugar and cinnamon added makes it quite palatable. When the traveler becomes hungry or thirsty, a little of the flour is mixed with water and drunk. It is an excellent article for a traveler who desires to go the greatest length of time upon the smallest amount of transportation."

Marcy: *Prairie Traveler*, 34, N.Y. 1859.

The name of this article is given as "cold flour."

Ibid 33-34.



Feb. 1931

## Pinole—A Concentrated Food

By Claude P. Fordyce

THE outdoor man of today can well make use of an extremely compact and energy-yielding ration which wilderness dwellers of several nations have been using for many years. It is a parched meal called, variously, "nocake" by New Englanders; "rockahominy" by early Virginians; "gifo" by the Louisiana Indians; and "pinole" by Mexicans. It is far superior to any other condensed food, and one can live on it continuously and solely for weeks or even months.

In early days an Indian would start out alone on a far journey where game was scarce, and be sustained in perfect health with a small sack of pinole or parched and powdered maize or corn, a teaspoonful of which he would stir in a little water and swallow, which amount would suffice for a meal. The Delaware Indian would parch Indian corn in clean, hot ashes until it burst, then grind in a mortar to a flour, oftentimes mix maple sugar with it, and when hungry would take a spoonful in his mouth and stoop to a stream to drink.

Boone, Crockett, and Lewis and Clark depended upon it on forced marches when no meat was to be had. T. S. Van Dyke relates that the principle of pinole is very simple. "If you should eat a breakfast of corn meal mush alone, and start on a hard tramp, you will feel hungry in an hour or two, although at mealtime the dewrinkling of your stomach may have reached the hurting point. But if, instead of distending the meal so much with water and heat, you had simply mixed it in cold water and drank it, you could have taken down three times the quantity in one-tenth of the time. You would not feel the difference at your waistband, but you would feel it mightily in your legs. It works a little on the principle of dried apples, although it is quite an improvement. It swells to suit the demand and not too suddenly.

"SUPPOSE now, instead of raw corn meal, we make it not only drinkable but positively good. This is done easily by parching it to a very light brown before grinding, and grinding it just fine enough to mix so as to be drinkable, but not pasty as flour would be. Good wheat is as good as corn, and perhaps better, while the combination is good. Common rolled oats, browned in a pan in an oven, and run through a spice mill, is as good and easy to make it out of as anything. A coffee mill may do if it is set fine enough. Ten per cent of popped corn added will improve the flavor, as will also chocolate. Sugar is a direct benefit, as it yields heat and energy.

"In using pinole stir about 2 heaping teaspoonfuls in a cup of water, drink it in five seconds, and be fed for five hours. One will be well nourished through the longest trips, and come out strong and well on pinole alone. Pinole, a small quantity of milk chocolate, and a few raisins form an ideal lightweight ration, and they are preferred by the mountaineers of our West.

"Breakfast foods, which are so popular today, compare well with pinole. Corn breakfast food, flaked and parched and ready to eat, yields 1,735 calories in fuel value per pound, while parched corn (pinole, prepared by the Indian method) has 1,915 calories. Popped corn is also high, having 1,880 calories; wheat bread is lower with 1,205 calories, and boiled

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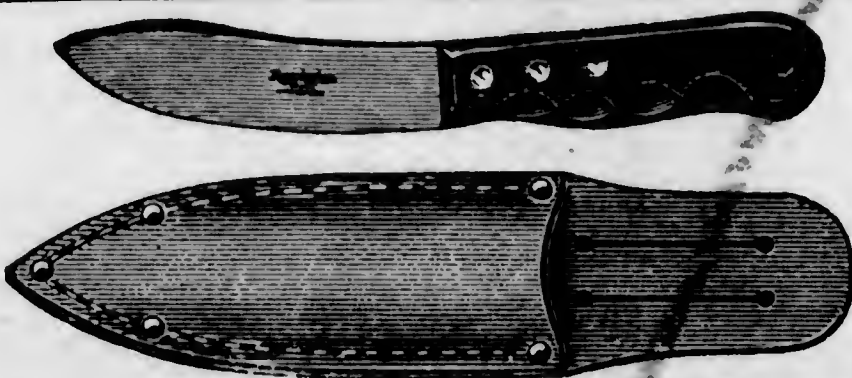
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## DR. LITTLE'S DOG BOOK

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Corn

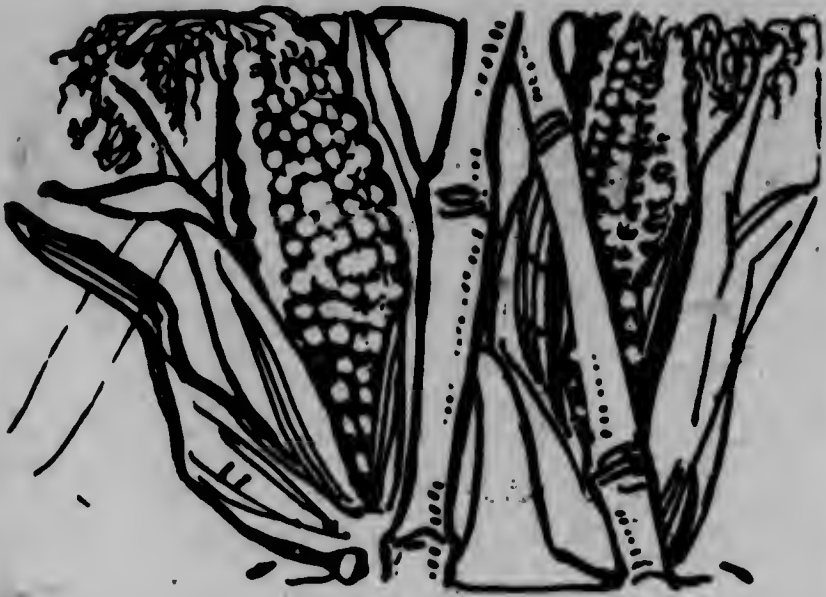
Science News Letter, Aug. 20, 1932.

P. 6

BOTANY

## NATURE RAMBLINGS

by Frank Thone



### Corn Farmers 1,000 Years Ago

**T**HE CORN we now grow is not essentially different from the corn grown by the Indians a thousand years ago.

The age of the highest development of the Pueblos in the Southwest has been determined at about 1000 A. D. This great Indian civilization knew corn—was, in fact, founded on corn. Corn was the principal crop these ancient aborigines grew on their irrigated farms on the canyon bottoms; it was their main dependence for food and the central fact around which their elaborate religious ceremonials revolved. To the Pueblos, corn was life.

For this reason, their dead were often buried with ears of corn in their hands. In the dry, hot earth of the caves, their

bodies dried into mummies, with garments, weapons and all other funeral gifts intact. So it happens that scientists have recovered many ears of the corn they grew, and we know their varieties as accurately as we know the kinds of corn grown in our own township last summer.

This corn is not different in any essential from the corn grown in Iowa and Texas and Georgia now. The ears are shorter, to be sure, and have fewer rows of grains to the cob, but they are corn ears unmistakably. They are different from modern ears of corn as the Indians who raised them are different from modern men; but there is no more chance of mistaking them for another kind of grain than there is of mistaking a man for a monkey.

These thousand-year-old Pueblos had several varieties of corn, just as their descendants have today. And like the modern Pueblos, they seem to have attached much importance to the color of the grain, for there are red and blue cobs as well as yellow. The corn grown by the present Pueblos is bigger, and on longer cobs, and white has been added to the grain colors. But it is very evidently the offspring of the grain of their ancestors.

Many centuries earlier than the "golden age" of the Pueblo culture their predecessors, the Basket-Makers, also raised corn. It was not greatly different from the corn of the Pueblos—differs less than the Pueblo corn does from modern types.

Science News Letter, August 20, 1932

SINCE

1888

*Allen*  
PRESS CLIPPING BUREAU

LOS ANGELES

SAN FRANCISCO

PORTLAND, ORE

*Acorns*

STATION, CALIF.  
NEWS TRIBUNE

FEBRUARY 8, 1935

564  
If it were not for acorns gleaned from a rugged, unproductive section of Placer County, Indians of the Auburn reservations could not subsist through the winter, according to statements made by the Indians themselves. L. J. McKinney, probation officer of Placer County, has asked federal aid for the group, who, he claims, are undernourished and living on soil unfit for cultivation.



21:4. Oct-Dec 1919

NORTH AMERICA

*Corn Among the Indians of the Upper Missouri.* GEORGE F. WILL and GEORGE E. HYDE. The William Harvey Miner Co., Inc., St. Louis, Mo., 1917.

The study of Indian corn, that most prolific of the grains, has been much forwarded by the publication of this little book which treats of corn among the Upper Missouri Indians. We have now authoritative data on corn of the Upper Missouri Indians and of the Iroquois Indians and there remain to be presented equally intensive studies of the corn of the Pueblo region. The authors have interestingly reconstructed from literature, from information of the living and by their own experiments the various aspects of the subject treated in the book under the chapter headings: History of the Upper Missouri Indians, planting and cultivation, harvest, corn as food, corn as an article of trade, the sacred character of corn, corn ceremonies, and varieties of corn. The number of tribal corns awaiting discovery so long after the decay of the American aborigines strikes one with surprise. The act of preservation of the favorite tribal varieties suited by long adaptation to the environment and through customary use to the needs of the people for food ceremony, etc., shows how intimately the Indians were tied to this culture plant. The authors and others are to be congratulated on their discoveries in this field. They have brought to light much that was believed to have been irrevocably lost. The book gives a fascinating history of maize which serves to enlighten the general reader, the student of material culture and the farmers who seek to improve the quality of their corn crop. The basis of improvement of corn as to the varieties suitable and most prolific for certain localities and uses are the old Indian stocks developed in environments which have become their own. The practical reactions of scientific investigation are well illustrated in this work in which it is shown that the breeding and crossing of native corns has been of immense value to modern agriculture. The book is well illustrated and is an example of the excellent work of the Torch Press.

WALTER HOUGH

who holds an important position in the bureau of ethnology at Washington:

**Pretty Indian Maize Legend.**

“WHEN I was a boy I often asked my mother where my people came from, but she would not tell me, until one day she said: ‘I will give you the story as it has been handed down from generation to generation. In the real beginning Wakanda (God) made the Wazhazhe—men, women, and children. After they were made he said “Go.” So the people took all they had, carried their children and started toward the setting sun. They traveled until they came to the great water. Seeing they could go no farther, they halted. Again Wakanda said “Go.” And once more they started, and wondered what would happen to them. As they were about to step into the water there appeared from under the water, rocks. These projected just above the surface and there were others barely covered with water. Upon these stones the people walked, stepping from stone to stone until they came to land. When they stood on dry land the wind blew, the water became violent and threw the rocks upon the land and they became great cliffs. Therefore, when men enter the sweat lodge they thank the stones for preserving their lives and ask for a continuation of their help that their lives may be prolonged. Here on the shore the people dwelt; but again Wakanda said “Go.” And again they started and traveled until they came to a people whose appearance was like their own; but not knowing whether they were friends or foes, the people rushed at each other for combat. In the midst of the confusion, Wakanda said, “Stand still.” The people obeyed. They questioned each other, found they spoke the same language and became friends.

“Wakanda gave the people a bow, two dogs and a grain of corn. The people made other bows like the one given them and learned to use them for killing wild animals for food and to make clothing out of their skins. The dogs gave increase and were used as burden bearers and for hunting. The corn they planted, and when it grew they found it good to eat, and they continued to plant it.

“The people traveled on and came to a lake. There they found a sacred tree and took it with them. The people (Ponca) went on and came to a river now called Nishude (the Missouri). They traveled along its banks until they came to a place where they could step over the water. From there they went across the land and



Indians of both tribes live on farms—some live in towns where they own homes and are engaged in business.

#### Let's Dissect the Charge.

**B**UT Indians never make good farmers." But let us see whether they do or not. Let us see what the official state report for 1914 says about that. The report says that the farmers of Thurston county raised last year 2,943,908 bushels of corn, they having a total of 80,655 acres planted; that the average per acre was 36.5 bushels to the acre, while the average all over the state was but 23.3. That sounds like the Indians are failures as farmers, don't it? They sold this corn at an average of 51.2 cents, the average price of the state being 52.5 cents per bushel. Of course, the Indians did not raise all of this corn, for there are white farmers on the reservation—some as owners and some as tenants, but government Superintendent Johnson of the reservation, and W. T. Biddock Walthill, both authorities on all matters pertaining to the Omaha Indians, state that the crops of the Omahas were equal to those of the white farmers, and in many instances they were better last year.

Corn is king up on the Omaha Indian reservation. It has been a king enshrined in the hearts of the Omahas for centuries, for be it known that the Omahas, many authorities state, were the very first to grow corn, commonly called maize by the old-time Indians, on the American continent. And thereby hangs a most interesting tale—an Indian legend, which will be related before further statistics are taken up.

The Omahas have a vague idea of where they came from originally. Some hold to one traditional legend handed down from generation to generation, while others hold a different view. Nor is their idea at all clear as to where corn came from. Among other ideas is that told by father to son for centuries, in effect that corn came to them from a kindly spirit that watched over the red children of the long ago. An Indian who believes in the old legend, as do some of the older of the present Omaha tribe, was Standing Buffalo, a Ponca, which tribe is closely related to the Omahas. Standing Buffalo, now dead, was a very wise old man. He never talked of the past, but built for the future, and it was somewhat reluctantly that he talked of the origin of corn not long before he died. But here is what Standing Buffalo said, being translated into English by Francis La Flesche, the historian of the Omaha tribe,

came to a river now called Nibthacka (the Platte). This river they followed, and it led them back to the Missouri.

"Again they went up this river until they came to a river called Niobrara, where we live today. So you now understand where our people came from and where maize (corn) came from."

The Poncas and the Omahas are of the same gens and were one tribe when they started out from the great lakes of the east, centuries ago, to move westward. That they became separated on their journey while crossing a stream, is Indian history—one part later to be known as Poncas and the other Omahas, thus explaining the two tribal names. They were one when the kindly spirit gave them a bow, corn and dogs and told them to travel toward the setting sun.

No matter whether there be merit in the legend, as related by Standing Buffalo or not, the tale is interesting, as all must admit.

#### What Statistics Show.

**N**OW let us go back to the farmers of Thurston county. The state report for 1914 places the total value of all land in Thurston county and farm permanent improvements at \$1,060,845. It says that the value of the buildings, meaning houses and barns, etc., was \$133,375, and that of farm implements \$11,400. The majority of this land and improvements belong to the Omahas. The same report shows that one year ago there were 2,439 milch cows on the reservation and 9,425 other cattle; 11,698 hogs, 7,644 horses and 1,325 mules.

That is a pretty good showing, isn't it, for a race of people who knew absolutely nothing of farming fifty-eight years ago.

What about wheat? Yes, there was some wheat raised last year—as there was this year—on the Omaha reservation. Last year there were 3,308 acres of winter wheat harvested. This year there was more. Last year the reservation farmers threshed out and disposed of 55,244 bushels. The average yield was 16.7 to the acre, that of the whole state averaging but one bushel more. Then there is the spring wheat. Last year 2,744 acres were harvested from which was threshed 30,744 bushels, the average per acre being 11.2, a fraction less per acre than the state average.

Oats? They raise oats, too, the 1914 acreage being 20,417, from which was threshed 71,595 bushels, an average of 35 bushels per acre against 34 for the whole state.

They raise alfalfa, too, those Indians do. Last year the reserva-



Nov. 1936

been published in the short interval of six years, there have been numerous additions and modifications to keep the work reasonably abreast of the times. Considering the labor involved in translating such a work, it is almost sad to think that a revised edition will be needed a few years hence. Nevertheless, we have in this volume a body of knowledge which will constitute a valuable sourcebook for many years to come, even if knowledge of the subject increases at an accelerated pace, as it doubtless will.

From the nature of the case, much of our information concerning human heredity will have to be gathered from the experiences of medical men with their patients. At present, the average medical practitioner knows little of genetics. Medical students are fortunate if they pick up a rudimentary knowledge of Mendel's law during their premedical course. In the later grind of regular medical instruction they will probably have few opportunities to make good their deficiencies, even if they should appreciate the importance of so doing. The more medical men there are who have some training in genetics the more opportunities for gathering, interpreting and recording facts on human heredity will be seized, and the more rapidly our knowledge of this subject will be extended. The publication of Baur's, Fischer's and Lenz' work, by enabling medical men to become acquainted with the more important facts and principles of human heredity, will doubtless perform a valuable service in stimulating further observation and research.

Section I of the book, by Dr. E.

~~Baur, consists of a sketch of the general theory of variation and heredity. Dr. E. Fischer contributes the second section on Racial Differences in Mankind, which will be of especial interest to the anthropologist. The third section on Morbific Hereditary Factors, by Dr. F. Lenz, is the longest in the volume and gives descriptions, illustrated with many pedigree charts, of most of the heritable human defects and predispositions to disease which are now recognized. The various biometric and other methods employed in the study of human heredity are described by Dr. Lenz in Section IV on Methodology.~~

The final section of the book, also by Dr. Lenz, is devoted to The Inheritance of Intellectual Gifts. In recent years many fruitful researches have been carried on upon the transmission of superior mental ability, and it is helpful to have a résumé of the results. The attempt to evaluate the mental differences between the races of man, and especially between the subdivisions of the Caucasian race, will doubtless arouse quite different reactions from different readers. The field is full of pitfalls, and much that is written on it, while suggestive, is lacking in conclusiveness.

We hope that the price (\$8.00) will not unduly restrict the dissemination of this very valuable work. As it is desirable that the book have a wide sphere of usefulness we may suggest, with all diffidence, that, after the universities and the chief libraries are provided for, the price be reduced to,—say, \$4.95.

S. J. HOLMES.

### Maize in South Africa

MAIZE IN SOUTH AFRICA, by A. R. SAUNDERS. Pp. 284 £1 net. South African Central News Agency, Johannesburg, 1930.

**A**LTHOUGH Indian corn is one of the principal cereals and hence one of the world's most important food plants, books on the crop are not

numerous. Maize in South Africa makes a welcome addition to the short list and compares favorably with the product of U. S. authors.

Naturally, written for an African audience the book contains much information of only casual interest to



ing a conservative figure of 50% due to hereditary defects, is it not a travesty to put forth a bill of rights for childhood, and not to acknowledge the fundamental right of a sound body and a sound mind?

Probably the conference felt such a plank trespassed on two basic rights of adults—to procreate and to emotionalize, and that treading on this forbidden ground would interfere with the unanimity that appeared to pervade the conference. Without a recognition of the inalienable right to a sound body and a sound mind, are not these other privileges simply meaningless abstractions? With the above figures in mind, a reading of some of the pledges in the Charter savors almost of the sardonic. Education for parenthood, for every one of our six million mental deficients! Did the Conference *really believe* that to be right, kind, or in the interests either of the child or of society? For every child—a home environment harmonious and enriching, (with parents suffering from, and transmitting, heritable defects that make such a wish a travesty!) We learn that the Golden Rule is the basis of the Children's Bill of Rights; that, while the Golden Rule does not refer to vaccination or to pure milk, it *means* these things today. Does it not also include a mandate to prevent the procreation of crooked bodies and warped minds, and

is any childhood charter adopted today deserving of respect that ignores these facts?

Perhaps it is too much to expect that this conference should have considered the aspect of heredity in child welfare. There is admittedly enough to be done on the environmental side to keep several conferences busy. The subject of human heredity is broad enough to be considered by a separate gathering. There are ample data available to make possible some very definite recommendations. Shortly after the Conference adjourned, Dean Lyon of the Medical School of the University of Minnesota suggested that such a conference should be called\* to study and to recommend ways of applying existing knowledge regarding human heredity for the benefit of the race. The absence of the fundamental pledge from those adopted by the last conference makes it imperative that action be taken to ratify and to make effective the most important childhood right of all—"For every child the right to be well born."

Until this is generally recognized by doctors, by welfare workers and by educators, the great interest and the very heartening interest in child welfare which the conference showed to exist will be in danger of being misdirected or even of being warped to ends detrimental to the race.

#### A German Eugenics Text Translated

BAUR, E., FISCHER, E., and LENZ, F., *Human Heredity*. Translated by EDEN and CEDAR PAUL. New York, Macmillan, 1931. pp. 734.

FOR several years I have hoped that someone would translate the valuable work of Baur, Fischer and Lenz on "Menschliche Erblchkeitslehre." Recently Eden and Cedar Paul have added this work to their long list of German volumes which they have rendered into English. It is to be hoped that they

will put American students of heredity and eugenics still further in their debt by translating the companion volume to this work, i.e., "Menschliche Auslese und Rassenhygiene (Eugenik)" by Dr. Fritz Lenz. In fact, these two books are really parts of one general treatise. The translation was made from the third German edition printed in 1927. The first edition appeared in 1921. In each of the three editions which have

\* The White House Conference on Heredity. JOURNAL OF HEREDITY, 22:92. 1931.

American readers. Most of the general information such as origin, history, genetics, pathology, breeding methods and uses originated in the U. S. However, this very fact makes the book of some value to readers in the Western Hemisphere.

It is of interest to note that maize reached South Africa as early as 1655. Despite this long period of residence the plant apparently is not happy, for South Africa has the rather unenviable distinction of having the world's worst corn yields. It would be interesting to know whether this poor showing is due to generally unfavorable conditions or to lack of acclimatization. One can not help wondering whether the native African sorghums yield more or less in Africa than in the United States.

Transplanted to Africa, maize encountered some new adversaries. One of these, the witchweed (*Striga lutea*), in addition to being a serious parasite offers a fascinating problem in physiology. Witchweed is a flowering plant that behaves as an annual on annual hosts and one that, under favorable conditions, will produce 2 or 3 million seeds which probably will remain viable in the soil for 20 years. The author states that the seeds of this plant do not germinate in the absence of a host plant. "Experiments have shown that an activating substance is exuded from

or excreted by the roots of the host plants, and that in the absence of a host, and therefore of this substance, the seeds will not germinate. All attempts at inducing germination artificially have hitherto given negative results. What this activating substance is and how it acts have not been established; all that is known concerning it is that it is easily inactivated by heat or by exposure for more than 48 hours. It is exuded by members of the grass family only, but not by all of them." Apparently South Africans are not troubled with the European corn borer (*Pyrausta nubilalis*) but they have an able substitute in the African borer (*Busseola fusea*) which seems to have much the same habits as his European cousin.

It is of interest also to note that most of the rots attracting attention in the United States are present in South Africa and that tassel smut (*Sorosporium reilianum*) is of more importance than the ear smut (*Ustilago zaeae*).

The book is divided into thirteen chapters of which one is devoted to a description of the principal varieties showing that the theory of improvement through inbreeding has not attained the status of an epidemic in Africa. There is an index and bibliography of 142 original sources.

J. H. KEMPTON.

#### Books Received

BOOKS are acknowledged in this column as received, and such acknowledgment must be regarded as sufficient return for the courtesy of the sender. As far as space permits, books that contain material of special interest to the reader of the JOURNAL will be reviewed in later numbers.

BIOLOGY AND MANKIND, by S. A. McDOWELL, B. D., Senior Chaplain and Senior Science Master at Winchester College. Pp. 229. 9 Chapters. 46 Illustrations. Price, \$2.50. New York, The MacMillan Co., 1931.

From the Preface: "The greatest need of England, and England's politicians is knowledge of the biological factors upon which legislation may impinge." Unfortunately biological factors

don't have a vote, and the next election is nearer than the F<sub>1</sub>.

WEEDS IN THE GARDEN OF MARRIAGE, by CAPTAIN GEORGE PITT-RIVERS. Pp. xv and 86. Price, 3/6. London, Noel Douglas, 1931.

There is real segregation in Anthropologists. Either they don't believe in heredity, or they do. Captain Pitt-



# SCIENCE - AND - INVENTION

## CORN FROM GRASS IN EIGHTEEN YEARS

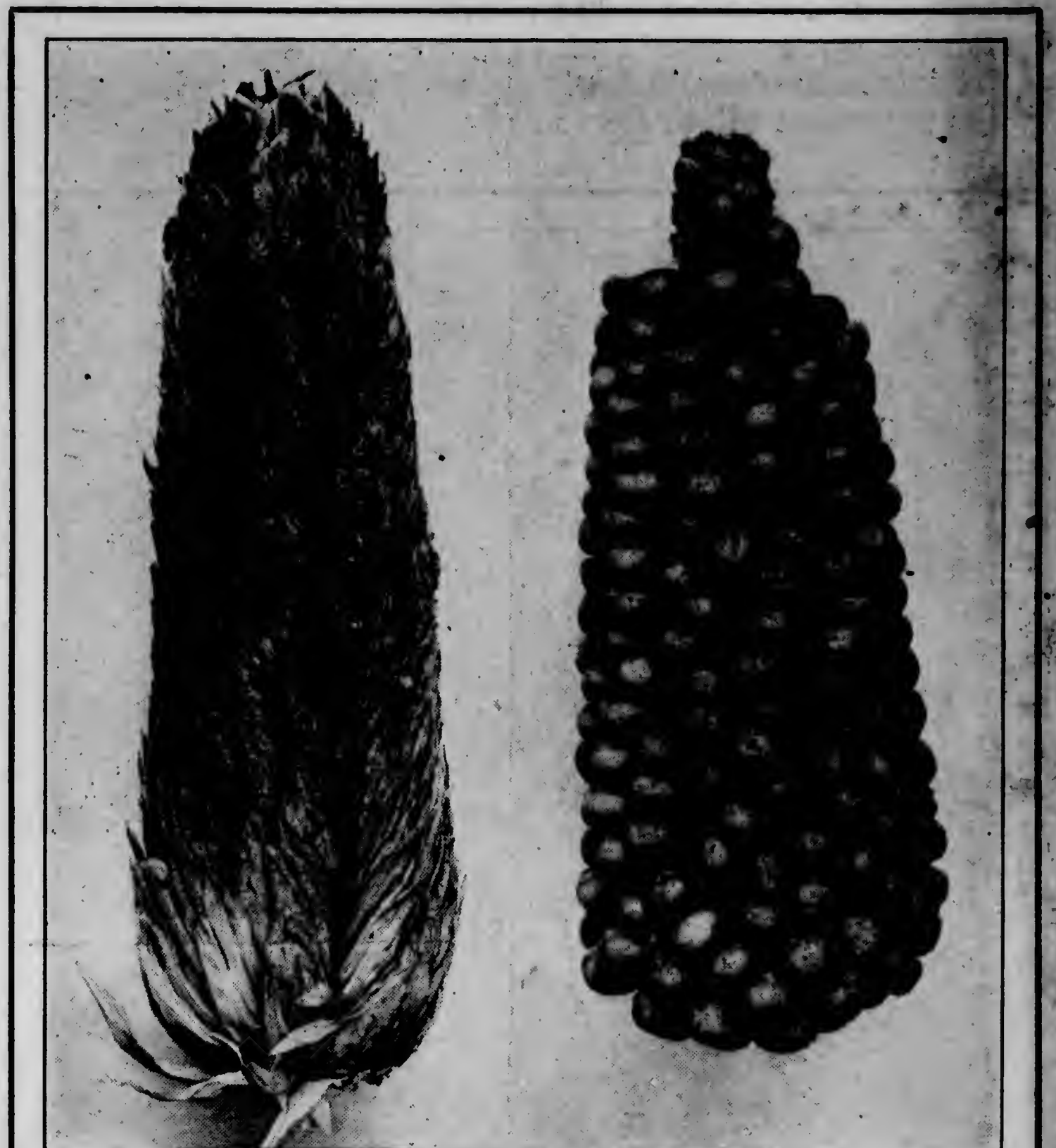
**T**HE SURMISE OF BOTANISTS that the wild ancestor of our Indian corn is a grass called teosinte has been made a certainty by Luther Burbank, who has bred corn from the wild teosinte in eighteen years. This process—the same by which the Indians got the maize that they taught our forefathers to grow and eat—doubtless took the redmen many centuries to perfect. Besides proving an interesting point, Mr. Burbank has incidentally created a productive fodder plant. The wild grass has no cob to hold its grains; and the eighteen years of selection and growth in the Burbank nurseries developed, among other things, a perfect cob, such as is familiar to us in our cultivated corn. The improved fodder plant developed from teosinte will grow all over the United States, while the wild variety grows only in southern Florida. We quote from an article contributed to the magazine section of *The Post-Dispatch* (St. Louis) by Robert H. Moulton, who says:

“The plant which botanists have always considered as the probable ancestor of our present varieties of maize is a wild grass called teosinte. They have long believed that the presence of Indian corn in America represented an evolution brought about by crude plant-breeding methods of the Indians extending through untold centuries. Luther Burbank, in order to prove the truth of this theory, has now carried the plant through successive developments and produced perfect ears of corn in the miraculously short period of eighteen years. Public announcement of this prodigy, which has been proceeding quietly at Burbank’s experimental farm in California since 1903, and which constitutes one of the most notable achievements of the plant wizard’s life, has just been made.

“It was the savage Indian, says Burbank, who gave us, here in America, the most important crop we have. It was the

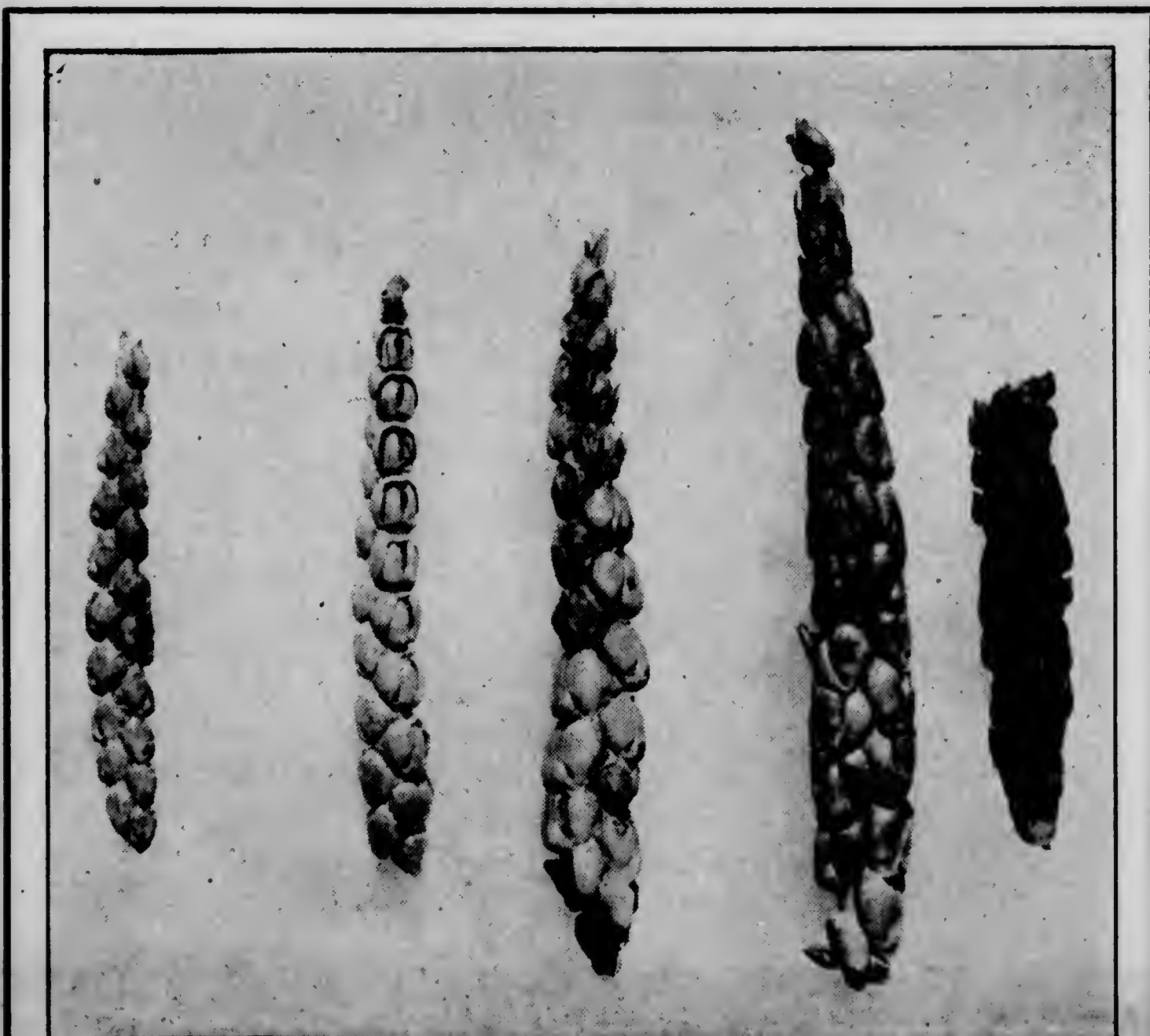
kernels, on a cob the thickness of a lead-pencil, and from two to four inches long—slightly less in length than an average head of wheat.

“From its earlier stage of ‘pod’ corn, in which each kernel was encased in a separate sheath, or husk, like wheat, teosinte represented, no doubt, a hard-fought survival and adaptation



“POD” CORN. AT THE END OF 18 YEARS.

At the left is seen the ear at an intermediary stage between teosinte and corn. At the right is the ear of corn evolved from grass.



Illustrations from the St. Louis "Post-Dispatch" Sunday Magazine.

### STEPS OF DEVELOPMENT IN NINE YEARS.

Left to right, progress of tiny teosinte ear from grass toward corn.

Indian who found the wild grass, teosinte, covering the plains and developed it into corn. Or, to turn it the other way around, it was the desire of the Indian for a food plant like this which led the teosinte grass, by gradual adaptation, to produce maize. On Burbank’s farm there grows, to-day, this same teosinte which the Indian found. It bears tiny ears, with two rows of corulike,

like that of the flowering violet. And when the Indians came into its environment it responded to their influence as the pansy responded to care and cultivation in its new dooryard home.

“Where teosinte had formerly relied upon the frosts to loosen up the ground for the seed, it found in the Indian a friend who crudely but effectively scratched the soil and doubled the chance for its baby plant to grow. Where it had been choked by plant enemies, and starved for air and sunlight by weeds, it found in the Indian a friend who cut down and kept off its competitors. Where it had been destroyed by animals before its maturity, it found the selfish protection of the savages as grateful as if it had been inspired by altruism.

“Planted in patches, instead of struggling here and there as best it could before, the teosinte grass found its multiplication problem made easier through the multitude of pollen grains now floating through the air. And so, by slow degrees, it responded to its new environment by bearing more and bigger seed. As the seed kernels increased in numbers and size, the cob that bore them grew in length. From two, the rows of kernels increased to four, to six, to eight, to fourteen. Here, again, the selfish motives of the savages served to help the plant in its adaptation—for only the largest ears and those with the best kernels were saved for seed. So, under cultivation, the wild grass almost disappeared, and in its place there came, through adaptation, the transformed Indian corn.”

This, in brief, says Mr. Moulton, summarizes Burbank’s theory of the original evolution of teosinte into corn. How many centuries were required to bring about the development we



can only conjecture, for when white settlers came to America they found Indian corn, or maize, bearing eight-inch ears, with fourteen rows of improved kernels to the ear. It is not even known how long the Indians had been cultivating this improved corn. That it was long before the appearance of Europeans, however, is evident not only from its early and widespread cultivation, but from indications found in mounds and in the ancient pueblo ruins and cliff dwellings. He continues:

"It must be remembered that between the original wild grass and the corn which the white men found the Indian cultivating here, there was undoubtedly a very long period of the so-called 'pod' corn, in which each kernel was inclosed in a sheath. When it is considered that the elimination of this sheath in itself unquestionably required many centuries, some idea may be gained of the probable total length of time necessary to develop teosinte into the perfected ear of corn.

"It was nature's scheme of producing variations—her apparently unalterable will to create no duplicates—that opened up to

"Burbank's experiment with teosinte is a striking example of the fact that the plant-breeder, simply by taking the variations which nature gives him, can effect wonderful improvements in her plants, and, by urging nature into new variations through cross-breeding, can create at will an infinite number of new combinations or characteristics from which to select."

## SAVING LIVES BY TEACHING SAFETY

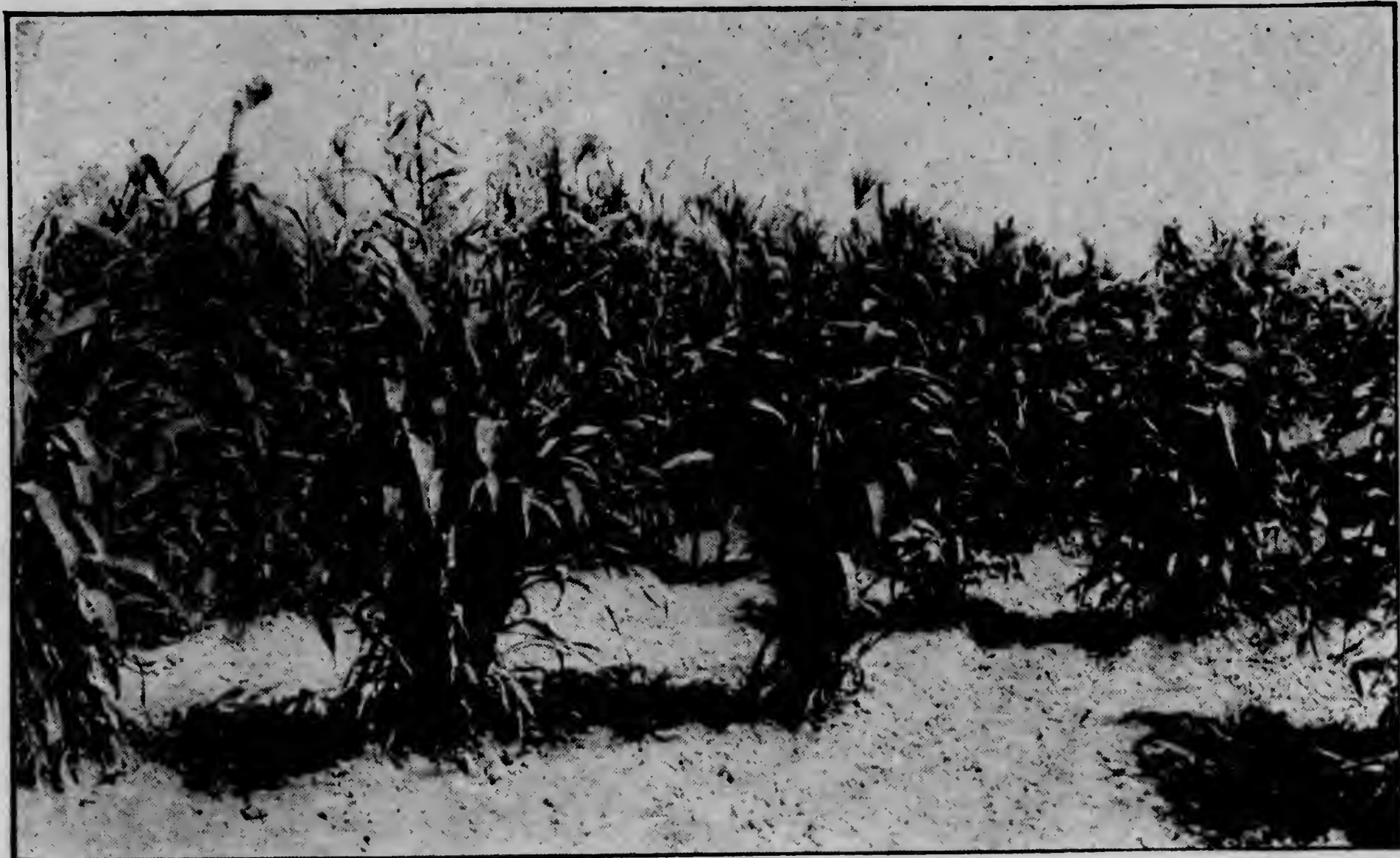
**A**CCIDENTS TO SCHOOL-CHILDREN may be greatly lessened, if not entirely done away with, by proper school instruction in the principles of safety, and this may even decrease the number of accidents among non-attending children and among adults. This is the conclusion of Dr. E. George Payne, principal of Harris Teachers' College, St. Louis, and chairman of the School Hazards Committee of the National Safety Council, after a study of accidents among children in the various public schools of that city. Dr. Payne gives curves illustrating the sharp decline in coroners' inquests and in automobile accidents since the introduction of safety instruction in 1919, altho both had previously shown an upward trend. Statistics for separate schools show, he believes, that attitude of mind on the part of the children has a much greater effect on the proportion of accidents, which vary greatly from school to school, than has location or environment. This attitude, of course, can be favorably or unfavorably affected by training. Writes Dr. Payne in the *Report of the St. Louis Board of Education for 1920*:

"The conclusion from these statistics is that, on the one hand, in spite of congestion and other unfavorable conditions, proper school instruction will affect favorably, if not eliminate entirely, accidents to school-children and even decrease the number of accidents to

those children who are not in school. The instruction will also decrease accidents to adults. On the other hand, these charts show that certain sections of the city have a high record of fatality to children or are 'sore spots' that need education in accident-prevention much more than others. Nineteen schools out of one hundred and twenty-two have more than half of the fatalities, and they show also that there is no definite relation between the number of accident opportunities and the number of fatalities. The obvious need is education in accident-prevention and the provision of additional play space.

"Another point of very great significance must be noted. During the four years covered by these statistics only two deaths resulted to persons of school age going to and from school, and no death occurred on school premises. During the same period approximately four hundred persons, under twenty, were killed by accident in the homes, on the street, and in industry. The serious problem is that of children and adults outside of school influence.

"The very patent conclusion from these data then is that instruction in accident prevention must be real education; it must not be spasmodic or misdirected if it is to be effective. The problem is specifically that of developing controls within the children themselves—e.g. habits, attitudes, and ideals—that will carry over into the complex life of the community when persons are unsupervised; when they are left to direct their own energies. This conclusion implies a generally misdirected effort by safety advocates in that they have directed unnecessary energy to the care of school-children coming out of schools and going home from and coming to school. The effort of the schools, the public-safety councils, and directors of safety should be centered upon the problem of the whole population away from school influences. The schools have the finest opportunity and the greatest possibility of effecting favorable results. Can we meet our opportunities?"



THE PLANT-WIZARD'S TRIUMPH.

Field of corn developed from parent spears of grass.

Burbank his opportunity to carry forward the evolution of teosinte into corn in a comparatively few seasons. In his experiments with the plant he produced more than 10,000 specimens on his grounds. Among these thousands he found some offspring which were an improvement over the parent plants. It was then simply a matter of continued and intensive application of scientific methods of selection, from season to season, until the final result was achieved.

"Teosinte has no rachis, or cob, like other grains, but one kernel is piled on the next below, the kernels, when ripe, falling apart. By a gradual evolution a rachis and eventually a flat and later a round cob were developed, and this cob was finally covered with large, fat kernels. Teosinte seeds have always a flintlike, chitinous covering. But at the end of a few years Burbank found an occasional kernel that had emerged from its covering, and by breeding only these kernels, the chitinous sheath in time became only a remnant at the base of the kernels and finally disappeared altogether. The ears of corn which he produced at the end of eighteen years were equal in every respect to those which the Indians, with their unskilled efforts, had produced after many centuries of patient toil, and which they were cultivating at the time the white man first came to this continent. To the white men are due the superior varieties of corn which are grown to-day.

"During his experiments with teosinte Burbank not only changed the plant into corn, but incidentally created one of the most productive fodder plants on earth, and extended the latitude in which it can be profitably grown nearly or quite 1,000 miles farther north and south. Heretofore, all teosinte had to be raised in southern Florida or some tropical climate, but Burbank's improved varieties, developed as a result of his scientific plant-breeding, will produce, even in the Northern States, fifty times as much fodder as the commonly cultivated teosinte of the South and fifty times the amount of grain.



requests for study material for colleges, high schools and elementary schools were met with material for the instruction of nearly 260,000 pupils. The Local Flora Section, of about three acres, was opened on May 9. This area is planted on an ecological basis. The total budget of \$165,690 represented a decrease of income

of \$22,782 as compared with 1932, a loss of approximately 12 per cent. The loss of available income as compared with 1930 was \$46,873. During the year the sum of \$10,232 was added to the endowment fund. The year was closed without a deficit and without vacating any positions.

## DISCUSSION

### A RARE SPECIMEN OF *ZEA MAYS* VAR. *SACCHARATA*<sup>1</sup>

A SPECIMEN of maize, collected by Earl H. Morris, archeologist, and identified by the writer as *Zea Mays* var. *saccharata*, is of special interest because of the fact that it is the only specimen of sweet corn so far identified from the numerous historic collections of corn recovered in the United States. This specimen is found in the American Museum of Natural History. Through the courtesy of the curator in chief, Dr. Clark Wissler, the writer secured the loan of this specimen for determination and study and it is described as follows:

*Zea Mays* var. *saccharata*  
Aztec sweet corn  
Specimen No. 29-0-9397

Length of ear 3.75 inches, diameter 1 inch at butt, tapering. Eight-rowed, regular. Kernels broad and shallow, measuring 5/8 of an inch broad, 2/8 of an inch long, cuneate to truncate, central area distinctly depressed, forming a marginal ridge, pericarp coarsely wrinkled, color pale amber, endosperm translucent, hard and brittle. Embryo completely disintegrated, color dark brown. Starch grains small, many poorly formed and tending to aggregate. Cob buff color. Ear enclosed in a husk 7 1/2 inches long, shank 2 1/2 inches long bearing 5 nodes. The kernels are homozygous throughout and possess the severe wrinkling and translucent horny endosperm typical of sweet corn. The size, color and 8-rowed character are highly suggestive of Golden Bantam, a popular present-day variety.

The question has been raised as to the possibility of this being an immature specimen of field corn. The condition of the kernels in the upper half of the ear give evidence that the ear was plucked while still immature. The kernels towards the base of the ear are fully developed and show the wrinkled pericarp and translucent endosperm typical of sweet corn.

The specimen was collected by Mr. Earl H. Morris, who furnished the writer the following statement regarding its history.<sup>2</sup>

The ear of sweet corn from Room 139 of the Aztec

<sup>1</sup> Journal Paper No. J 146 of the Iowa Agricultural Experiment Station, Ames, Iowa.

<sup>2</sup> Earl H. Morris, letter to author under date of November 20, 1933.

Ruin, New Mexico, came from a refuse deposit laid down during the Mesa Verde phase of Pueblo III. The Aztec Ruin was built between 1110 and 1121 by a group of Chaco people, occupied for a time, then abandoned, and finally reoccupied by groups representative of the Mesa Verde strain of Pueblo culture. In accordance with Dr. Douglass' findings, the entire San Juan country was abandoned not long before or after 1300 A. D. In view of these facts it would be safe to estimate that the ear of corn in question was grown between the years 1200 and 1300.

The fact that sweet corn existed in pre-Columbian times is proved by this specimen. Since it is the only historic specimen so far identified in the numerous archeological collections of maize, doubt is expressed as to sweet corn being either a wide-spread or an important Indian food plant in the United States in the pre-Columbian period. The theory of its origin as a mutant of field corn is in harmony with the genetics of the corn plant.

The fact may also be noted that, among the numerous collections of historic corn from Peru, apparently but one specimen of sweet corn has so far been identified. This specimen was collected by M. Uhle under the direction of Dr. A. L. Kroeber, of the University of California, to whom we are indebted for the loan of this ear. This specimen, termed Huamachuco corn of the Inca period from northern Peru, was identified by Hendry<sup>3</sup> as sweet corn, a determination with which we do not wholly agree. This specimen we think belongs to the starchy sweet corn *Zea amylosaccharata* of Sturtevant. The starchy character of the endosperm is much more pronounced than in the pseudo starchy sweet corn of Jones. At any rate, it is interesting to note that sweet corn material is apparently rare in the maize collections from Peru, which seems to run parallel to the situation in the United States.

A. T. ERWIN

IOWA STATE COLLEGE

### ~~A CONCEPT OF COLLOIDAL SYSTEMS BASED ON PROBABILITY~~

~~THE two most important features upon which the nature of the colloidal state is generally predicated~~

<sup>3</sup> Huamachuco corn by Hendry. *Jour. Amer. Soc. of Agron.*, vol. 22, 1930.



Cotton

C. Hart Merriam  
Papers  
BANC MSS  
80/18 c

C O T T O N

INDIANS OF NEW MEXICO & ARIZONA

G.P. Winship. Coronado's Expd., 1540-1542; with translations of writings of members of the Expedition in which the cultivation and use of cotton ~~is mentioned~~ by the native Indians are mentioned.-- 14th Ann.

Rept. Bur. Eth. for 1892-93: pp. 489, 517, 558-60, 575.

Part 1:

1896.



Journ. Wash. Acad. Sci. III, 24, Jan. 1913.

BOTANY.—*The cotton of the Hopi Indians: A new species of Gossypium.*

FREDERICK L. LEWTON. Smithsonian Miscellaneous Collections  
60: no. 6, with 5 plates. October 23, 1912.

The early Spanish explorers discovered in 1540 the region now occupied by the pueblo Indians and recorded the cultivation of the cotton plant by the Indians. That the cliff-dwellers, the ancestors of these pueblo Indians of our Southwest, cultivated, spun and wove cotton, has been shown by the work of several eminent ethnologists. Fragments of cotton fabrics are common in the villages of the cliff-dwellers which were in ruins when first seen by the white man.

After tracing the history of cotton cultivation by the Indians of this region and its use by them for ceremonial and household purposes, a technical description of the cotton now grown by the Hopi Indians is given and published as a new species under the name *Gossypium hopi*.

This cotton is conspicuously different from the American upland cottons in color of foliage, flowers, habit of branching, etc., and it is believed that it has never been cultivated by the white man or had any influence in the development of the types of cotton so largely cultivated in the East and South.

The Department of Agriculture has experimented with the Hopi cotton for several years and the experiments show this cotton to be remarkable for its earliness and its ability to grow under very dry conditions.

Owing to the ease with which machine-made cotton yarn can be procured by the Indians from the traders, but very little Hopi cotton is now grown by them, and the smallness of its bolls and poor yield of fiber have not made its cultivation attractive to the white man.

F. L. L.

BOTANY.—*Rubelzul cotton: A new species of Gossypium from Guatemala.*

FREDERICK L. LEWTON. Smithsonian Miscellaneous Collections  
60: no. 4, with 2 plates. October 21, 1912.

*Gossypium irenaeum* is described. This is a shrubby species cultivated by the Kekchi Indians at Rubelzul, a part of the finca "Trece Aguas," a few miles from the town of Senahu in Alta Verapaz, Guatemala. It is planted about the door-yards and yields longer and finer fiber than the species commonly planted by the Kekchi Indians in regular patches, oftentimes at some distance from their dwellings. The most prominent character of this new species is seen in the remarkable development of the calyx, which reaches proportions not known in any other species of *Gossypium*.

F. L. L.

*Journal Wash Acad Sci*  
*Vol III, Jan 4, 1913*

BIO-CHEMISTRY.—*Wild volatile-oil plants and their economic importance.* I. *Black sage*, II. *Wild sage*, III. *Swamp bay*. FRANK RABAK. Bulletin 235, Bureau of Plant Industry, pp. 37, with 6 figs. 1912.

In the general part of this bulletin are described the distribution of wild aromatic plants in the United States. The present production of volatile oils obtained from wild plants native to the United States is discussed in detail. A classification of volatile oils based on their odors and constituents is suggested. Attention is called to the commercial importance of volatile oils. The plant sources and the commercial use of the important substances, camphor, borneol and cineol are thoroly discussed.

The special part of this bulletin consists of the investigation of the volatile oils of black sage, wild sage, and swamp bay.

The oil of the black sage (*Ramona stachyoides* (Benth) Briquet.) was found upon examination to consist essentially of camphor (more than 40 per cent) and cineol (22.5 per cent) with smaller quantities of an alcohol, probably borneol, both free and as an ester, thujone, traces of pinene and terpinene, and traces of combined acetic and formic acids. The constituents of possible commercial importance in the oil are camphor and borneol.

Analysis of the oil of wild sage (*Artemisia frigida* Willd.) showed the presence (1) of borneol, 43 per cent, of which about 6.8 per cent exists as bornyl heptoate, leaving 35.8 per cent of free borneol; (2) of cineol (eucalyptol) 18 to 20 per cent; (3) of fenchone 8 to 10 per cent; (4) of free acids, chiefly oenanthylic or heptoic acid, 0.58 per cent, with traces of formic and caprylic acids; (5) of combined acids in the form of esters, chiefly oenanthylic acid, with smaller quantities of valerianic, undecylic and formic acids. The chief constituents of commercial importance are borneol and cineol.

The oil of swamp bay (*Persea pubescens*, (Pursh.) Sarg.) was found to consist chiefly of 21 per cent of camphor, 19.8 per cent of cineol, and borneol, the latter occurring to small extent as esters and as free alcohol. Small quantities of butyric acid and esters of butyric, valerianic and heptoic acids were also present.

The plants which yield the above oils are found in widely separated regions of the United States, in California, South Dakota, and Florida, respectively.

The large quantities of camphor in the oils of black sage and swamp bay are new sources of this important substance. Likewise the large percentage of borneol in the oil of wild sage opens new possibilities.

F. R.



Cotton cultivated by Peruvian Indians  
"who have long been known to make  
cotton blankets" - W. P. Blake, *Sci. Rep.*  
*P. R. R. Rep.* V, 249, 1857.

Aboriginal cotton

Whiffen, *P. R. R. Rep.*, II, p. 124, 1856.

Native Hopi cotton

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Lewton, F. L. - cotton of the Hopi Indians;

a new species of Gossypium.

Sinclair. Misc. coll. 60: 4. 6. ~~65~~ 23, 1912.



## COTTON CULTIVATION BY THE PIMOS

In November 1846 Emory passed through the Pimos villages. He describes their thatched huts, and adds: "In front is usually a large arbor, on top of which is piled the cotton in the pod, for drying."

--Emory: Military Reconnoissance from Ft. Leavenworth to San Diego, 1846-7, 85, 1848.

In his report to Albert Gallatin, October 8, 1847, Emory says: "Specimens of the seed of the cotton grown by the Pimos were obtained, but they have not yet reached me." --Ibid, 131.



## COTTON IN SOUTHERN UTAH

A.S.Taylor, in Calif. Farmer, quoting the Salt Lake correspondent of the San Francisco Evening Bulletin, May, 1863 writes:

This year, 1863, the Mormons took out, as I am informed, from 40,000 to 50,000 pounds of Deseret grown cotton. South of here this cotton is being cultivated in large quantities and of excellent quality. It is said that this year there will be collected not less than twenty pounds to each inhabitant in the territory -- which, at an estimated population of 50,000 would give 1,000,000 pounds of the article. . . As yet, I believe, there are few or no cotton mills in the territory of Utah."

A.S.Taylor, Calif. Farmer, June 26, 1863.



A.S. Taylor writes in the Calif. Farmer:

"Indigenous cotton Bartlett says [U.S. & Mexican Boundary Survey of 1850-53, New York, 1856] was found by Alarcon in 1542 on the Colorado, of which the Indians made garments. This native cotton is still grown on the Gila, in Chihuahua, Sonora, on the Texas Rio Grande bottoms, and in many warm river bottoms of the uplands of the northern states of Mexico, and during the ante-Columbian times doubtless, was cultivated in many parts of Mexico, as it was found in common use by the early Spanish Conquistadores and in many parts of Central America."

A.S. Taylor, Calif. Farmer, Vol. 16, No. 22, Feb. 21, 1862.

And in a later issue of the Calif. Farmer Taylor writes:

"Cotton of excellent <sup>quality</sup> seems to have been abundantly cultivated throughout the temperate lowland countries of Mexico at the arrival of the Spaniards, and to have been the principal clothing material of the people. It is still grown and cultivated and made up into fabrics by the Gila tribes, also by half-civilized Indians of various parts of Mexico and Central America."-- A.S. Taylor, Calif. Farmer, Vol. 16, No. 24, Feb. 21, 1862.



EARLY RECORDS OF COTTON MANUFACTURING  
IN CALIFORNIA

*Not compared*

"One of the earliest records of cotton manufacturing in California is to be found in a letter from President Lasuen to Governor Arrillaga dated December 21, 1792. In this letter Lasuen states that "at all the lower missions as far as San Luis, inclusive, Henriquez, has made spinning-wheels, warping-frames, looms, and, with the exception of carding machines, all the tools of the industry. Some of the missionaries have been dressed in narrow [de angosto] blankets and Franciscan sackcloth. In the San Gabriel and San Luis Missions he also taught them how to weave cotton sheets. He [i.e. Henriquez] also says that he will instruct them in the manufacture of wide textiles [en tegidos de ancho] such as baize and thick cloth [pano] and that this instruction is very easy for those who have had instruction in narrow weaving [la tienen de angosto.] He [i.e. Father Lasuen] recommends that, either the said Henriquez or some one else with a similar knowledge of wide textiles, together with two or three well-equipped looms, be procured for the other missions. Some indigo-blue dyes should also be bought for the baize. Thus the other weavers and all the overseers will be saved. A master fuller should be brought in



order to put the finishing touches on the sackcloth [or broadcloth], baize, and thick cloth."

"Another weaver-instructor, Mariano Jose Mendoza, appears to have been one of the twenty skilled artisans, sent over from Mexico in 1792. Very little appears to be known of Mendoza's activities till the summer of 1796, when he was sent from Monterey to San Juan Capistrano. He was then under contract to teach his trade to the Indians for thirty dollars a month, which sum was to be paid by the government. Governor Borica's orders to the Comandante of San Diego show that every precaution was taken to insure that he did his work well. "As soon as the weaver arrives with his family on the packet S. Carlos, you assign him to his work, teaching his trade to the Indians . . . If he is negligent in his duties and does not work in the hours assigned, put him in jail [capo=calabozo] at night and take him out in the morning to perform his duty; charge the comandante of the guard not to be negligent in a matter which so much concerns the King's service in the introducing of the industry into this peninsula."

"Nevertheless his work does not appear to have been entirely satisfactory. "The weavers had forgotten to weave cotton and wool, as he said, but on being urged

he remembered and made a piece of 30 yards." We are not surprised, therefore, to find Father Fuster writing to Governor Borica to say that, "if the (said) artisan had not come, the (said) blankets and other goods would have been made just as well or better. If we look at things without any feeling, we can assure you that the (said) artisan has been of little utility to the mission, because we do not see the least improvement in the weaving of the wide goods for which he had a name, whether it be on account of his little intelligence or of his little good will."

Early History of Cotton Cultivation in California. E. Philpott Mumford, Calif. Historical Society Quarterly. Vol. VI, No. 2, pp. 162-164, June, 1927.



## C O T T O N

References to plant or fabric in Schoolcraft IV as follows:

Speaking of Zuni, N.Mex., it is said, "No other place, except Tusayan, is mentioned where cotton fabrics were offered to the Spaniards, and even at the present day the Moquis and Pimos are the only people in New Mexico who manufacture the same material."--R.H.Kern, in Schoolcraft, Indian Tribes, IV, 33, 1854.

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"Whilst in Zuni, in 1851, I purchased several of these fabrics from some Moquis."

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"The cotton-plant does not appear from De Vaca to have reached much north of the Gila, or east of the Rio Grande."  
--Schoolcraft, Ibid 115.

"The tendency of Indian emigration has been shown, by the transfer of tropical fruits and plants, (as the zea maize, and cotton and tobacco plants,) to have been from the region of Central America, where Coxcox first landed (Vide Boturini), towards, and into the temperate and northern latitudes."Ib.132.

"The tribes of the Mississippi valley had not the cotton plant, even so late as De Soto's day (1542)."--Ibid 138.

"It has been said that the Navajoes and Moquis manufacture beautiful fabrics of cotton. This is partially true of the Moquis; but the Navajoes raise no cotton, while that of the Moquis is of a very inferior quality."--E.Backus, Ibid 212.



Cotton 2

"Mexico has every facility to make it one of the best manufacturing countries, both of woollen and cotton goods. Of the latter there are several (factories) already in operation. The raw material is (chiefly) brought from the United States and South America, very little cotton being raised in Mexico."

--Carpenter, speaking of Ojala, Mex., quoted in Ib.442.

Other remarks on cotton in Mexico on pp.443-444.

Columbus found aborigines spinning cotton and wearing cotton garments, in 1492.--Ibid 443.



## C O T T O N

In an article on the Apaches, ~~in Schoolcraft V~~, it is said that Lt.-Col. Backus, U.S.A., "in detailing the leading events of the introduction of a fort into the territory of the nation, in 1851, . observes, that the Navajoes raise no cotton, and of course have no fabrics of this sort; while the Moquis, who cultivate the plant, make nothing but fabrics of the coarsest cloth."

--Schoolcraft, Indian Tribes, V, 204, 1855.



## COTTON CULTIVATION

On October 1, 1847, Albert Gallatin writes as follows: "It is sufficient to say, that the Indians of the Rio Gila, and of the upper valley of the Rio del Norte, were an agricultural people, cultivating maize, beans, pumpkins, and cotton; depending exclusively on agriculture for their subsistence."

--Emory: Military Reconnoissance from Ft. Leavenworth to San Diego, 127, 1848.

Gallatin, writing to Emory on October 1, 1847, asks: "I wish now to know, whether you took any notice of the cotton cultivated by the Pimos, and what species it was?" --Ibid, 129.



## C O T T O N

" . . . The tribes of New Mexico, to whom De Vaca applies the term 'Jumanos.' (Humanos.) These . . . inhabit the outer northern edge of the circle of the semi-civilized tribes of New Mexico. They retained at that era, (about 1530,) and continue to retain at the present day, the two striking elements of that type (the Toltec type) of civilization: namely, the zea maize and the cotton plant. We have no knowledge how the latter was fabricated. There was no indication then, nor is there now, that the distaff (one of the most ancient implements of mankind) was employed to form the thread. It is only said that they possessed blankets of cotton . . ."

--Schoolcraft, Indian Tribes, II, 28, 1852.

" . . . The tribes of the present area of New Mexico, to whom he [De Vaca] applies the name of 'Jumanos.' Among these he observed the 'cotton blanket' . . ."

--Ibid 21.



## COTTON CULTIVATION BY COCO MARRICOPAS

In his report to Albert Gallatin, October 8, 1847,

Emory says:

"The Coco Marricopas Indians come from the West. So late as 1826, Mr. Kit Carson, one of our guides, met these people at the mouth of the Colorado. Subsequently to that period, they were visited by Br. Anderson (whom we met in Santa Fe) at a point [about half way between their present village and the mouth of the Gila river. p.132

They are taller and more athletic than the Pimos, and what struck me as very remarkable, the men had generally aquiline noses, whilst those of the women were retroussers.

They occupy thatched cottages, 30 or 40 feet in diameter, made of the twigs of cottonwood trees, interwoven with the straw of wheat, corn stalks, and cane.

Cotton, wheat, maize, beans, pumpkins, and water-melons are the chief agricultural products of these people. Their fields are laid off in squares, and watered, by the Zequias, from the Gila river. Their implements of husbandry are the wooden plough, the harrow, and the cast-steel axe (procured probably from Sonora). . . . . They had many ornaments of sea-shells, showing, in my opinion, their recent migration from the gulf."

--Emory: Military Reconnoissance from Ft. Leavenworth to San Diego, 1846-7, <sup>131-</sup>132, 1848.



## COTTON

In the diary of Pedro Fages, under date of October 12, 1781, Fages writes that on Gila River about 4 or 5 leagues from a place called Agua Caliente he found several <sup>Indian</sup> houses, and that "in the vicinity of these small houses were planted quantities of cotton, squashes, and watermelons."

--Diary of Pedro Fages, Colorado River Campaign, 1781-1782, Pubs. Academy Pac. Coast Hist. III, 149, 1913.



Extract from 'History of San Bernardino Valley from the Padres to the Pioneers, 1810-1851' by Rev. Father Juan Caballeria, 1902.

Cremation and Burial.

"The burial place of the Christian Indians of San Bernardino Valley was at Politana. Until brought under the influence of the missionaries they cremated their dead, burning not only the body but all the belongings of the deceased. The padres taught them the rites of Christian burial. This cemetery was <sup>to</sup> them a sacred spot. . It was used by the Indians of the whole valley until comparatively recent years. The place where it was situated is now on the left side of the new electric railway as it turns north from Colton on Mt. Vernon Avenue, but no trace of this cemetery remains. ^As settlers came into the valley their greed for possession of land did not spare the Indian burial place; the graves were leveled and the land placed under cultivation. A thriving orange grove now blossoms and bears. . .fruit over the crumbling bones of a dead and forgotten generation."



Midoo cremation ceremony in 1850

INDIANS NEAR DEER CREEK, NEVADA CO., 1850

Alfred T. Jackson, a pioneer miner who cabined and worked on Rock Creek, Nevada County, 1850-52, in his diary (published by C. L. Canfield, 1906), under date of June 22, 1850, writes as follows of a settlement of Indians between Brush Creek and Rock Creek.--

"There is an Indian campoody up on the ridge above Brush Creek, where about 200 Digger Indians are camped. They are the dirtiest lot of human beings on earth. One has to be careful going near the place, or he will surely get the itch. They will eat anything, acorns, grasshoppers, or seeds, and I have seen an old squaw pull a rotten pine log apart hunting for a white grub as big as my little finger, and, when she found one, swallow it alive with as much relish as if it were a fat oyster. . . . [9]

The Indians burn their dead and I went over to the ridge with Jim Gleason to a buck's funeral Friday night. It was a queer ceremony. They piled up a cord or more of pine limbs, wrapped the buck in a blanket, deposited his body on the pile, together with his bow and arrows, clothes and small belongings, and set it on fire. The bucks of the tribe set around outside in the shadows, glum and silent as ghosts. The squaws joined hands and kept up a stamping, first with one foot and then the other, wailing together in a mournful chorus, which sounded like 'wallah tu nae' and which they repeated over and over as long as



I stayed there. Others replenished the fire with fresh pine knots and limbs. The main attraction was an old, ugly squaw, who, I was told, although no relation to the buck, was chosen chief mourner. She went into a frenzy, howling and screeching like mad, contorting and twisting her body and spinning round and round until she exhausted herself and tumbled to the ground. Then she would come to and crawl to the fire, get hold of a piece of wood out of which the pitch was frying and daub it over her head and face until her hair was saturated with tar. They say that she never washes herself or tries to get the pitch off, and the buck's wife can't take another man until the tar wears away. It got to be monotonous and disgusting and I came away by midnight, but the Indians kept it up two nights, or until the last vestige of the body was burned up. What heathens they are to dispose of their dead in such a barbarous way instead of burying them decently in the ground! "

C. L. Canfield, Editor, Diary of a Forty-niner, pp. 9-10, 1906.



# Dances

C. Hart Merriam  
Papers  
BANC MSS  
80/18 c

## BUFFALO DANCE AT SAN ILDEFONSO

Extract from letter of Zenaida Merriam Talbot, dated Santa Fe, New Mexico, February 17, 1929:

"Got interrupted then by a most picturesque Indian from San Domingo who wanted to sell me a concha belt or ring or necklace, but most he wanted me to take him up to San Ildefonso for a buffalo dance was going on there.

"When the stage came in he left. I told Tally about him and he decided we'd better go to that dance as I'd probably not have another chance to see it. It's usually only given at Xmas time. So I got up a quick lunch and we started. San Ildefonso is 24 miles up towards Taos. Just as we were rounding the top of the hill out of town by the Cross of the Martyrs we were hailed for a ride by that same San Domingo Indian, Jim Cortes, so we crowded over and took him up.

San Ildefonso is in the most beautiful setting of any of the pueblos I've seen. Not many houses, but a large plaza and two estufas. The drums were going in one of them when we drove up, and soon 8 drummers and 4 buffalo dancers came out of the roof of it and danced over to the center of the plaza.

These buffalo dancers had mainly naked painted bodies and legs and arms, and wore black masks. Over their heads and part way down their backs hung a piece of buffalo skin (shape of the Egyptian head dresses) with buffalo horns on top. Their bodies to the waist line were painted black with white crosses on either side, and a white painted band (about 4 ") below the black. Below this was a short leather skirt with metal jingles on its edge and up its side. It was an oblong





piece wrapped round, ending quite aways above the knees. Where this ended the legs were painted white, the lower parts all black. The buckskin skirts had a design in green on them. And at the waist was a red sash with bells attached. They wore tan high (about 8") moccasins, attached to which was a circlet at the ankles of long hair which fell to the ground--looked like long monkey fur. In one hand they carried bow and arrows and in tother a bunch of painted sticks about 14" long wrapped partly in gay colors.

The dance itself was a sort of a clog affair with many bows and turnings to the time of the 8 drummers who with a couple others also sang. In the middle of it the drummers stopt and an old man harangued them for quite a while. Then after more dancing they danced over to the estrya and climbed in.

That is the pueblo where the lovely black pottery is made, so we went to Ramona's house to see it. She had just sold practically all her finished work, but there were a great many unfinished beautifully shaped bowls. The most famous pottery maker is Maris, but she wasn't at her home.



Extract from 'History San Bernardino Valley from the Padres to the Pioneers, 1810-1851, Father Juan Caballeria, 1902.

Dances.

"Among the principal dances of the Indians of San Bernardino valley were those known as the Hawk-Feast, the Dance of Peace, the Dance of Plenty, the Dance of Victory, and the Dance of Deprecation. Another of their big ceremonial dances was designated by the padres as 'tatamar ninas' or 'roasting young girls'. The ceremony of 'tatema' took place upon the first evidence of maturity. A hole was dug into the ground and filled with stones previously heated. . . over this was spread a covering of leaves and branches and the girl laid down upon it and then nearly covered with heated earth. The result was a profuse perspiration which was kept up for twenty-four hours and sometimes longer. At intervals the girl was taken out, bathed and again imbedded in the earth. During the whole time constant dancing and chanting was kept up by young girls, attended by hideously painted old women who had charge of the ceremonies. At the close, a great feast was prepared in which all joined and which lasted several days and nights. The girl was then considered ready for marriage which usually took place soon after."



## Dances 2.

### Dance of Deprecation

"The Dance of Deprecation took place when a member of the tribe fell sick with some unusual disease. The disease was always attributed to the influence of an evil spirit. The whole tribe would assemble each <sup>person</sup> bringing a food offering, and bead gifts were placed in a large basket. The dance would then begin. Significant words were chanted by the women, children and old men, while the young men kept up the dance in the ordinary way beating time with arrows. After awhile the sorcerer would arise and present the offering to the supposed offended spirit. In making the offering he moved from left to right, and then in a circle, beat time mumbling mysterious words. During the time the sorcerer was engaged the people observed complete silence. At the close of the ceremony the dance broke up. The offerings would be cooked and left until the following day. This act was believed to appease the evil spirit whose baneful influence would then be removed and the sick person allowed to recover in the usual way."



## PUEBLO INDIANS' DANCE AT COCHITI'

Zenaida Merriam Talbot in a letter dated Santa Fe,

New Mexico, December 30, 1928, writes:

The Parsons invited us to go with them to see the Christmas dances at Cochiti' and Santa Domingo Pueblos. It was a lovely mild day, so we accepted. Then there was a scamper for sandwiches and to get into our heavy clothes, for we'd be gone till dark.

In half an hour we were off. It was a lovely drive over to Cochiti', about 30 miles. There we were the only white visitors, tho there were lots of the natives (Mexicans) in their bright clothes as well as visiting Navajos. We arrived in the midst of a Deer Dance. Seemed funny to see an Indian dance given out in the open of their central plaza. Cochiti' is much lower than here, so it was lovely and warm in the sun. The Deer Dancers wore most interesting costumes and head gear. The latter was of deer horns, with feathers attached to their tips, and fir boughs. All during the rather long dance they were almost in a horizontal position, leaning on sticks about 2 feet long which had a tuft of fur about half way down, I suppose to represent the deer's knees. Their moccasins were covered with skunk fur, and around their top was a row of about 1 inch bells which were kept tinkling in time to the four big drums and the chorus of men's voices. After they went off the field, from the other end another series of dancers appeared. These were the eagle or thunder bird dancers. They were only four real dancers, 2 men & 2 women, but they were accompanied by another orchestra of several drums, many hunters with bows and arrows, and a chorus of singers. All the dancers in both dances had their faces painted--mostly black. The eagle dancers had feather headresses and feathers standing up all down their arms, so that when they danced it was like a fan from one hand up over their heads and down to the other hand. They were most graceful.

Then after them the Deer dance was repeated. In this two small boys in full regalia took part besides their elders. I don't see how any of them kept that bent over position so long, while they were going thru all sorts of steps and whirlings. With this dance they stopt for the day, as they had been dancing since midnight.



INDIAN DANCE AT SAN FELIPE PUEBLO, NEW MEXICO.

February 1, 1929

Zenaida Merriam Talbot on Feb. 1, 1929 witnessed an interesting dance at the Pueblo of San Felipe. In a letter written at Albuquerque the evening of the same day she described it as follows:

"Enroute down <sup>[from Santa Fe]</sup> we detoured to the San Felipe Pueblo and saw a most colorful dance. There's a big plaza there entirely surrounded by the 1 and 2 story adobe homes, with at each angle, a narrow passage leading to the outside. As we approached the pueblo we could see the spectacular silhouettes against the skyline. And as we approached nearer saw the Indians were wearing the most gaudy imaginable shawls and blankets. Then we went thru one of the narrow passages and such a blaze of color! The walls were completely lined with the Indians, two or three rows deep--all in as brilliant colors as the ones just above them on the housetops. It was a wonderful sight of color.

"In the plaza a dance was in progress--the dancers lined up very much as in the Virginia reel, with the 'band' all apparently playing mouth organs. A leader, and two 'clowns' were between the rows of dancers. The Indians in their bright costumes were dancing an old Spanish square dance with very intricate steps. They had on high head gear, to represent the Spanish ladies' head-dresses, with silk veils over their

faces which came down to their waist lines. A long bright shawl was draped behind from the headgear, and they all had bright belts, some with the Spanish shawls draped round them. In one hand they held a gourd rattle with feathers attached while in the other they held a fan-like arrangement of 5 or 6 large feathers radiating from a 4 inch turquoise center. They managed these a la the Spanish fan in a most graceful manner.

"The dance was very interesting to watch--so was the audience."



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## DELAWARE INDIANS IN EASTERN KANSAS.

Gustavus F. Merriam kept a Journal of his visit to eastern Kansas in the fall and winter of 1857. In this Journal under date of September 14, 1857, he made the following entry:

"This afternoon a party of the Delaware Indians assembled in town to have a Pow Wow--or war dance, in honor of the return of the guide of the U.S. Troops to Utah with a scalp of a Cheyenne. The Indians were dressed and painted in real Indian style, and danced like so many sticks, yelled like so many loons or Indians and appeared as wild as one wished to see men. I heard them whoop their war whoop, sing a war song and dance the war dance.

Their musical instruments were of the flute and drum kind although poor specimens. The flutes were of a peculiar soft and mellow tone. Their little horses were perfect prodigies."



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The Ghost Dance By James Mooney

Bur. Eth. 14<sup>th</sup> Ann. Rept. Pt. 2. (for 1892-93) 1896.

The Ghost Dance of 1870 in So-Central

California - By A. H. Sayton

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Southern Paiute Religious Ceremonies,  
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Outing - March 1891

## INDIAN DANCES OF THE SOUTHWEST

By W. H. Draper

**S**POTTED ELK, ghost dancer, sat in the shade of his lodge and puffed lazily at his pipe, while I talked with him about his people's dances. He was in ordinary citizen's clothing, and sat on a camp stool. This was proof that he had fallen from his former high station. In the past he had been a great prophet among the redskins, but his prophecies failing to come true, they had cast him aside. In old days he went about with a dozen coats of paint on his bare legs, and feathers in his long black hair. Indians seeking light followed him about. But now he was alone. His sun had set.

"There is nothing to tell," he grunted. "Indian's trail heap short. White man's trail go long way. Dance play out. Medicine no cure. When me sick, must see white doctor. When me cry, no dance for sadness. White man say dance no right. Maybe so. I tired."

One may as well try to get words from a stump, as to persuade a sullen Indian to talk, so I left the dethroned prophet to his thoughts and wandered among the rows of tents, and the Indians in the town on the Kiowa and Comanche reservation. They were preparing again for the ghost dance. A new prophet had arisen among them, claiming that he had received word from the Messiah to go on with the dance. Forgetting that for the last two centuries false prophets have been rising and falling, and unmindful of the fate of Spotted Elk, the superstitious and ever credulous Indians were again preparing for the coming of the end of the world. The way of these people is marvelous. Their life will be surrounded by a mysterious element as long as the race continues to exist. Spotted Elk believes that they have reached the end of their trail. Yet there is a large element among them who are wont to cling to the customs of their ancestors. Civilization has pushed them farther west and into smaller areas of land, but I doubt if half the Indians who are to-day wearing the blue cloth of civilization have really forsaken the religion of the ghost dance.

While they have seen their sacred customs trampled under foot, their hatred for the whites has increased. There is not, and never will be, any real friendship in an Indian's soul for his pale face neighbor. Train them as we may, there still remains an inborn hatred.

Indians have engaged in their dances ever since they were discovered by Colum-



Photos by the Author.

A YOUNG APACHE WAR DANCER.

bus. It is a part of their existence. They are superstitious and fighting people, and this is why the war and ghost dances are most popular with them. As early as the sixteenth century we have accounts of the Indians preparing for the end of the world.

Laulewasikaw, a Delaware Indian, was, during the latter part of the sixteenth cen-



tury, the founder of the ghost dance religion, and the Indians grasped it fervently. Its teachings were that the Indian tribes should all unite in one body against the encroachments of the white man. They should not till the soil, because it was their mother, and to plow was to tear out her bosom. The Delaware prophet said he had died and gone to heaven where he saw the Master of Life. The Master had given him a message for



A SCALP DANCER IN REGAL COSTUME.

his people. In brief this message commanded: "Do not drink, have only one wife, do not fight each other, do not sing the medicine song, do not sell that which I have placed on the earth as food, and when you meet each other, bow and give one another the (left) hand of the heart. Do all these things and the Master of Life will come among you soon and drive out those white dogs and bring back all your dead to life."

Of course the Indians wanted to get rid of the whites and they hailed with delight the new doctrine. But it failed to come

true, and the Indians killed the prophet, but they never forgot the message he brought to them. And about every ten years a new prophet arises among them and says he has been on a visit to the other world. He always has some kind of a prayer for the redskins. For a few months he is the center of attraction, then, when his predictions fail, he is killed. No one ever invented a dance to go with the ghost religion until Wovoka, a Piute medicine man came from out the Rocky mountains in 1872, and announced that he had been to heaven and the Lord Jesus had given him a prayer and a dance. The Indians flocked about him, and he was called the Messiah.

Wovoka claimed to have died when the sun went down and that Jesus took him up in the skies where he was told all these things. He said that the time had come, according to the Winnebago myth and other Indian signs, that the world was to be destroyed. He said the whites were getting too numerous and the game too scarce. This is the Cheyenne version of the letter of Wovoka, the Messiah, to the people of the red race:

"When you get home you have to make dance. You must dance four nights and one day time. You will take bath in the morning before you go home. I likes you all. My heart full of gladness for you. I give you a good cloud and a good spirit. There will be a good deal of snow this year. When your people die do not cry. You will see them again. Jesus is here on earth. Do not tell the white people about this. All will live again. When the earth shake do not be afraid. The dead will all live again this spring. Dance six weeks. I give you good paint for the dance."

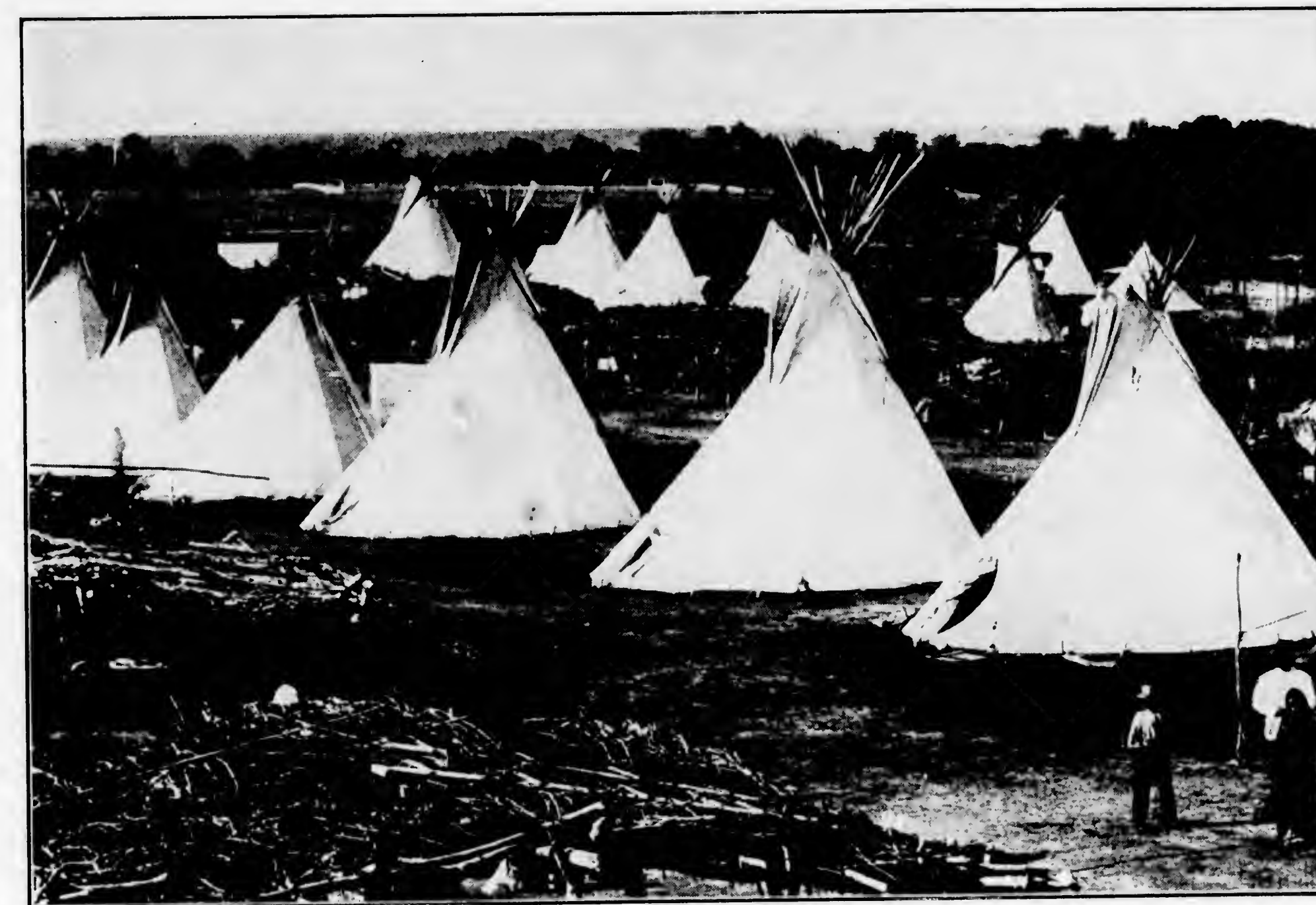
All the tribes sent delegates to visit Wovoka and learn the new dance from him. Then they returned to their people and soon over a hundred thousand Indians were dancing it. That was in 1875, and they continued to dance, and believe, until 1890, the date announced for the end of the world. Wovoka said the end would come in the spring or early summer. As the time drew near the Indians grew frantic. Medicine men of the various tribes claimed to have visions, in which they were given additional instructions as to how the ghost dance religion should be interpreted. The Sioux warriors were told to go on the

war path against the white soldiers, and that, if they wore the sacred ghost shirt, bullets would not penetrate them. As a result the battle of Wounded Knee and the Custer massacre took place, in which several hundred Indians were slain.

While the Sioux were having their battles the other tribes were dancing and waiting for the end of the world. It was generally expected that a flood of mud would sweep over the land and envelope the whites while the Indians would be carried safely on top of the flood. While they slept, their dead would return and game would again

pect to take a leading part in it, assemble for rehearsal of the songs. On these occasions from eight to ten are present, sitting in a circle around the fire. They sing the various songs of the dance, getting the tunes down to their satisfaction, but for my part I never could distinguish any kind of music in their songs. The closing song of the Kiowas follows:

The Father will descend,  
The earth will tremble,  
Everybody will rise,  
Stretch out your hands,  
The whole world is moving,  
Let us pray! Let us pray!



INDIAN DANCING VILLAGE.

inhabit the forests. Every full-blood Indian in the United States engaged in the dance. All other dances were forsaken for the time being. But as the spring of 1890 passed and summer waned, and the dance availed nothing, the Indians went sorrowfully to their homes, knowing they had again been deceived by a false prophet. Some have refused to give up the doctrine and a ghost dance is held every year on some of the reservations. But the mass of the Indians know better, even if they will not admit it.

The ghost dance usually takes place on the banks of a running stream. For several days prior to the dance, those who ex-

The dancing ground is very smooth and before the dance commences is sprinkled with white chalk. This chalk is supposed to be sacred, having been blessed by the medicine man. Just before entering the dance they bathe in the sweat lodge. The dance commences early in the morning, the dancers forming a circle. They take hold of each other's hands and move from left to right. Then, jumping up and down and singing the ghost songs, they grow more and more excited, until they fall in a faint on the ground. Then the circle is closed about them and the dance goes on. While they are lying in a dead faint no one is allowed to go near them. They





A CROW DANCE IN PROGRESS.

are supposed to be in the spirit world, talking with dead relatives and killing game. Sometimes they remain in this trance for an hour.

All ghost dancers are painted, before the dance commences, with great care. Each design is from an inspiration received in a vision. Usually the dancer adopts the particular style of painting which, while in some previous trance, he has seen worn by some departed relative. If he has not been in a trance the painting is done by some one who has seen the visions. The painting consists of elaborate designs in yellow, red, green, and blue upon the face, with a red or yellow line along the parting of the hair. Suns, crescents, stars, crows and other birds are the designs most used. The ghost shirt is like any other shirt, only that it is blessed by the medicine men before being worn. Men and women dance together in the ghost dance. The women are better dancers, because they see the visions oftener.

No dogs are allowed in the vicinity of a ghost dance, as they are considered only fit for food. No drum or other musical instrument is used in the dance, neither are any fires allowed in the circle, as is customary in other dances.

The dance lasts from five to six days. When all the participants have fainted and seen their dead friends, the dance is called

off by the medicine man of the tribe, and all go home.

When the Indians used in earlier days to start the war dance, it was a signal for our soldiers to make ready for a battle. It was always called just before the Indians started on the war trail. But now the war dances held on the reservations of the Southwest are so peaceful a veteran would not recognize them. The war dance in its true meaning, went out of date thirty years ago when Geronimo, the famous Apache chief, was captured. This old scalper was the leader of all the border raids, and justly considered the meanest Indian that ever swung over a broncho. He is now a prisoner of war at Fort Sill, O. T., and all of his following are either dead or captives with him. The Apaches, Comanches, and Cheyennes are the principal war dancers. Although the Sioux were great fighters, they are too corpulent to take part in the fast, fierce movements of the war dance. It requires great presence of mind and agile movers to keep pace with the average Indian war dancer. In these dances, which are hurriedly called, the redskins appear naked, except for the breechcloth. Their bodies are painted red, with green spots scattered here and there. They wear a feather in their hair, and carry a scalping knife in their hand. The dance takes place at night around a huge fire.

They dance around the fire and sing the war song. Their yells fall upon the ears of lonely white travelers with no less terror than the approaching roar of a typhoon at sea.

We are coming, we are coming!  
On the war path, on the war-trail!  
We want the pale face scalp!

The dance only lasts two hours, but in that time the Indians get worked up to a terrible pitch. They eat raw meat after the dance and then go on the war trail. Only fate can save those who fall in their path. Geronimo says he has killed over a hundred white men in a single battle.

The scalp dance is a part of the amusements of all the fighting tribes. It is carried on much in the same manner as the war dance. Both are held in the open air. No music is needed and nothing but the battle songs are used. In the war dance a fire is always burning in the center of the dancers, while in the scalp dance a pole, upon which used to hang the fresh scalps of the enemy, is placed in the magic circle. The war songs are prepared by the chief. There are many of them, but all have the same meaning, that the great spirit will finally help them in all their struggles against the pale face. A scalp



Apache.

Kiowa.

Comanche.

MEDICINE MEN.





A MODERN GHOST DANCE RECENTLY HELD NEAR DARLINGTON, O. T.

dance lasts all night, sometimes longer. Nowadays the scalp dance is nothing of interest, because the dancers use the old dry scalps of persons killed many years ago. Fresh scalps were used in every dance, hence when the news spread that a scalp dance had been ordered the whites made haste to leave that vicinity. The Cheyennes, Arapahoes and Kiowas were ardent lovers of the scalp dance. A Comanche scalp dance was to be most dreaded. The squaws of the Comanche tribe did all the killing for this particular amusement and they were without a fear of anything. Innocent women and babies were frequently murdered by these treacherous squaws to furnish sufficient gore for the dance to proceed. The Comanches yet hold the scalp dance, but it is very tame. Scalp dances are held in the spring. One of the leading religious dances of the prairie tribes is the crow dance, an auxiliary of the ghost dance. It is a favorite with nearly all of the tribes of Indians to-day. It is performed in the afternoon, differing in that respect from any other of their dances. Hypnotism plays a prominent part in this dance, the dancer falling into a hypnotic trance as a culmination of his desires. The ceremony of giving



SWEAT LODGE OF GHOST DANCERS.

the feather is a unique part of the crow dance. Sacred feathers are placed upon the heads of the seven leaders who enter the dance. When any dancer desires to be given a feather he takes six of his friends so as to make up the sacred number of seven, and goes to one of these leaders. He sings to him:

The crow has given me the signal,  
When the crow makes me dance,  
He tells me to get the feather,  
Says the father, I want the feather.

The leader then goes alone into his lodge and paints a crow's feather for the applicant. In return for the feather he is given some small present. The men participating in the dance are stripped to the breech cloth, but the leaders wear the regular clothes of the tribe. They are supposed to be consecrated, and may do as they choose, and the ordinary dancers must obey their wishes. Young men are generally called by the great spirit to act as the seven sacred leaders of the crow dance. The dance lasts six days, during which time all have called for the feather, and some have asked for it a second time. Hundreds of feathers are used. Men and women take part, and the songs refer to the general subject of the crow and the Messiah, but are set to a variety of dance steps and evolutions performed by the dancer. As the young leaders of the dance are constantly studying new features the crow dance has grown to enormous strength

among the Indians. A big drum is set in the center of the circle of the crow dance, and two strong bucks beat lustily upon it throughout the ceremony. The music is without time. When the leaders go home the elaborate pendants of varicolored feathers hanging all over them make an amusing spectacle.

The most important feature of the crow dance, as it is carried on now, is the hypnotic process of sending the dancers into the spirit world. It is a huge farce, carried on by the medicine men, and I wonder that Indians, so shrewd in other things, do not discover the fraud. If they do, it goes unnoticed, and I am inclined to think a great many know the real situation. But the Indian agents with whom I have talked, opine that a majority of the Indians are firm in the



GERONIMO THE FAMOUS APACHE WARRIOR.





ARAPAHOE GHOST DANCERS.

belief that they do see the spirit world in their hypnotic dreams. Whenever any of the dancers express a desire to see their dead, they are shoved into the dancing circle near the prophets, who carry painted feathers. These feathers are twirled in front of the excited dancer's face, and he or she is told to think only about their dead. After awhile they fall in a faint to the ground from the excitement and, while there, they are supposed to have the visions that have been impressed upon them in the dance. The young women and men are more easily affected than the older persons.

There are a number of dances of minor importance, such as the green corn dance, held in the spring just as the corn begins to turn yellow, for the purpose of thanking the great spirit for bountiful crops. All of the tribes engage in it, when they feel that the crops need praying for.

The Osages hold what is known as a pony smoke, but in reality it is nothing more than a feasting on dog flesh, of which diet they are very fond. At these dances, a white dog is killed, and put in a large pot of water in the center of the dancing ring. The Indians join hands and circle around the pot howling in glee. When they have

tired they break ranks and each takes a piece of the sacred meat and eats it. Then they throw in other dogs and dance again, until twenty or thirty, and sometimes fifty, dogs have been consumed.

A ban has been put on the medicine dances, because they often result in the loss of life. But they are very exciting. I once attended a medicine dance in the Creek nation. In a clear space is placed a large iron kettle. At daylight four medicine men come toward it, each from a different direction. They carry with them some mysterious herbs, which are placed into the kettle and then a fire is started. This decoction is partaken of by the four medicine men, and then they pass it around to the Indians who have gathered at a respectful distance. It acts as an emetic. After this the medicine men pronounce them clean enough to enter the dance. They then form in a circle around the kettle and dance for an hour or so, then again partake of the snake root, as it is called. Then again vomit and proceed with the dance. This is kept up until they are so weak they have to be carried to their teepees and death-like silence pervades over the scene of the medicine dancers. Some are thrown into a fever and after a few years' practice no less than one-half of the dancers die.

All over the Southwest are scattered reservations of the various tribes of Indians and each has its own peculiar dances. To describe them all would be tedious. But to enjoy the real Indian you must see him clothed in gay colors in the dance. Old and young alike. It is the springtime of their life. From beneath the paint and feathers you will see happy faces beaming with excitement. The sullen expression, so common in Indians, has vanished. The lazy motion of their body is lost. Their small black eyes sparkle as they whirl around the circle, lifting their bangled legs high in the air, and humming the hu, hu, yuh of the dance song. But when the dance is over they become the same lot of morose reds who have given the West so much trouble. They give only the grunt for an answer. They scowl at you when you speak to them, and flee when you ask a favor. The light of civilization has been thrust upon them. To the Indians it has been a consuming fire.



Diggers



Shoshonean

Diggers

Whites in the region of Fort Hall, Idaho, "called the more miserable bands Diggers, or Shoshonees. I am not quite certain, but think their distinctive name among the natives is Shoshonee; another division of the Snakes are called by themselves and others, Bonacks, or Paunaques."-- N.J. Wyeth, in Schoolcraft, Indian Tribes, I, 206, 1851.

Diggers.--The valley of Bear River <sup>Utah</sup> "is the most eastern residence of the 'Diggers'".--Ibid 220.

"The Snake, or Digger Indians."--Ibid 221.

Diggers: Applied to "Shoshonee or Snake Indians" <sup>of Idaho & Oregon</sup> by Gov. Joseph Lane, Sen. Ex. Doc, 52, 31st Cong., 1st Sess. Vol. 13, No. 561, 169, May 1850.



## Diggers

## Shoshonean

"The 'Diggers,' as they are called, are a band made up of the poorer and fragmentary classes of the Shoshonies, the Utahs, the Bonacks, the Sosokos, and the Washano tribes. They live, during the summer season, on the Humboldt river and its tributaries, NW of Salt Lake. They are very destitute generally."--Schoolcraft, Indian Tribes, V, 199, 1855.

Diggers.--"There are two bands of the 'Diggers,' as they are called, principally of the Shoshonie tribe, who reside on the Humboldt river, and in the adjacent mountains. The first . . . occupy the country around and about the junction of the N and S forks of the Humboldt. The other . . . reside in the neighborhood of Stony Point, a place made noted from the frequent difficulties between the Indians and emigrants."--Ibid 201.

Diggers on Humbolt River.--In population table, Ib. 498.



Digger Indians

Wintoon

Digger Indians: A traveler passing through the upper Sacramento Valley in June 1850, states: "Near by were the earthen huts of a few amiable Digger Indians, who did the fishing and hunting, and most of the farm-work."--  
Overland Monthly, p. 526, June 1871.



Digger Indians [Idaho]

Shoshonean

Digger Indians: In a journal of an overland trip from the Missouri River to California in 1849, Kimball Webster gives the following under date of Sept. 7, 1849: "General Palmer reports having had a serious battle with the Digger Indians at Mud Lake [Idaho], where he lost one man killed and had 2 or 3 wounded."--Kimball Webster, The Gold Seekers of '49, p. 80, 1917.

Digger Indians

Midoo

Digger Indians: Lt. Abbot speaks of rancheria of 'Digger Indians' on Chico Creek, <sup>Calif.</sup> Lt. H. L. Abbot, Pacific R. R. Repts., Via, 58, 1857.

Digger Indians: A. T. Jackson mentions <sup>'campody'</sup> ~~settlement~~ of 200 'Digger Indians' on ridge above Brush Creek, Nevada County, <sup>Calif.</sup> Diary of a Forty-niner, p. 9, 1906. Description of burning the dead by an eye-witness.  
June 22, 1850

Digger tribe: Applied to Indians from Yuba City.--  
Daily Alta California, March 19, 1852.

Diggers: Applied to ~~tribe to which the Totos belong~~ <sup>Tribe of Perry Creek & Flat (Thompson Marysville region)</sup>.  
Marysville Weekly Express, March 13, 1858. "Digger Rancheria at Thompson's Flat" also mentioned.

[OVER]



Digger Indians: Applied to Indians of <sup>Tolls Ranch on</sup> Feather River.-  
San Francisco Weekly Herald, August 16, 1860..

Digger

Shoshonean

Digger: Given by Heinrich Lienhard in his Journal (1846) as name sometimes applied to Utah Indians, inhabiting the region north of Salt Lake, from the fact that they partly live off roots which they dig from the ground.-- Heinrich Lienhard, Californien, p. 72, 1898.

Diggers: "All the Indians along the Humboldt call themselves Shoshonees, but the whites call them Diggers."-- Franklin Langworthy, Scenery of the Plains, Mountains, and Mines, p. 137, 1855.



Digger Tribe

[Nevada] Bannok?

Shoshonean

Digger Tribe: In a journal of an overland trip from the Missouri River to California in 1849, Kimball Webster gives the following under date of Sept. 3, 1849: "The Mormon whom we met on Bear River told us that the grass on Mary's River [Nevada] had been entirely consumed by fire which had been set by the Digger tribe of Indians for the purpose of preventing the immigrants from passing through to California."--Kimball Webster, The Gold Seekers of '49, p. 78, 1917.

Diggers: On Snake River, Idaho <sup>in 1832</sup> and Humboldt River Nevada. Shot by Jos. Meek and others. - River of the West by Mrs. F. F. Victor. 121, 122; 145-146, 1870 (killed 75 on Humboldt Riv.)

Digger or Root Digger

Various Stocks.

<sup>and utterly meaningless</sup>  
A name applied to various Indian tribes from Idaho and Nevada to the Pacific coast. In California used locally from Humboldt County south to San Diego County, and also throughout the west slope & foothills of the Sierra Nevada, particularly from Fresno Creek northward. { Also frequently used in Nevada for Shoshones & Piutes.

Used liberally by Comm. Ind. Affs. for the Mewuk tribes of California (as in Rept. for 1908, 149, 1909) but not by any means restricted to this tribe, as may be seen by consulting the Report for 1908, <sup>(1909)</sup> where on p. 183 the name 'Digger' is used for the Mewuk of Amador County, the Northern Midos of Greenville (Plumas County), and the Northern Pomo of Russian River near Ukiah!

Latham <sup>referring to a Oregon tribe</sup> in 1853, said: "The Diggers are generally placed in the same category with the Bonaks, and sometimes considered as Bonaks under another name." - Proc. Philolog. Soc. Lond, VI, 74, 1854. (Ethn. Opuscula, 303, 1860) [over



This was probably the source of Brace's use of both Diggers and Bonacks as applied to the Mew-wah of Yosemite region (Southern Méiwuk). - C.L. Brace, The New West: or California in 1867-1868, 98 and chapter XI, "The Digger Indians of Calif." 137-152, 1869.

Wilkes speaks of Digger

1845?

William Kelly, in the account of his trip from Missouri to California in 1849, repeatedly uses the much abused term Digger for the Shoshone & Kute Indians encountered from time to time in northern Nevada, particularly along Humboldt River. - Kelly, Excursion to California, London, 8°, vol. I, 252-254; 282, 1851.

Digger Indians

California

Digger Indians: Applied to Calif. Indians in general.--  
Franklin Langworthy, Scenery of the Plains, Mountains,  
and Mines, p. 218, 1855.

Diggers of the Tulares: Weekly Alta California [San Francisco], June 18, 1853.  
mention only.



Diggers

Utah

Shoshonean

Diggers: Name on Disturnell's Map of Mexico, 1847.

Name printed west of Sevier River in west-central Utah.

## Digger

Name "applied indiscriminately to all the tribes of northern and middle California, and to those of Nevada, Utah, and the southern part of Oregon. These tribes are popularly known as the Californian Diggers, Washoe Diggers, Shoshone Diggers of Utah, etc."--Bancroft, Native Races of Pac. States, Vol. I, p. 326, 1874.

See also Digger Indians, Diggers



Diggdr Indianer

Diggdr Indianer. - Gatschet includes various tribes under this head. Zwölf Sprachen, 76-79, 1876. [~~But~~ the vocabulary he gives as Digger<sup>99-115</sup> ~~is~~ clearly Wintoon. - cam]

Digger

Mewuk

Mewan

Digger: Account of ceremony held April 20, 1924 in Jackson Valley, Amador Co., Calif., celebrating the official abandonment of the term 'Digger': "Burned at the stake amid the jeers and taunts of hundreds of warriors in full regalia, and with their faces covered with war paint, an effigy representing the hated name of Digger was consigned to oblivion yesterday afternoon at a ceremonial gathering of the tribesmen from a half dozen counties of Northern California."-- Stockton Record, April 21, 1924.



Digger

Shoshonean

• **Digger.** Said by Powell to be the English translation of Nuanuints, the name of a small tribe near St George, s. w. Utah. It was the only Paiute tribe practising agriculture, hence the original signification of the name, "digger." In time the name was applied to every tribe known to use roots extensively for food and hence to be "diggers." It thus included very many of the tribes of California, Oregon, Idaho, Utah, Nevada, and Arizona, tribes speaking widely different languages and embracing perhaps a dozen distinct linguistic stocks. As the root-eaters were supposed to represent a low type of Indian, the term speedily became one of opprobium. (H. W. H.)

Handbook Am. Indians

Pt. 1, p. 390, 1907

Digger, or Shoshokee

Branch of the Shoshone language.--Bancroft, Native Races of Pacific States, III, 661, 1875.

Yahmah

Digger

Digger: Applied to Indian at Bucks Flat on Little  
Antelope Creek.--San Francisco Weekly Bulletin, June 1,  
1867 (from Red Bluff Independent, May 1867).



• "Digger Indians, who call themselves Pah-Utahs."

Tribe found by Lt. E. G. Beckwith <sup>on Humboldt River</sup> 20 or 25 miles west of mouth of Reese River, Nevada, June 7, 1854. -- Pac. R. R. Repts., Vol. II, B, p. 34, 1855.

Digger Indians

Name applied by ~~the~~ early California settlers to various bands or tribes on the Merced, Tuolumne, Fresno, and San Joaquin rivers and vicinity, including the tribes in Chowchilla and Yosemite valleys. -- Galen Clark, Indians of Yosemite, p. 5, <sup>63, 67</sup> 1904.

• Name used for <sup>California</sup> Indians in ~~western Nevada and eastern Cal-~~  
~~ifornia~~ "who burn their dead." -- Sarah Winnemucca Hopkins,  
Life Among the Piutes, p. 63, 1883.

The Digger Indians

Méwah

Mewan

Fremont James [apparently a member of tribe] in *Native American*, IX, 224-226, 1910. (Refers to Mewan of Tuolumne and Mariposa counties.)

Digger Indians, and Diggers. - Applied to Indians of Yosemite Valley.  
- Bunnell, *Discovery of Yosemite*, 3<sup>d</sup> ed. 72, 1892.

Digger Indians: Applied to Indians of Yosemite Valley.--  
J.F. Campbell, *My Circular Notes*, Vol. 1, pp. 73 & 79,  
1876.

Diggers: Applied to Indians having camp <sup>near</sup> ~~in~~ Murray Creek  
[probably Calaveras County].--San Francisco Weekly  
Herald, April 19, 1860.



Digger Indians

Shoshonean

Digger Indians: Applied by Cartwright to Indians along  
Humboldt River, <sup>Nevada</sup> -- D.W. Cartwright, Natural History of  
Western Wild Animals, 208, 216, 1875. Written Diggers  
Ibid 209.

Digger Indians

Yukean

Digger Indians: Applied to Yuka Indians by Capt. Edward Johnson in letter dated Fort Weller, May 31, 1859. MS, Old Files Division, War Dept., No. 151 C 1860 (filed with 75 C 1860).



*Alhefaskan on*

Soo-lah'-te-luk

*on water*

Digger Indians

"Digger Indians of Humboldt County".-- San Diego  
Tribune, April 30, 1923.

Digger Indians: Applied to Indians of Humboldt Bay  
region.--Marysville Weekly Express, April 30, 1859.

Digger Indianer

Wintoon

Digger Indianer.-- Name used by Gatschet, following Loew, for a tribe on upper Sacramento river whose name was unknown to him. Zwölf Sprachen, 32, 1876. Vocabulary 99-115. [This vocabulary shows the tribe to have been Wintoon. --~~Chm~~] ~~C.H.M.~~] A few additional words, Ibid 88.

See Wintoon.



Diggers

Hwilkut

Diggers: Humboldt Times of Oct. 4, 1856 mentions the  
Bald Mountain Diggers.

Diggers

Mewwah

Mewan

"In the Yosemite Valley there are the 'Diggers', so called because, in times of scarcity, they subsist on acorns, roots, and insects and their grubs, dug from the earth."  
--Samuel Kneeland, Wonders of the Yosemite Valley and of California, 52, 1871.

Digger Indians.--Ibid 53.

Digger: Twenty-two students Sherman Inst., Riverside, Calif.

1925-6. →

The Sherman Bull. Vol. 19, No. 1, Riverside, Calif.  
Sept. 11, 1925.



## Diggers

The different tribes of Indians "must have a common origin and must belong to one race. This race we will designate by the name which the Americans give, and we will call it Diggers."--M. P. de Lucy-Fossarieu, Les Langues Indiennes de la Californie, 12, 1881.

Diggers--The native population of the present States of Utah, Oregon, and New Mexico would be, in 1826, about 300,000. "Nearly all these Indians (with the exception of the Moquis, Pimos, and Maricopas) belonging to the race of Diggers, if one adds their number to that of the Diggers of California properly so called one has a total of about 500,000."--Ibid 15.

Diggers--"It is an undoubted fact that the Diggers have not always been the degraded and brutal race which we have described."--Ibid 15.

· Diggers

-Name applied to Goshoot Indians in vicinity of Goshute  
Mts., Nev. -- Lt. E. G. Beckwith in Pac. R. R. Repts., Vol. II,  
B, p. 25, 1855.

· Diggers

Tribe of Utahs on Humboldt River, Utah. -- Bancroft (after  
Schoolcraft, 1860), Native Races, I, 464, 1874.



• Diggers

Name applied to Sierra (or Caruana), Laguna (or Tata-gua), and Surillo (or Cartaka) tribes on Tejon reservation and others on "Laguna, Tihatchipe, Hockeye, Kern river, Posa creek, and other localities" in the Southern District of California. -- J.P.H. Wentworth in Rept. Commr. Ind. Affrs. for 1862, p. 325, 1863.

~~Name applied to band of Yosemites -- Bunnell, Discovery of Yosemite, 3d ed., p. 72, 1892.~~

• Diggers of California

The Paiutes of Mohave Desert referred to as probably "distinct from the Diggers of California."—Whipple, Ewbank, and Turner, Pacific R.R.Repts., Vol. III d [Pt. 3] p.19, 1856.

• Tribes of the Klamath and Trinity rivers regarded as much superior to the "diggers of the greater part of California."—Gibbs in Schoolcraft's Arch., Pt. III, p.140, 1853; quoted by Bancroft, Nat. Races of Pac. States, Vol. I, p:327 (footnote), 1874.

• Digger Indians of Alta-California

Tribes of Lower California undoubtedly belong to the same race or family as the "Digger Indians of Alta-California."—Bancroft (after Browne, 1869), Native Races, I, 558, 1874.

(over



Diggers.--One of the vocabularies taken by Bartlett "in the country watered by the Sacramento River."--Ludewig, Aboriginal Languages, 26, 1858.

"Diggers of Napa Valley."--Another vocabulary taken by Bartlett.--Ibid 26.

Diggers.--"In a letter, he [Bartlett] says: 'The name of Diggers is applied to all the California Indians by the people (whites) generally, and it is difficult to get the real names of the tribes. Half the time the natives will give one the name of their chief or captain.'"--Ibid 27.

Digger tribe

Olhonean

Digger tribe of Indians: Referring to natives of Santa Clara County, Calif.-- San José Calif. News, Nov. 13, 1923. Same in Santa Clara Calif. Journal, Nov. 14, 1923.



## ROOT DIGGERS

C. W. Smith in his journal of  
an overland journey from Missouri to  
Calif. in 1850 (published 1920)  
states that the "Root Diggers" . . .  
a most savage and degraded tribe"  
infest the valley of the Humboldt.--  
C.W. Smith, Journal of a Trip to  
Calif. p. 70, [1920].

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Calif. p. 70, [1920].



## "DIGGERS"

Victor, in the book called 'River of the West,' published in 1870, quotes Joseph Meek many times as using the name "Diggers" for the Shoshone of Snake and Humboldt Rivers in the year 1832. The same term was applied to the Northern Piute of Humboldt River, where some were shot by Meek, who also describes the slaughter of Northern Piutes in Humboldt Valley (75 killed pp. 145, 146). For other references see pp. 121, 122.

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"Digger Indians" of Humboldt Valley, Nevada

The unfortunate and misleading term Digger Indian has not only been in use a long time but has been applied to more than a hundred tribes in the western United States from Wyoming and Idaho to the Pacific Ocean.

In 1848 a western newspaper, the California Star, published the following:

The Diggers.--These Indians, represented by the generality of writers as the most miserable specimen of humanity, are the most troublesome on the route from the United States to California. They generally make their first appearance at the head waters of Mary's river. They have their homes during the summer among the thick willows which border the stream, from these they start at every turn, follow the emigrant parties during the day, and hang about their camps at night. Unless a constant and vigilant guard is maintained, serious and in that region irreparable losses of cattle and horses may be expected. It is necessary to corral the animals from the Springs of Mary's river until the settlements are reached. A yoke of cattle were stolen from an emigrant and killed the night before his arrival at Johnson's last season. It is deemed advisable not to allow these Diggers to come into camp, and to keep them always at a respectful distance. This should be done mildly but firmly.

## WE CAN AT LEAST LET THEM RETAIN THEIR NAME

Editor The Chronicle—Sir: I am distressed to noted that The Chronicle's correspondent at San Andreas has an erroneous idea in regard to the "Digger Indians." He states a certain tribe "changed its tribal name from Digger Indians to Wemvks." As a matter of fact, "Digger" could not be a tribal name for the very obvious reason that neither word is of Indian origin.

These Indians' tribal names has always been "Mewuk," and as they became weary of the ugly name that had been wished on them and is generally used in a disagreeable way by people who wish to imply that Indians are an inferior race, they decided to try to have their correct name recognized. Nothing more nor less than that.

AN IRATE INDIAN.

Harris, Humboldt Co., May 2, 1924.—San Francisco Chronicle, May 3, 1924.



Washington Irving, in relating the adventures of one of Capt. Bonneville's trapping parties, in July 1833, says:

"One morning, a trapper of a violent and savage character, discovering that his traps had been carried off in the night, took a horrid oath to kill the first Indian he should meet, innocent or guilty. As he was returning with his comrades to camp, he beheld two unfortunate Diggers, seated on the river bank, fishing. Advancing upon them, he levelled his rifle, shot one upon the spot, and flung his bleeding body into the stream. The other Indian fled, and was suffered to escape."

Continuing down Marys River towards Humboldt River, the trappers found these Indians in considerable numbers, "but always pacific; the trappers, however, suspected them of deep-laid plans to draw them into ambuscades; to crowd into and get possession of their camp, and various other crafty and daring conspiracies, which it is probable, never entered into the heads of the poor savages."



Carded

The Marysville Weekly Express,  
April 30, 1859, reports "Digger Indians"  
. . . "from the Humboldt" en route to  
Nome Lackee Reservation.



Carded

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WPA  
MIA  
©

## INSULTING OUR VICTIMS

Through the Indian Board of Cooperation, an effort is being made to bring about the discontinuance of the term "Digger Indian." This is an auxiliary effort to the campaign of the Indian Board to induce Congress to pass the Court of Claims bill, which would empower the Indians of California and other Pacific Coast States to bring suits against the Federal Government for unsatisfied claims under the Indian treaties. But it is being pushed just as energetically as the main purpose.

It is not unreasonable that the surviving Indians of this coast should wish to have the opprobrious title of "Digger Indian" relegated to the limbo of forgotten things. Congress may not be able to efface the phrase from popular usage, but it can at least compel the Bureau of Indian Affairs to discontinue its application. Chief among the scientific authorities championing the cause of the Indians is Dr. C. Hart Merriam, president of the United States Biological Society, formerly head of the United States Biological Survey and one of the leading biologists of the world.

Dr. Merriam, who has his headquarters in Washington, and who has for many years carried on field work in California in connection with his main life project, the study and preservation of the many and diversified languages of the California Indians, is particularly qualified to discuss this subject. He has specialized in this field, and year after year has gone among the Indian tribes and communities, lived with them, made friends with them, and has added bit by bit to his exhaustive study of their divisions and languages. In all his research work he has never yet found a "Digger Indian," nor any "Digger Indian" language or dialect.

Just before starting from Washington for his country home in Lagunitas, to make his final checking-up of his years of investigation and study, Dr. Merriam made this statement on the subject of the "Digger Indian."

"During the past seventy-five years, the term 'Digger' has been applied loosely or specifically to the Shoshone, Piute, Gosiute, Bannock, and Washoe tribes of Indians inhabiting various parts of the Western States, particularly in the States of Idaho, Oregon, Utah, and Nevada.

"In California it has been applied officially by the Government, through the reports of the Indian office, to such widely separated and wholly unrelated tribes as the Wintoon of McCloud River, the Pomo of Russian River, the Midoo of the Northern Sierra, the Southern Newuk of Yosemite region, and the Yokut of the Tulare country; while in the literature of the State and in the everyday usage of the white people it is forced to do duty for practically every tribe from Humboldt bay to San Diego. Obviously, therefore, it is an utterly meaningless and confusing name, devoid of so much as a shadow of tribal significance. Not only is this the case, but what is far worse, it is a term implying inferiority if not contempt, and is highly objectionable to the Indians. Is there any reason why the Government should humiliate intelligent, friendly, and law-abiding Indians by continuing the official use of so offensive a term?"

*Call. Indian Herald - July 1923.*



## THE TERM 'DIGGER' AS APPLIED TO INDIANS

During the past 75 years, the term 'Digger' has been applied loosely or specifically to the Shoshone, Piute, Gosiute, Bannok and Washoo tribes of Indians inhabiting various parts of the western United States, particularly in the states of Idaho, Oregon, Utah, and Nevada.

In California it has been applied officially by the Government, through the reports of the Indian Office, to such widely separated and wholly unrelated tribes as <sup>the Wintoon of the Cloud River,</sup> the Pomo of Russian River, the Midoo of the Northern Sierra, ~~and~~ the Southern Mewuk <sup>and the Yokut of the Tulare country</sup> of Yosemite region, while in the literature of the State and in the everyday usage of the white people it is forced to do duty for practically every tribe from Humboldt Bay to San Diego. Obviously therefore it is an utterly meaningless and confusing name, devoid of so much as a shadow of tribal significance. Not only is this the case, but what is far worse, it is a term implying inferiority if not contempt, and is highly objectionable to the Indians. Is there any reason why the Government should humiliate intelligent, friendly, and law-abiding Indians by continuing the official use of so offensive a term?

April 24, 1922

- C. M.



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

SEQUOIA AND GENERAL GRANT NATIONAL PARKS

OFFICE OF  
THE SUPERINTENDENT

~~SEQUOIA NATIONAL PARK OFFICE~~

General Grant National Park, California.

January 29, 1931.

Dr. C. Hart Merriam,  
1919 Sixteenth Street,  
Washington, D. C.

My dear Dr. Merriam:-

I was much interested to receive your inquiry about the difference, if any, between a Digger and a Mono Indian. I have delayed my reply till I had an opportunity to call upon Enoch Work, whom I have mentioned in former letters as the oldest white man in the vicinity of Dunlap, who has lived with the Indians there since he was a child. I had already had a line on this matter from the Indian, Waley, also mentioned in former letters. I have always had the impression on this question that was indicated by Waley, and which was strengthened in my mind by several talks with old-timers on the Kaweah and Tule watersheds, in years past, which is as follows:-

The term "Digger" is applied by many old-timers to the general run of foot-hill and Valley (San Joaquin Valley, in the minds of my informants) Indians of the several groups or tribes found in those parts of the country. There is no particular tribe of Diggers, but the various small tribes, Potwishas and others living at low altitudes came under that name. The Monos, on the other hand, originated on the east side of the mountains, and when on this side were supposed to confine their tribal activities to higher levels than the various tribes of diggers. The Monos were also supposed to be of a more aggressive and in some ways higher type of Indian. Commodore Murray, the first white child born in Tulare County, and a man who had lived most of life in the Indian country of the Kaweah and Tule Rivers section, told me once that the Digger Indians were dull and peaceable by nature, and that the only times that they ever went on the warpath or staged any so-called massacres of the whites was when they were "egged on" by visiting Monos. Notably, the skinning alive of a white man near where Visalia now is, in the early days, was instigated by a Mono who was in the party of Indians, called Diggers, who were mixed up in that trouble with the whites.

Members of various pioneer families in the Three Rivers section have apparently been of the same opinion, and the idea has been firmly fixed in my mind since my arrival in California in 1897, when I became interested in the Indians of the region.

*Acked. Feb. 21, 1931  
cm*



As noted in previous letters, the Indian Waley, living near Dunlap, considers that the Monos are different from the Diggers, and considered himself, a Mono, superior to any Digger. He seemed to think that the Monos were increasing while the Diggers were decreasing in numbers. He said the fine-looking school children seen along the road at Dunlap were mostly Monos, and he was very proud of them, to judge from his talk. When I asked him about the reported epidemic that caused the exodus from the Mono Rancheria, above Dunlap, years ago, he said there was no epidemic, but that the Diggers died off in time. I have sometimes wondered if their passing was assisted by the Monos, on occasion, but have no information as to that.

Enoch Work, the pioneer of the Dunlap section, says that he doesn't know any difference between a Digger and a Mono, but that the languages were different - that is, the Mono dialect is different from the various languages spoken by the different tribes along the foot-hills and in the Valley. He doesn't know as to whether or not the Monos on the east side of the mountains are or ever were called Diggers. He has never been over there. He says the Diggers got their name from the fact that they used to dig with pointed sticks for roots (and grass-nuts, I suppose) and the whites applied the name to all the tribes indiscriminately. He was a little uncertain, however, as to whether the Monos who have drifted into the country here were originally of the stick-digging fraternity. From the nature of the country on the east side of the range, where the Monos presumably originated, it is very possible, I think, that their food supply was of a different sort, and possibly no digging was done over there. Most old-timers seem to be agreed that the Monos from the east side made trips over the pass to the Kings River country, where they bartered flints and pine nuts to the local Indians for acorns and ~~possibly~~ possibly other food not to be found on their side of the mountains.

The whole question is very interesting, and if I get any more information about it, I will be glad to send it along to you.

With kindest personal regards,

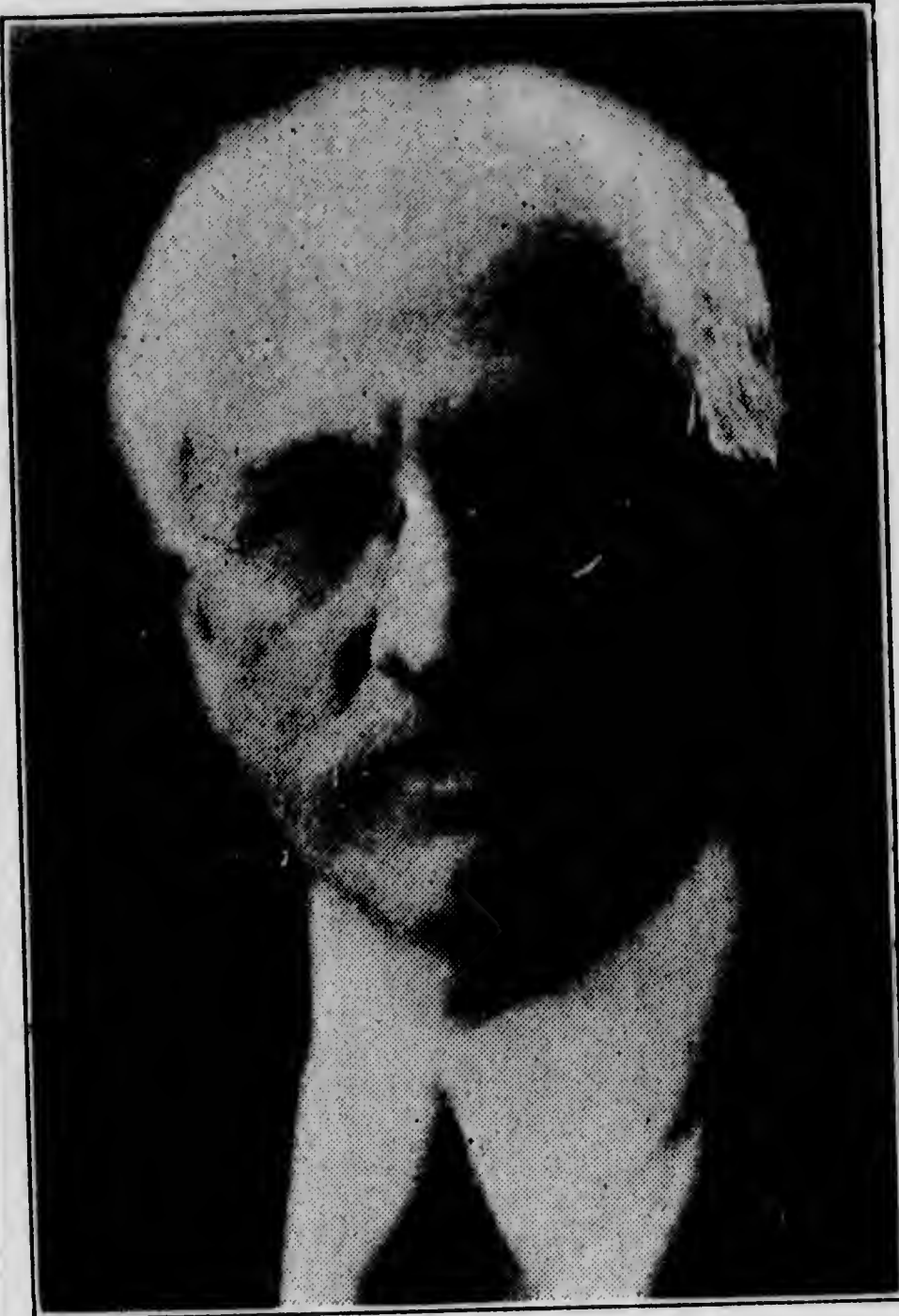
Yours very truly,

*Guy Hopping*  
Guy Hopping,  
Asst. Supt.

P.S.- I have heard it said that the Monos also took deer hides or buckskin back over the mountains with them, trading with the Diggers for these as well as food stuffs.

*H*





JAMES HENRY BREASTED

### Digger in the Past

The discovery a few years ago of the tomb of King Tutankhamen focussed the attention of the world on Egyptian archæology. But Dr. Breasted has followed it since 1894, when he was appointed assistant in Egyptology at the University of Chicago. In the winter of 1894-95 he was in Egypt collecting for the University of Chicago. Since then he has spent pretty nearly all of his time the same way, and in 1925 the University relieved him of all teaching duties. This has enabled him to take full charge of the work of the University's Oriental Institute, of which he was made director in 1919.

All his work, however, has not been teaching and digging. In 1900, for instance, he found time to visit the European museums on a commission of the Royal Academies of Germany to copy and arrange the Egyptian inscriptions in these museums for an Egyptian dictionary. For a number of years he has been associate editor of the *American Journal of Semitic Languages*.

Dr. Breasted was born at Rockford, Ill., on the 27th of August, 1865, and in 1888 he finished his undergraduate studies at Northwestern College. Then he studied at the Chicago Theological Seminary, specializing in Hebrew. From there he went to Yale, taking a master's degree in 1892, and in 1894 he received his Ph.D. from the University of Berlin. Since that time he has received many honorary degrees, including the highly prized Doctor of Letters of Oxford University.



Yale Review - Oct. 1925.

## IN THE MOUNTAINS OF MENDOCINO

BY WILLIAM KENT

**T**O the north of San Francisco Bay, in from the Pacific, lie the coast range mountains with their marvellous fringe of redwoods on the foggy ocean edge. This wonderful growth, the most beautiful and densest of all known forests, was not of any but incidental interest to the early pioneers, nor was it a hunting country. But the coast range back of it, running up to six or seven thousand feet altitude, was a delightful broken and varied landscape, full of game and with grazing available to herds of cattle and subsequently to sheep.

Some way or other, this particular neighborhood attracted to it a peculiar immigration of Pike County Missourians. They began coming prior to the discovery of gold, and thereafter hastened their advent. Gold mining was done in a few places, but the original settlement of the Mendocino country started with hide hunters and livestock.

These Missourians were of long and shambling build. Their family altar was the frying pan. Malaria was in their bones, and although a vigorous people, when health permitted, they were not enamored of unnecessary toil and not particularly ambitious to improve their lot. They loved narrative, deliberative conversation, and eating tobacco. They were hospitable and by no means natty dressers or tidy housekeepers.

Years ago a man who had invaded their eastern habitat told me of riding down through a malarial bottom and coming across a small clearing with a log house and a miniature corn field amidst the girdled trees and stumps. The owner slouched out to his front gate and hospitably asked



not a thought, but an act, as Creation is; it is the deed transferred to a higher plane, and implies a like totality of the human being."

When calling Benton's attention to an article on "Personalism" by Whitman in "The Galaxy" for May, 1868, he thus commented:

"There is meat in it, and bone, too. I do not object to the style. I think we all write too smoothly and flippantly. The need of literature always is for something deep-cut and characteristic. Alcott writes Walt that he and Emerson are enthusiastic. He says he (Walt) is on the road to empire."

One more unpublished entry from the early note-book of Burroughs must be inserted here. It is dated December 21, 1871:

"Walt said a friend of his, Mr. Marvin, met Emerson in Boston the other day and when Walt was mentioned Mr. Emerson said, 'Yes, Walt sends me his books. But tell Walt I am not satisfied, not satisfied. I expect — him — to make — the songs of the — nation — but he seems to be contented to — make the inventories.' Walt laughed and said it tickled him much. It was capital. But it did not disturb him at all. 'I know what I am about better than Emerson does. Yet I love to hear what the gods have to say.' And continuing, he said: 'I see how I might have wandered into other and easier paths than I did — paths that would have paid better, and gained me popularity — and I wonder how my feet were guided as they were. Indeed, I am more than satisfied with myself for having the courage to do what I have.'"

One must stop somewhere, although the comradeship between Whitman and Burroughs, which extended over thirty years, is traced in this article only in its first decade. Illustrative of the pervasive influence of the poet upon his comrade, is the fact that as Burroughs's first book was about Whitman, so his last essay in the last book published during his life was also about Whitman. He was never done with the poet any more than with the birds.

the stranger to get down. Entering into conversation on the qualities of the country, my friend found the native tremendously enthusiastic. He said: "Why lookit hyar stranger, thirty years ago I came hyar from Tennessee, nothin' but a pore boy. Now lookit what I've done. I've built me a house and got me a wife and family. I've cleared me a cohnpatch and I've raised some syrup, and tobacco. There's hawks belongin' to me runnin' in the woods. There's hickory nuts and 'simmons in the fall and blackberries in the summer. I got mostly everything a man could want. Say, stranger, I got me a rifle that'll peel the head off'n a squirrel at thirty yards and I got me a dawg. Now say, stranger, I got me the finest damn coon dawg in Missoura."

And of such satiety consists true wealth.

The Mendocino country was sparsely inhabited by isolated tribes of Digger Indians, whose range of inter-communication was so small that a different language was found in almost every tribe. They were probably the most harmless and least warlike of all our aboriginal inhabitants. They did not possess the art of making pottery, but wove water-tight baskets of willow roots in which they cooked by dropping in red-hot stones. They lived by hunting and fishing and obtaining native produce. They had no agriculture.

In their attacks on grasshoppers they either built a long low hedge of inflammable sticks, herded the grasshoppers through the flames to the end of singeing their wings; or if the earth were soft, stuck a round stick in the ground, which, by being revolved created a small pit, large at the top and bottom like an old-fashioned backgammon dice box. They placed these pits at intervals with a brush screen between and drove the insects into them. The hoppers were slightly toasted before being eaten, as were the oak-eating caterpillars, which were also esteemed.

In their pursuit of yellowjackets and their larvae they took lesson from the bear, which, having found a yellow-jacket hole, proceeded to beat down on it with alternate



paws, humming pleasantly during the process. When the last of the outcoming yellowjackets were smashed, the comb containing the larvae and their food supply was dug up and eaten with great relish. The Indians, on their part, obtained heavy leaved evergreen branches and, sitting one on each side of the hole, alternately smote the enraged parents as they appeared, humming in careful imitation of the bear. The larvae and comb were dug up, treated with a little fire, and greatly prized.

One of their chief foods was acorns, and they managed to soak out the objectional bitterness of bay nuts and buckeyes. They appreciated berries and knew the nutritive qualities of roots and grass seeds forgotten by the white man. Their tastes in meat and fish, as in other respects, they boasted, were the same as those of a bear, the most unclean feeder of all our wild animals. When they were near the ocean, their diet was largely shellfish.

The "midden heaps" of their villages were their burying grounds. It was a great way of "keeping the family together."

As far as the Spanish missions reached to the north, clear from California Baja to the neighborhood of Sonoma, the Indians had been brought into the fold and their souls saved by forcible missionary work with occasional employment of the *reata*. Once captured, they settled down to a sort of pious serfdom not ill befitting their mild and unambitious natures. Beyond the field of the missions, however, they were found by the early pioneers living quietly their inoffensive lives with a somewhat communistic regard for the rights of property.

The early settlers found them, murdered them, intermarried with them, sold them liquor, and generally mused up the situation. Never were people more undeservedly misused; it was and is a national disgrace.

I knew of the days of the deer-slaying hide hunters with their squaws who did the tanning with deer brains and smoke. My father had journeyed through the mountains back in

1868 with a pack train and in 1871 in search of vacation and rest, and I had always been anxious to get back in the great country that he described.

First of all it was necessary to find a guide, and Bogue Bowman, heir to the Missouri traditions, supplied the need. He was known as a "bar" hunter, and had the necessary paraphernalia in a bunch of ill bred and worse mannered hounds and curs that spent most of their leisure time in pursuing fleas when not planning to raid the camp food supply. With him in midsummer, we rode back from the intolerable heat of the lower altitudes into the higher mountains of the coast range backbone.

It was a country of big trout streams, of scattered pine forests, and steep, ragged, brush-covered slopes known as "roughs." There were stretches of pasture land with scattered liveoaks and covered with the nutritious yellow grass of the dry California summer.

We had not long started before one evening our camp was quietly invaded by an unusually diffident man, who came in and sat by the fire, said "Hello" to the guide and "Hello" to the rest of us. He explained that he had been watching us for a couple of days and had made up his mind that we were all right, and therefore took the liberty of intruding. We found that he had been mixed up in the unfortunate hanging of a deputy sheriff and that a reward was out for his apprehension. He shuddered and said he was "skeered," and he certainly acted the part.

It seems that throughout the region there was a feud between a man named White who set up general claim to all grazing and range facilities, and a bunch of small settlers whom he alleged were disrespectful of his rights and his property interests in his livestock. White had chartered sundry Indians and boasted of an expedition that had yielded 2,600 deer hides. Houses had been burned and men "turned up missing," and our unfortunate acquaintance had by his intervention with the alleged cause of justice, got himself



unpopular, and took to the brush. He explained that he had duly married a Wylackie squaw who had been drowned with her child while trying to ford a flooded river, so that now he was lonesome and claimed the right to be ornery. He told us of his wanderings with the Indians on the ranges of the Yally Balley mountains and said that it would be a pleasure for him to escort us to where there were big fish that would bite. He also volunteered to take on the hard task of bread making, and in this he was without rival. He would procure the flour, salt, and baking powder, and after ostentatiously washing his hands, he would mix the ingredients and make his dough. Then he would take two frying pans and apportion a proper amount to each, and proceed to "rise" the loaves on the fire. He had a trick which I never saw anyone else able to perform, for he could work the frying pans, one with each hand, so as to keep the "rising" loaves revolving round and round, thereby giving an even amount of heat. After the loaves had duly risen he took them out and propped them against stones with their crowns facing the fire to finish the baking, and proceeded to start new loaves.

Through all his domestic occupations and his instructive conversation concerning the country, its assets and inhabitants, he continually looked over his shoulder to see if anything was coming. He was evidently and obviously scared.

According to promise, he took us far up a branch of the Eel River where in deep pools lay small schools of big landlocked steelheads sitting as peacefully on the gravel bottom as any school of suckers. We found that by using a piece of small trout belly for bait on our miniature flies, and trolling it around the noses of the quietly loafing fish, we could after sufficient irritation induce a strike.

And then the trouble began, for our tackle was poor and light, and the fish ran from six to twelve pounds. The first one I hooked, weighing about ten pounds, started excitement in the pool and the whole lot began tearing around and jumping out of water.

Doolittle shrieked at me to pull him in, and when I explained that the tackle was not strong enough and that the fish needed string, he proceeded to offer advice and request the gift of more string, finally despairingly winding up — "Don't do a damn thing I tell you. I don't know what I'm talking about."

When the fish was tired and towed out into shallow water Doolittle waded in, and with both hands and forearms threw him far up into the brush, yelling and shrieking with excitement and joy. The fish were fine and fat with firm flesh from the cold water. Nothing more delicious ever sizzled on a broiler.

While we were camping on the stream enjoying this wonderful sport, there came a bunch of about seventeen Wylackie Indians, relatives by marriage of our friend Doolittle. They had brought spears and I regret to say nets and dynamite to make sure of capturing a goodly supply of big fish. They were accompanied by an old white man who had married into the tribe and was spending his last days as a sad derelict among these kindly and dirty people.

We talked matters over with a can of tobacco and a package of cigarette papers in the midst, and entered into a treaty which was faithfully observed. We on our part requested and were allowed unmolested possession of a number of pools in which we had discovered fish. This was acknowledged as fair inasmuch as we had arrived first. In the rest of the streams the Indians were to fish as they saw fit.

Before beginning the fishing operations it was incumbent upon them to eat up five small deer which they had brought into camp. This was a worth-while performance. The deer were skinned and hung up near the fire. The Indians sat around, each with a sharpened stick. They went to the pendent carcasses and cut off strips which they then partially broiled and swallowed, and continued in this occupation without napkins or finger-bowls for about fifteen hours, at which time they exhibited considerable distension. From



time to time, the stripped bones were handed out to the nondescript dogs that always signalize an Indian camp. After this sumptuous repast, both people and dogs were able to endure several days of fasting without complaint.

However, after a due allowance of sleep, our friends went out for fish, and it was a most interesting performance. Out of respect for us they refrained from the easy use of dynamite and put in practice an ancient method of getting results.

Going to a deep pool in a rocky cleft they beat upon the water with branches, threw in stones, and scared the school of fish until like so many small trout they took refuge under the banks. Then an able-bodied Indian stripped and, taking in his hand a small scoop net without a handle, dived down into the icy depths. He swam under the rocky bank until only his legs were visible in the clear water. He succeeded in getting a big fish into the net and came in triumph to the surface to drag him out in shallow water. We who considered ourselves fishermen were forced to praise and admiration of such a feat. I commend it as real sportsmanship.

While in our camp by the river, we were approached by an Indian who evidently had something on his mind. After lighting up a cigarette, he announced that the tribe had been visited by the "bad man from Mad River," and that he felt it incumbent to notify us to look after our possessions. He explained that he didn't want the Indians suspected of robbing us, but that the tribe could not control the actions of this evil white man.

We agreed to keep watch, and our friend Doolittle explained to us afterward that this "bad man from Mad River" had married a squaw from the tribe and thereby forced himself into practical adoption as a continuing liability, and that he was a person of evil habits who was accustomed to do all sorts of robbery and pilfering. One of his most disgusting traits was to rob solitary sheep camps. The enormity of this procedure can only be realized by a consideration of the circumstances.

A sheep herder with his dogs starts out in the grazing season with a band of from 500 to 2,500 sheep in charge. They need the closest herding and continual attention. Not only do they have a habit of scattering and straying, but unless closely watched by herder and dogs, become easy prey to coyotes and occasionally to mountain lions and bears. The herder is responsible for his charges from the time he starts the grazing in the morning until his sheep are duly bedded down for the night, and must take his fitful sleep with his yapping dogs at hand. Under no conditions can he leave them. It is a twenty-five hour day with poor company and small pay. His provender is brought him at intervals of perhaps a week by a camp tender who makes the rounds of a number of sheep camps. In the event of his camp being robbed during his unavoidable absence while out herding, he is left with full responsibility and no means of sustenance, except what mutton he can procure from his charges — no coffee, tobacco, or beans; just mutton and misery. A man mean enough to rob a sheep camp does not deserve well of his fellow men.

Doolittle explained that the gentleman in question had been thoroughly identified by measurement of his tracks, and added that he doubted whether he would ever again reach his Mad River home, as there were a number of sheep men on his trail.

While the others were out fishing, I sat in camp, and true to form the "bad man from Mad River" appeared, bringing with him two or three friendly dogs to make up with those we had in camp, so as to prevent outcry.

His ruse was successful, and he proceeded to walk around and size things up. Meantime I was lying in the tent with my rifle at hand. He looked in, passed the time of day, and seeing that we were on guard, went his way without further conversation.

I am pleased to relate that Doolittle's predictions came true, and that he was subsequently found in the trail in an



extremely dead condition, to the gratification of Indians and sheep herders alike. Considering his case, I remarked to Doolittle that I should think someone would pot him from the brush, and Doolittle appreciatively responded, "And it's a good country to do it in, now ain't it?"

A year after our adventure, a letter came from Doolittle to my Chicago office, in which he stated that in one of fifty fat bucks that he had killed and dried that fall, he had happened on a madstone which he wished to sell and believed to be worth several hundred dollars. A madstone is a porous mineral lump, probably of lime, which is occasionally found in a deer's stomach. Throughout the whole history of the frontier, there runs the faith in its extraordinary virtues. It was believed that by applying it to the bite of a rabid animal or a rattlesnake it would absorb the poison and ward off all the evil effects. It is one of those general beliefs that is hard to combat in the face of the tremendous volume of testimony. Neighbors would send miles for the local madstone, which, it was averred, would cling to a wound until it had absorbed the poison and then drop off and after due rest be good for another application. I can testify as to the existence of the stone, having seen one taken from a deer's stomach, but never saw one tried.

Doolittle related that his troubles were not over, and that after having been tied up and left to die in the brush, he had managed to bite loose, and said that if he could only make a stake from his madstone he would leave the country. I never succeeded in finding a market, and the sweep of the years has lost him, though I have often made inquiry.

The storekeeper in a small town took some time off to spin us yarns of the country. He told of the Indians and their peculiarities. There was one in particular who was always desperately thirsty and who found considerable difficulty in finding means of assuagement. He and another Indian had met in combat, and the second Indian was possessed of an old-fashioned forty-four calibre Winchester and some badly

re-loaded shells. As the storekeeper explained: "He shot Yellow Jacket fair in the middle of the brisket. If the ammunition had been good for anything, it would have finished him, but as it was, the bullet just stuck. He came running in to me and opened up his shirt and showed me where he had been hit, and said he wanted a drink. I told him what he wanted was to have the bullet picked out. I pried at it with my old jack-knife but it didn't come, so I then got a fellow with a pair of sheep shears and together we fixed him. He never made a face or gave a grunt, but after we were through, he still said he needed a drink, and I gave him one."

Our guide, Bogue Bowman, narrated from time to time, incidents of more or less interest connected with his trade of "bar and varmint" hunter. It seems that on one occasion he took out a tenderfoot who offered him twenty-five dollars for the opportunity of killing one of our harmless California brown bear. After the manner of tenderfeet, he had a desire to perform the deed in person, deeming it a matter of great prowess, and a subject for fearsome bedtime stories.

Bogue related how they set off on horseback with the "dawgs" and soon jumped a big bear. The bear, as by usual schedule, proceeded to climb and roll down off the long mountain-side with the dogs in pursuit. The country was too rough to follow on horseback, so Bogue dismounted and continued the pursuit on foot. Meantime the tenderfoot was unable to keep up and when the bear was finally treed, Bogue stood underneath and shouted for him to come along. As Bogue told it — "That bar got tired of settin' in that pine and down he clumb backwards. Of course I could a shot him, but I wanted the twenty-five and so I took my rifle and jabbed him in the stern and told him to climb back, and told him just what I thought of a mean ornery bar that would rob a poor 'chimeser' (a habitant of the Chimisal brush) of twenty-five dollars. The bar clumb back so I built a fire under the tree, and after a while my tenderfoot followed up and I got the twenty-five."



For real sportsmanship this is equalled by a practice I have heard of in the Adirondacks where the guide seizes a swimming deer by the tail so that the deer hunter may shoot it in the head without danger that the defunct animal should sink.

In the hot month of August it was a bad rattlesnake country. When hunting deer, we used frequently to hear the warning note in the wild oats and poison oak clumps. It was here that I had a curious experience.

Ordinarily a rattlesnake is averse to striking and merely requests the privilege of getting out of the way. But one morning at about daylight, after a hot night in the lower foothills, I was sitting with a companion on an oat-covered ridge overlooking an expanse of country which we were searching with our glasses. There was no brush or cover within twenty-five yards. Suddenly there dawned on my consciousness the well-known buzz of a rattlesnake.

I immediately jumped up as did my friend. A big rattler was coming directly towards us. It seemed such an unlikely procedure that I wanted to try him out and so stepped away to see whether he would follow. The buzz of his rattles showed that he was intending to strike, and his following me showed that I was the thing he was after. I got a stick and put him out, and, when returned to camp, related the experience. I found that the guide had the day before killed the snake's mate, and here was a case of taking up a vendetta, after the manner of the cobra. I afterward found one Indian who had known a similar occurrence.

Years ago in "The Saturday Evening Post" there was a story attributed to me, the source of which I have never been able to discover. It may not have been infallibly veracious, but it was illustrative and might have been true. As it was blamed on me in the first place, I am going to re-tell it regardless of copyright.

The tale ran that once when back in this country, a man told me of an Indian and a dog that were peculiarly available

in deer hunting. The Indian trained the dog with great care, and the dog himself exhibited superior intelligence. When the Indian took down his shotgun, the dog immediately went in pursuit of quail and grouse. If the rifle were the weapon chosen, the dog would look at nothing except a buck. One day the Indian took down his fishing rod, and the dog rushed down to the moist ground near the spring and started digging angleworms. The Indian used to take the dog out to run bucks out of the brush for tenderfeet and was acquiring a comfortable revenue therefrom. He used to run along beside the dog and help him in his work, until by trained scent and eyesight he got to be as adept as the dog himself. Finally, the dog got himself caught in a bear trap and was thereafter no good, but the Indian kept on taking out tenderfeet and running deer to them. I am alleged to have said, "I should like to see and employ that talented Indian." Whereupon the *raconteur* stated that it was with grief that he had to relate that the Indian was dead. "The durn fool got in the habit of chasing jack rabbits and so we had to shoot him."

This great and beautiful wilderness was a favorite haunt of the California grizzly, the finest of our American game animals. At the top of his shoulders he wore the hump and the long hair — the mark of his family, that showed his kinship with the silvertip of the Rocky Mountains, and the great Kadiak bear of Alaska. Standing on all fours nearly as high as a horse and much heavier, and stretching up to nine feet in height when upright, he was an object of interest and surprise to both redmen and white. He was too big and impervious for the run of the arrow-armed Indians, but a few legendary heroes of the Hoopa tribe had mastered him.

The grizzlies had vanished from this country before my day, and the last two remnants of the species that were heard of were in the Sespe valley back of Ventura and in the south central Oregon country where, outlawed and lonesome, they disappeared.



The last appearance of the southern bear occurred in a raid which he made from the back country over the great Sespe ridge and down into the Ojai valley where an unsuspecting tenderfoot had established what he called a "bee apiary." In the calm of the evening, twenty hives full of hardworking and faithful insects clustered about the house. In the morning, there was a smear of combs and honey interspersed with kindling wood, and enormous tracks twelve inches across leading back to the wilderness, from which he never emerged. This was the last typical adventure of the last grizzly.

Bret Harte's pungent couplets come back to us over the years with their sharp word-sparing outline —

Coward — of heroic size,  
In whose lazy muscle lies  
Strength we fear and yet despise;  
Savage — whose relentless tusks  
Are content with acorn husks;  
Robber — whose exploits ne'er soared  
O'er the bee's or squirrel's hoard;  
Whiskered chin and feeble nose,  
Claws of steel on baby toes —

But Bret Harte did not do the great grizzly justice. He was not a coward but a sensible sort of outdoor person who went his way and took his chances looking for food with primitive man whom he generally ignored. If an Indian were foolish enough to cache his acorns within the bear's reach, he was a good neighbor. The bear saw no particular reason for paying any attention to him, or getting out of his way, unless by some act of aggression the Indian promoted trouble. When the white men came with their small-bore Kentucky rifles and disputed his dominance, he proved himself a formidable fighter on many a stricken field; but, being intelligent and capable of transmitting traditions, he learned and taught his family that the contest was unfair and unequal, and usually took to flight.

Back still further, I have heard how the Spanish vacqueros bothered the grizzly in their perennial desire to hang a *reata* on any animate object that they might encounter, and how the disgusted and irritated bear sat back and pulled in the rope, which the vacquero and his horse unanimously voted should be given up.

The grizzly was omnivorous. He loved the spent salmon that had come up the streams to spawn. In the acorn season he was happy and well fed. He pastured on the patches of rank yellow clover that grew in the little damp meadows of the mountains. Much of the time when his compatriots in the snow country were taking their winter nap, the California grizzly living below the snow line was out making a desperate fight for a livelihood, tearing rotten logs to pieces for grubs and ants, digging out yellowjacket nests for their larvae, but always and ever hoping that providence would turn up dead animals for his consumption.

He was a tremendous traveller, with surprising speed in his clumsy shuffling pace. A great bear hunter went thirty miles from home to hunt one of the last of the race, and on his bootless return found that old Ephraim had taken advantage of his absence to kill and eat the family cow.

Dignified and self-respecting, this splendid animal is but a memory. But the worst of all insults is graven on his monument.

Some day when you particularly hate mankind and its works, and desire to fill yourself with evil thoughts of human taste, just study the great seal of the great State of California. You will note the presence of a vast, helmeted, warlike female, who is most decently robed. You will note a huge harpoon in her hand and a disk meant either for a pie or a shield. You will note in the distance men digging nuggets as large as potatoes. You will note a scene of hills and water and ships. It is a complex situation with deep but unexplained allegorical meaning. The lady shrieks "Eureka" as though she were announcing the terminal station of the North-



western Pacific railroad, while tamely and submissively there snoops at her side a disgraced and apologetic miniature of the former boss of California.

On one of our expeditions into the country the crowd was joined by a little old man of German descent, a respected citizen who had retired from active life. He accompanied the party without evident desire to participate in the more strenuous exertions of hunting or fishing. He cultivated the campfire and the table, and especially took pleasure in drinking toasts most formally to those who happened to be observant at the time. I put him down as a person of no wilderness experience, which shows how mistaken one may be in one's estimate.

The first deer we obtained was a tough and poor specimen, but meat we must have and so I proceeded to the manufacture of hamburger steak. I was laboriously carving my way with a hunting knife when our friend joined me and asked if he could be of assistance. I told him he could and he procured a board and two chopping knives from the kitchen outfit. A sausage machine could not have been as efficient as his flying hands. After this exhibition of skill, I learned that he had operated a butcher shop for many years, but went no further in my investigation.

The hunters went out for an over-night camp, leaving him behind. When we returned, we found the biggest buck of the season hanging up in our camp tree. I made inquiry as to how this happened, and our little old gentleman remarked that he was walking around the camp and saw the big tracks and thought that the buck should be harvested. Therefore he had looked around for a rifle but finally found nothing but a double-barrelled gun and for it one lonesome buckshot cartridge.

Then he told how he went out and followed the track which led to a shaded knoll overlooking the country, and he said to himself, "Ah, now he is going where he can look out. I must be very careful." So he crawled along on the track till he

found where it doubled back with uncertain course. "Ah," he said, "you will now lie down." Then he looked about and said to himself, "There is a log. You will go and lie behind that log and look out the other way." "So," he went on, "I just sneaked up and looked over the log and there he was. Bang!"

I afterward inquired of those who knew his record and found that in his younger days he had been one of the most renowned of the successful hunters of the region, but all this he had modestly secreted from our knowledge.

In my many camping trips my sleep has been broken by many disturbances, but never but once was there real danger and never but once did I feel the reaction of fear.

At the end of a hard day's travel I bedded down in the middle of a trail with steep bank on one side and big rock on the other. It was the only level place I could find. In the night I suddenly rose up out of deep sleep and yelled aloud. A band of range horses trotting down the trail had come within twenty feet of me. They might not have stepped on me but my watchful subconscious mind took no chances.

In this great and hospitable mountain country, the Indians are almost gone. The great California grizzly is exterminated, but with any ordinary care, the fishing will last forever and the prolific Columbia black-tailed deer will be found in abundance. I feel sure that with the heed now being paid to outdoor recreation, these hospitable coast range mountains, with their superlative climate and beautiful water, will for many generations be the ideal camp ground of people who love the outdoors and who in the long dry summer can realize the rapture of lying in their blankets with the star-punctured canopy overhead. A tent spoils it all.



## THE PEACOCK

By W. M. LETTS

**A**CROSS the terraces of grass  
The peacock screams "Alas! Alas!"  
With head raised towards the Eastern sky  
He tears the silence with his cry.

For he has known an older day  
When Solomon in fine array  
Has scattered grain and laughed to see  
His strutting courtier's dignity.  
For Solomon and all his queens  
The peacock trailed his blues and greens,  
For Solomon so great and wise  
He flashed those lustrous, plumèd eyes.  
And now he mourns when he recalls  
The golden throne, the cedared walls,  
The Nubian slaves in silk attire  
Who brought him food at his desire;  
The little apes who tried in vain  
To snatch a feather from his train,  
The burning Eastern day, the shade  
By wide-flung cedar branches made.  
And once — how long ago it seems  
That golden day of peacock dreams! —  
The Queen of Sheba stood to gaze  
Upon his beauty and to praise  
The splendor of his outspread fan  
While he performed his slow pavane.  
And with her jewelled hands caressed  
The finer jewel of his breast.



# BAR ODIOUS OF 'DIGGER INDIAN' RED MEN PLEAD

The entire Indian delegation from California, now in Washington seeking justice for their tribes, have joined in a petition to Congress to remove from them the odious name of "Digger Indian."

News from Washington, comes to the effect that there are not and never have been any Indians designated as "Diggers" by the Indians themselves.

That name was fastened on them by the Americans, chiefly the early gold diggers, and was made to apply practically to every tribe in the state.

## QUOTE AUTHORITY

The Indians are quoting not only their own historians, but Dr. C. Hart Merriam, president of the United States Biological Institute, in support of this contention. He is an authority on the California Indians and says:

"During the last seventyfive years the term "Digger" has been applied loosely or specifically to the Shoshone, Piute, Gosiute, Bannok and Washoo tribes of Indians inhabiting various parts of the Western United States, particularly in the states of Idaho, Oregon, Utah and Nevada.

## MANY TRIBES

"In California it has been applied officially by the government through the reports of the Indian office to such widely separated and wholly unrelated tribes as the Wintoon of the McCloud River, the Pomo of the Russian River, the Midoo of the Northern Sierra, the Southern Newuk of the Yosemite region and the Yokut of the Tulare country."

Dr. Merriam holds the name is meaningless and

Dogs

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C. Hart Merriam  
Papers  
BANC MSS  
80/18 c





Vulpes velox

Caught in weak steel trap with  
wadded jaws and a bell on  
wire attached to trap so it  
was taken out immediately  
when the bell rang.

Was never cross or afraid.  
and slept in a box in my  
room the first night.  
Was like an intelligent little  
dog.

Vernon Bailey

Vulpes velox Sweet Fox

at Busbaves ranch near  
Daguerre, Calif. Nov. 1924

Caught in no. 0, steel trap  
and taken out before it was hurt.  
Kept for two days and then  
escaped. Was not afraid  
of me and never offered to bite  
or struggled to escape.

Came back for several nights  
and made tracks around  
doorsteps.

Vernon Bailey



Vernon Bailey in an article on  
'Maximilian's Travels in the Interior of  
North America, 1832 to 1834,' said:

"The little kit fox, or swift, an  
animal then common but now almost unknown  
in the region that Maximilian visited,  
was easily domesticated. The kit fox  
that the prince kept all winter as a  
pet was gentle, affectionate, and full of  
quaint interesting little ways and dog-  
like tricks. It also proved useful as  
well as interesting, for the common  
house rats had found their way up the  
river on the steamers and become a great  
pest among the food stores of the Indians.  
At night the little fox was placed in rooms  
where the Indian corn was stored and where  
he took great delight in killing the rats."

--'Natural History, Vol. XXIII, No. 4,'  
pp. 337-343, 1923.

Anne Axel and Earl H. Morris  
Digging in the Southwest

Address Boulder, Colorado,  
P.O. Box 500.

Will be there till May. 1935.

Vulpes macrotis

Desert Fox

Common on the Mohave Desert and  
some of the interior valleys.

Burrows in valleys and on sandy ridges  
usually have 3 to 6 burrows as a breeding  
den and with the male and female and half a  
dozen young they make quite a colony.

Are very gentle animals and easily tamed,  
as are the kit foxes and others of the group.  
At Brisbane's ranch near Daguerre, Calif.  
one was caught and taken out of trap



before it was hurt and kept a couple of  
days and handled freely without being  
scared or offering to bite or struggle  
to get away. It escaped the second  
night but came back to the house for  
several nights and made tracks all  
around the doorstep.

Maximilian had a tame rhesus at Mandan  
North Dakota - See Fauna 49+53.

Veron Bailey

Vulpes macrotis, California

Kept as "Dogs" by Tubotelobela & other tribes - O.H.M.

C. Hart Merriam  
1919, 16<sup>th</sup> St.  
Washington, D.C.

Inkian Dogs





SHE KNEW OF THE DOGS THAT GAVE FLEECE  
*Jumbo, asleep beside her, is like them, but is, she said, a white man's dog*

# FLEECE-BEARING DOGS

They Have Passed But Traces of Them Remain

by Douglas Leechman

IT WAS on the Port Madison reservation, just a few miles from Seattle, that I first came across an Indian who could tell me something about the fleece-bearing dogs. She was an old woman; originally, I believe, of the Duwamish. Just a few minutes before, she had returned from the beach with a basketful of clams which were dug within less than a hundred feet of the house and she was now resting in the shade close by an unfinished dug-out canoe that her husband was working on. Old and feeble and surly she appeared.

Nearby slept her dog, who went by the very un-Indian name of Jumbo.

"Do you remember," I asked her, "the dogs whose wool the Indians here used for making blankets?"

"Yes, I remember hearing about them, though I never saw them. My mother knew them, and her mother, and they both made such blankets long ago."

"Were they dogs like Jumbo?" I asked curiously. "Yes, like Jumbo," she replied, "they were white dogs, with long hair, but Jumbo is not one of them. He is a white man's dog, not an Indian dog."

Still, to be on the safe side, I decided to take Jumbo's picture as well as that of his mistress.

Most of the early explorers of the North Pacific Coast noticed the fine white woolen blankets that the Indians wore. The first true identification of the animal supplying the wool seems to have been made by Ledyard

who, in the Journal of Captain Cook's Voyage, speaks of the garments as being "principally made with the hair of their dogs, which are almost white and of the domestic kind."

It was in May, 1792 that Captain Vancouver came across these dogs. While at Port Orchard, on Puget Sound, he wrote: "The dogs belonging



WEAVING THE YARN MADE FROM THE FLEECE  
*Photograph of a painting by Paul Kane of this phase of Indian life*



to this tribe of Indians (at Port Orchard) were numerous, and much resembled those of Pomerania, though in general somewhat larger. They were all shorn as close to the skin as sheep are in England; and so compact were their fleeces, that large portions could be lifted up by a corner without causing any separation. They were composed of a mixture of a coarse kind of wool, with very fine long hair, capable of being spun into yarn. This gave me reason to believe that their woolen clothing might in part be composed of this material mixed with a finer kind of wool from some other animal, as their garments were all too fine to be manufactured from the coarse coating of the dog alone. The abundance of these blankets among the few people we met with, indicates the animal from whence the raw material is procured, to be very common in this neighborhood; but as they have no one domesticated except the dog, their supply of wool for their clothing can only be obtained by hunting the wild creature that produces it; of which we could not obtain the least information."

During the next month while farther north along the coast of an island, Whidby reported that he and his group saw "upwards of two hundred (people) some in their canoes with their families, and others walking along the shore, attended by about forty dogs in a drove, shorn close to the skin like sheep."

Hamilton Smith states that not all of these dogs were pure white. He depicts each as "with pointed, upright ears, docile, but chiefly valuable on account of the immense load of fur which it bears on its back, of white, and brown, and black colours, but having the woolly proportion so great and fine, that it may well be called a fleece."

Every other account seems to agree that the dogs were all white, and it is possible that those described by Hamilton Smith had been accidentally crossed with other dogs. In fact, it was the custom of these Indians to keep their flocks of dogs on small islands to prevent the breed from becoming mixed, a custom which implies that the dogs did not take to the water very readily. This trait is also said to be observable in the Eskimo husky, and lends some shadow of support to the theory that the two breeds are related. It is further recorded that these white, long-haired dogs never barked.

It appears that the wool from the dogs was nearly always mixed with other materials before use. Sometimes it was the wool of the mountain goat, also often used alone, sometimes duck's down, sometimes milk-weed fibre, and sometimes "wild hemp", *Apocynum cannabinum*. When down was used, each minute

feather had to be handled separately, the quill extracted and the remaining down rubbed into the dogs' wool.

Before using the wool from the dogs, it had to be cleaned. This was done with diatomaceous earth. A ball of this material, about the size of a man's fist, was heated in a fire of willow-wood. This reduced it to a powder, which was mixed with the wool. The wool was then spread out on a mat, moistened and beaten for a long time with a sword-shaped stick, which had the effect of removing all the natural grease from the hair.

The actual spinning of the yarn could then be undertaken. A bundle of the wool being held in the left hand, it was fed slowly to the right hand and rolled into a yarn on the bare right thigh. The woman making the yarn was careful to keep it of the same thickness throughout, and allowed it to fall into a basket placed ready to catch it as it was twisted. Two separate basketsful were made in this manner. Then, taking the two threads at once, one from each basket, she rolled them about a stick in such a way as to form a large hollow ball, which could be undone from the middle.

The inner end of the ball was fastened to a spindle, which was about three feet long and provided with a heavy disc of wood or bone about a foot across. When the spindle was in use, one end rested on the ground and

the other was held by the left hand. The lower surface of the disc was struck with the right hand, causing the spindle to revolve, and the two threads were thus twisted into one, the resulting single thread being wound up on the shaft of the spindle as fast as it was made.

About 1866, J. K. Lord collected a number of blankets woven from this dogs' hair thread and sent them to the British Museum, and these are now among the very few specimens known. Most of them are white and have a loose fringe formed of loops of the weft threads. Sometimes they are ornamented with black zig-zag markings, but this does not imply the use of a black wool as black dyes were available.

It is quite possible that examples of these dog-hair blankets are still awaiting the ardent collector, for many of the Indians still have such remnants of their former glories hoarded up and after they have assured you several times that they have nothing left, will produce some totally unexpected treasure.

Strange things are done by the primitive tribes whose histories are hidden in the tangled jungles of the past. But as strange as any was the custom of shearing these Indian dogs, and the silent way in which it passed.



AN INDIAN BELLE  
Chau-u-wit, a Clallum chief's daughter, wearing dog-hair blanket



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By DOUGLAS LEECHMAN

(Illustrations by courtesy of Nature Magazine)

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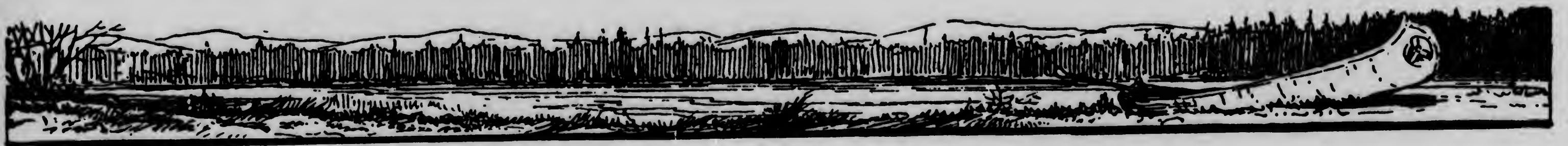
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Strange things were done by the primitive tribes whose histories are hidden in the tangled jungles of the past. The student is often confronted by a tradition that leads to some astounding belief or custom. As strange as any of these was the custom of shearing these Indian dogs, and the silent way in which it passed is stranger still. Only in the memory of some silent old Indian the days of the past are retained, and when on the rare moment when such a one speaks, the curtain is lifted, and a new world revealed to the imagination.



AN INDIAN BELLE

Chau-u-wit, a Clallum chief's daughter, wearing dog-hair blanket.





D O G

INDIANS OF TEXAS PLAINS, 1541:

G.P.Winship. Coronado's Expd., 1540-1542; with translations of writings by ~~contemporary~~ members of the expedition.-- 14th Ann.Rept.Bur.Eth.for 1892-93:  
Part 1: pp.504, 507, 527, 570<sup>1</sup>, 578, 1896.

DOGS

SIQUAN INDIANS:

W J McGee: 15th Ann.Rept.Bur.Eth.for 1893-94:

pp.170-171, 174, 1897.



D O G

SIOUAN ((Dog-Clan names)---

J.O.Dorsey: 15th Ann.Rept.Bur.Eth.for 1893-94:

~~px222xx~~ 1897.

Yanktonai.....p.218

Quapaw.....p.229

D O G

SERIAN, PIMAN & YUMAN Names for Dog.---

J.N.B.Hewitt: 17th Ann.Rept.Bur.Eth.for 1895-96:

pp.342<sup>\*</sup>-3<sup>\*</sup>, 1898.



D O G

MENOMINI INDIANS: (Clan name for Dog = Änäm; another name is "Hana" (änäm) ).---

W.J.Hoffman: 14th Ann.Rept.Bur.Eth.for 1892-93:

pp.41-42, 1896.

D O G

CHEROKEE MYTHS:

J. Mooney: 19th Ann. Rept. Bur. Eth. for 1897-98:

pp. (see Index), 1900 [publ. 1903].



D O G S

ESKIMO of POINT BARROW, ALASKA (Sledges, dogs and harness)

John Murdoch: 9th Ann.Rept.Bur.Eth. for 1887-88:

353--360, illus. 1892.

Native carving of dog's head, ivory, Fig.417,  
p.407.

" " " " " , bone ladle,  
Fig.46...p.105.

D O G S

DAKOTAS:

G.Mallery: 10th Ann.Rept.Bur.Eth.for 1888-89:  
p.292, 1893.

From Battiste Good's Winter Count of the Dakotas,  
1141--1210, translation of Pl.xxii A: "Among  
a herd of buffalo...were some horses. The people [ ]  
all cried out, 'there are big dogs with them,' having  
never seen horses before, hence the name for horse,  
sunka (dog) tanka (big), or sunka (dog) wakan (won-  
derful or mysterious)."



D O G S

ESKIMO of POINT BARROW, ALASKA (Uses of dogs for purposes other than sledging).

John Murdoch: 9th Ann.Rept.Bur.Eth.for 1887-88,1892.

Dog-skin Clothing .....p.110, 123,142

2nd Dept - Maximilian Trans  

---

(English Translation) 152, 1843

Also much of importance on  
other pages -



## Dogs of Cibola or Yuni Indians,

The Europeans who first landed in America found a breed of dogs in all parts of the country and the description agree accurately with that of the animal now found only among the Indians of the Western Plains.

In form and size they resemble the mastiff. Clavigero, states that the inhabitants of Cibola, (demonstrated by Mr. E. G. Squier, to be the same as Yuni,) kept up a large breed of them, which they used for carrying burdens - this of course before the introduction of horses, dogs were not used by the Aztec Nation.

Dr. E. Palmer - 1868 or 1869

## DOGS AMONG THE HOPI

Dr. J. Walter Fewkes, in an article on 'Property-right in Eagles among the Hopi', states: "The ancient Hopi had a domestic dog which was a pet rather than a beast of burden. The good qualities of this pet were recognized and recounted in their legends."

Am. Anthropologist, Vol. 2 (NS), No. 4,  
page 706, December 1900.



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-- 'Natural History, Vol. XXIII, No. 4,'  
pp. 337-343, 1923.

CALIFORNIA INDIAN NAMES FOR DOG  
-----

Roland Dixon and A. L. Kroeber state that the names for dog "in at least a dozen California stocks are so similar that there can be no question that they are only variant forms of one common word."

An appended foot-note reads as follows:

"Similar words for dog are: Yurok, tsic; Chimariko, sitcela; Wintun, tcutcu, sukut, suku; Yana, cuc, cucu; Maidu, sü, suku; Washo, suku (-gucu in composition); Moquelumnan, tcuku; Contanoan, wutcu, matcan; Salinan, otco; Chumash, hutcu (-go in composition); Yokuts, tcecec (pus in another dialect). Shoshonean saridi (Ute), and Nahuatl tcitci (chichi) may be the same word."

Am. Anthropologist, Vol. 5, p. 16, 1903.



Early Dogs of the Shasta Indians.

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The Shasta Indians of Shasta Valley and the neighboring Yreka Valley tell me that their ancestors always had dogs, that these dogs were small and had sharp ears, and that they were called Hah'p-soo. - *Chm*

## SOUTH AMERICAN DOGS

Humboldt, in the *Personal Narrative* of his travels in the Upper Orinoco region, writes:

"In the countries we had just passed through, between the Meta, the Arauca, and the Apure, there were found at the time of the first expeditions to the Orinoco, in 1535, those mute dogs, called by the natives maios, and auries. This fact is curious in many points of view. We cannot doubt that the dog, whatever Father Gili may assert, is indigenous in South America. The different Indian languages furnish words to designate this animal, which are scarcely derived from any European tongue. To this day the word auri, mentioned three hundred years ago by Alonzo de Herrera, is found in the Maypure. The dogs we saw at the Orinoco may perhaps have descended from those that the Spaniards carried to the coast of Caracas; but it is not less certain that there existed a race of dogs before the conquest, in Peru, in New Granada, and in Guiana, resembling our shepherds' dogs. The allco of the natives of Peru, and in general all the dogs that we found in the wildest countries of South America, bark frequently. The first historians, however, all speak of mute dogs. . . . The practice of eating the flesh of dogs is



now entirely unknown on the banks of the Orinoco;  
but as it is a Tartar custom, spread through all  
the eastern part of Asia, it appears to me highly  
interesting for the history of nations to have  
ascertained that it existed heretofore in the hot  
regions of Guiana and on the table-lands of Mexico."

--Humboldt's Personal Narrative, Vol.2, pp.509,  
510, 1885. See also "Views of Nature,"  
Bohn's edition, p.85.



## INDIAN DOGS

In his report of explorations along the Assiniboine and Saskatchewan Rivers in 1858, H. Y. Hind makes the following statements regarding the Indian dogs of this region.

"Next to the horse the dog is the Prairie Indian's most valuable friend. The dog is the great stand-by of the Squaws, who have to attend to all the duties of the camp. . . . . The dogs drag on poles the camp furniture, the provisions, the little children . . . . . It is a very amusing sight to witness several hundred dogs solemnly engaged in moving a large camp. They look wistfully at passers by, and take advantage of the least want of attention on the part of their mistresses to lie down, or snarl and snap at their companions in the work. They nevertheless obey the word of command with alacrity and willingness if not fatigued. . . . . When any great event takes place, a dog feast is proclaimed. . . . .

Although some of the Indian dogs we saw among the Crees of the Sandy Hills are large and ferocious looking animals, we never found them vicious or inclined to attack us; they were always deterred from approaching by the sight of a stick or a feint at picking up a stone.

Although I made many inquiries, the Indians could give no information respecting the occurrence of hydrophobia.



Indian Dogs 2

among their dogs, and the same observation, as far as I could discover, applies to the dogs so numerous at Red River, and at different Posts of the Hudson Bay Company. Large numbers of dogs are kept at the Company's Posts to haul sleds during winter; in summer time, they are fed on fish at fishing stations; in the prairie, they feed upon the offal of buffalo. Dogs will go for a week without food, and yet get into condition for travelling if well fed, in a fortnight or 18 days. At Manitoba House, I saw them devour large pike alive, which were thrown to them as they were taken from the nets. Indian dogs are terrible thieves, especially those originating from a cross with a wolf. It was <sup>necessary</sup> to place out of reach or under cover every article bearing the least resemblance to leather when we were among the Crees. .... The wolves have this trick also when food is scarce, especially when the tether is allowed to trail loosely from the horses neck without being attached to a stake, thus leaving him at liberty to wander some distance from the camp, during the night.....

With Crees, Ojibways, Swampys, and Sioux, the dog is supposed to be the most acceptable sacrifice to offended deities; five dogs is the common number for the propitiatory offering."

—H. Y. Hind: Report on Assiniboine & Saskatchewan Exploring Expedition, 108, 1859.



Indian Dogs on Long Island, New York.

DOMESTICATION OF THE WOLF

Niles' National Register, July 13, 1839, publishes the following note:

"There is going the rounds an article from the learned Frederick Curvier to prove that Wolves may be domesticated--that their anatomy is the same as the dog's nearly, &c. Now one fact is better than all speculation. In the early history of this country, on Long island, for example, one of the greatest nuisance, the white settlers encountered on the eastern extremity, was the quantity of Wolves the Indians had trained up as Dogs. Any one familiar with our Indian tribes generally, particularly those of the Rocky Mountains, knows that the Indian dog, is virtually a lineal descendant of the Wolf. The same in Kamschatka, Asia, and this was one of the illustrations the lamented Dr. Mitchell was accustomed to give, in proof of the Asiatic origin of our aborigenes, to say nothing of the identity of some of the rude paintings on deer skins with Egyptian symbols."--Niles' National Register, Vol. 56, p. 320, July 13, 1839.



12

INDIAN DOG (CLATSOP)

Lewis & Clark Expedition

February 16, 1806. - Fort Clatsop, <sup>near Astoria, mouth of Columbia River,</sup> NW Oregon.

Lewis says: "The Indian dog is usually small or much more so than the common cur. they are party coloured; black white brown and brindle are the most usual colours. the head is long and nose pointed eyes small, ears erect and pointed like those of the wolf, hair short and smooth except on the tail where it is as long as that of the curdog and streight. the natives do not eat them nor appear to make any other use of them but in hunting the Elk as has been before observed."

Original Journals of Lewis & Clark, Thwaites Ed., IV. 78, 1905.



## INDIAN DOGS

Capt. Bonneville describes the Indian dogs his party met while traveling through the Black Hills in 1832. He says "they were about the size of a large pointer, with ears short and erect, and a long bushy tail --altogether, they bore a striking resemblance to a wolf."

Washington Irving. Adventures of Capt. Bonneville,  
52-3. 1852.



## INDIAN DOGS

In an article on the Michigamies, in ~~Schoolcraft V~~, is given a creation myth of "the Chippewa bands at Grand Traverse Bay, on the peninsula," of which the following is a part: "The master of life and the Good Spirit, saw that the Indian needed assistance in the chase, and the dog was given to him, that he might find game, and bark. The dog was not created here on earth, he was formed in heaven and sent down to aid the Indian in the chase; the master of life gave it power to scent, and spoke to him, saying, 'You will do all that lies in your power to assist and be faithful to the Indian, and he will in return take good care of you, and you will increase and multiply exceedingly, but the Indian will have power to kill you and offer you up as a sacrifice, not that I need a sacrifice, but it will be habitual for him to do so.'"

--Schoolcraft, Indian Tribes, V, 193, 1855.

In an article on the practice of sorcery ~~and~~ or medical magic, in same volume, it is said (apparently of the Sioux--<sup>439</sup> see p.435) that "The most valuable present which can be made to the medicine-man, of any kind of food, under any circumstances in which remedies are required, or revelations, or some secret, is a dog--any kind of a dog, fat or lean. This is the most agreeable offering to the spirits, the victim <sup>440</sup> they like best to eat. And as it is the Medais who eat for the spirits, it is with dogs that they must be treated, and it is with dogs that they make their most solemn feasts."--Ibid, 439-440.



## INDIAN DOGS

In the "Sketches of the ancient history of the Six Nations," by David Cusic, a Tuscarora, ~~in Schoolcraft V~~, is the following: "They have a certain time of worship; the false faces first commences the dances; they visit the houses to drive away sickness, &c. Each town or district are allowed to sacrifice a couple white dogs; the dogs are painted and ornamented with strings of wampum: they throw the dogs into the fire, and some tobacco, and addresses the Maker. They pretend to furnish him a coat of skin and a pipe full of tobacco; after which, have dances for several days."

--David Cusic, 1825, in Schoolcraft, Indian Tribes, V, 643, 1855.

On the next page Cusic says: "The Skunantoh or Deer was the most useful game of the Five Nations; the animal can run considerable distance in a day. The people have a small dog in aid to overtake, but very seldom stop when pursued by the dogs.

These creatures generally go in the river or lake; in this situation the dogs are compelled to leave the deer."

--Ibid 644.



## INDIAN DOGS

In his book entitled *The American Fur Trade of the Far West*, Hiram Martin Chittenden describes the Indian dog as follows:

"Scarcely less in importance to the Indian than the horse was the Dog, a long, slender, wolfish animal, whose general appearance clearly denoted its consanguinity with the cowardly denizens of the plains. The Indian dog was an inseparable feature of Indian life. They were present in large numbers in every village, and white visitors found them an intolerable nuisance. Before the advent of horses among the Indians, dogs were used as beasts of burden, and continued to be so used in later times in the winter season, when they were the only animal that could successfully stand the long sled journeys over the snow. The flesh of the dog was the greatest delicacy the Indian could offer his guest, and all narratives of Western adventure abound in references to this hospitality so repugnant to the white man, but which he perforce must accept in order to avoid giving offence to his host."

Hiram Martin Chittenden: *American Fur Trade of the Far West*, II, 833-834. 1902.



## I N D I A N D O G S

NEAR HEAD OF SOUTH FORK  
EEL RIVER, CALIFORNIA

Gibbs, in his journal Aug. 29, 1851, in Schoolcraft III, describes the location of camp by saying, "the creek on which we were, seemed to be one of the sources of a river said to enter the coast 30 or 40 miles below Cape Mendocino, and which among some of the sea charts is laid down as the R. des Marons," and says: "A few Indians came into this camp, part of a band belonging to the next valley. They had with them a dog, the first we have seen among them, and of a breed not mentioned in Youatt, being apparently a cross between a turnspit and a coyote. When it is added that he <sup>as great</sup> was an adept in thieving as his masters, all praise of his capacity is exhausted."

--Gibbs, in Schoolcraft, Indian Tribes, III, 118, 1853.



I N D I A N D O G S

KAROK INDIANS

Described at some length by Gibbs in Schoolcraft, Indian Tribes, III, 152-153, 1853.



--J.D. Berthwick, Three Years in California, 129-130, 1857.

"They are very fond of dogs, and have always at their heels <sup>(129)</sup> a number of the most wretchedly thin, mangy, starved-looking <sup>(130)</sup> curs, of a dirty brindled colour, something the shape of a greyhound, but only about half his size. A strong mutual attachment exists between the dogs and their masters; but the affection of the latter does not move them to bestow much food on their canine friends, who live in a state of chronic starvation; every bone seems ready to break through the confinement of the skin, and their whole life is merely a slow death from inanition. They have none of the life or spirit of other dogs, but crawl along as if every step was to be their last, with a look of most humble resignation, and so conscious of their degradation that they never presume to hold any communion with their civilized fellow-creatures. It is very likely that canine nature cannot stand such food as the Indians are content to live upon, and of which acorns and grasshoppers are the staple articles. There are plenty of small animals on which one would think that a dog could live very well, if he would only take the trouble to catch them; but it would seem that a dog, as long as he remains a companion of man, is an animal quite incapable of providing for himself."



WILD DOG

CHANNEL IDS.

In 1853 San Nicolas I. "was inhabited by foxes and by wild dogs, similar to those which Nidever [a hunter from Sta. Barbara] had seen among the Indians of the northern part of California."--Eisen, Acct. of Inds. of the Sta. Barb. Ids., 14, 1904.

Wild dogs said to have eaten an Indian babe. <sup>in 1836 Ibid</sup> --Ibid 15(see 13)

There were dogs in abundance.--Ibid 26.



While at Fort Union in June 1833, Maximilian speaks of a band of Indians arriving and 25 tents being set up. "Their dogs lay about the tents; they were large, quite like wolves, and of different colours, chiefly of the colour of the wild grey wolf, and some spotted black and white. Reduced to skeletons by want of food, they could not stretch out their sharp back-bone; but, for the most part, went crooked and contracted, looked about for old bones, and growled at each other, showing their white teeth. They were not so savage to strangers as the dogs of the Crows, at Fort Clarke, and if one of them seemed inclined to bite us, he was immediately very roughly kicked and beaten by the Indians."

- Maximilian: Travels in Interior of North America,  
203, 1843.



## INDIAN DOGS

S. DAKOTA

While at Fort Lookout on the Missouri just above the mouth of White River, May 1833, Maximilian states: "The dogs, whose flesh is eaten by the Sioux, are equally valuable to the Indians. In shape they differ very little from the wolf, and are equally large and strong. Some are of the real wolf colour; others black, white, or spotted with black and white, and differing only by the tail being rather more turned up. Their voice is not a proper barking, but a howl, like that of the wolf, and they partly descend from wolves, which approach the Indian huts, even in the daytime, and mix with the dogs."

—Maximilian: Travels in Interior of North America, 152, 1843.

While at Fort Clarke, in No. Dakota, Maximilian was struck with the number of wolf-like dogs of all colors, of which there seemed to be from 500 to 600 running about. He says: "They all fell upon the strangers, and it was not without difficulty that we kept them off by throwing stones, in which <sup>p. 173</sup> some old Indian women assisted us." —Ibid, 172-173.

[Fort Clarke is on the west bank of the Missouri between Heart and Knife Rivers.]



## INDIAN DOGS

In his report of explorations along the Assiniboine and Saskatchewan Rivers in 1858, H. Y. Hind makes the following statements regarding the Indian dogs of this region.

"Next to the horse the dog is the Prairie Indian's most valuable friend. The dog is the great stand-by of the Squaws, who have to attend to all the duties of the camp. . . . . The dogs drag on poles the camp furniture, the provisions, the little children . . . . . It is a very amusing sight to witness several hundred dogs solemnly engaged in moving a large camp. They look wistfully at passers by, and take advantage of the least want of attention on the part of their mistresses to lie down, or snarl and snap at their companions in the work. They nevertheless obey the word of command with alacrity and willingness if not fatigued. . . . . When any great event takes place, a dog feast is proclaimed. . . . .

Although some of the Indian dogs we saw among the Crees of the Sandy Hills are large and ferocious looking animals, we never found them vicious or inclined to attack us; they were always deterred from approaching by the sight of a stick or a feint at picking up a stone.

Although I made many inquiries, the Indians could give no information respecting the occurrence of hydrophobia



among their dogs, and the same observation, as far as I could discover, applies to the dogs so numerous at Red River, and at different Posts of the Hudson Bay Company. Large numbers of dogs are kept at the Company's Posts to haul sleds during winter; in summer time, they are fed on fish at fishing stations; in the prairie, they feed upon the offal of buffalo. Dogs will go for a week without food, and yet get into condition for travelling if well fed, in a fortnight or 18 days. At Manitoba House, I saw them devour large pike alive, which were thrown to them as they were taken from the nets. Indian dogs are terrible thieves, especially those originating from a cross with a wolf. It was <sup>necessary</sup> to place out of reach or under cover every article bearing the least resemblance to leather when we were among the Crees. . . . . The wolves have this trick also when food is scarce, especially when the tether is allowed to trail loosely from the horses neck without being attached to a stake, thus leaving him at liberty to wander some distance from the camp, during the night. . . . .

With Crees, Ojibways, Swampys, and Sioux, the dog is supposed to be the most acceptable sacrifice to offended deities; five dogs is the common number for the propitiatory offering."

--H. Y. Hind: Report on Assiniboine & Saskatchewan Exploring Expedition, 108, 1859.



D O G S

SERI INDIANS, Tiburon Island

"although the Seri have lived from time immemorial in that initial stage of cotoleration with the coyote in which the adult animals are permitted to scavenger the rancherias, they were without domestic dogs until these animals were introduced into northwestern Mexico by the Spaniards, when they apparently absorbed the animal and its name at once from their eastern neighbors of the Piman stock---presumably the Opata, or possibly the Papago, with both of whom the Seri converts and spies were in frequent contact during the Jesuits' régime at Opodepe, Populo, and Pitic."----- W J McGee: 17th Ann.Rept.Bur. Eth.for 1895-96: p.297,\* 1898.



In a general discussion of the region around Fort Simpson, B.C. John Dunn states that "the brown, black, and grey bear are numerous in these northern parts; as are wolves, which during the winter months, come near the fort, howling in hundreds, with their whelps, for hours. The Indian dogs resemble the wolf very much, having a sharp nose, and a long bushy tail; being a cross breed from the wolf they are famous [290] dogs for running deer down in the woods, and are often used by the Indians for that purpose - particularly in winter, when the snow is on the ground, driving the deer from the woods on to the beach, where the Indians lie in wait and shoot them." [291]

Dunn: History of Oregon Territory, 290-291, London, 1844.



# Dog Benefactor of Blind Indians, Keeps Hunger From Door

Many a dog has been a barrier between human life and death and has immortalized all his kind by unselfish devotion to his master.

But in all the literature of dog stories there is none that surpasses the account that James Davis, district attorney of Del Norte county, gives of a dog that is trying to make up to a poor, blind old Indian couple for all the inhumanity of the white man to the Indian.

Starvation would long since have wasted these two blind relics of the red men were it not for the venison that their dog brings them.

## DOG IS HUNTER

No modern huntsman ever brought down a deer with a rifle, nor Indian warrior with a bow and arrow, animated by as noble a purpose as that which has taught this dog to be the greatest deer killer in the north.

The poor, blind old Indian couple, by a cynical twist of nomenclature, have borrowed the name of "White" from the palefaces. A name not coined out of Indian legend is about all this country has ever given them.

For according to District Attorney James Davis, who has interested the Indian Defense League in their plight, they are the biggest Indian owners of timber land in that region. They have about 30,000,000 feet of timber on their claim, but they can't sell it because the government is holding it in trust on the ground that they are incompetent to handle their own affairs.

## RECOUNTS VISIT

In a letter written to Mrs. H. C. Roberts, 239 Mather street, Oakland, District Attorney Davis tells of his visit with this blind old Indian couple and the dog that guards them, forages deer for them and is their only link with life.

"I cannot write of them now without feeling my blood boil within me," writes Davis.

"They live about twenty-three

miles up from the source of the Klamath River.

"On the right bank of the river across from the mouth of Ah Pah Creek, at that time the summer home site of the late Charles Willis Ward, a wide span of river beach on gravel bar reaches from the summer confines of the river to the highest beach at the foot of the hill. The span of the gravel bar is probably 500 yards wide, marking the winter reach of flood water. On this highest bench, against the lap of the overhanging mountain, are three Indian homes. Here lived Charley Fry, my friend Henry McDonald and an old Indian couple named White.

## NEIGHBOR HELPED

"I learned from McDonald that the old couple were in hard circumstances, that they had nothing to eat, and that he had given everything he could possibly afford to help them out.

"I don't think the old folks have much today," he added. "Come down with me and we will see." He took the lead and I followed, and surely I did see the most pitiable sight I have ever experienced.

"The shack, probably 10x12 feet in dimensions, was made of split timber. There was no pretence of joining the boards, and one could have thrown a good sized stone through the cracks. Here and there an attempt had been made to 'chink' up the holes. There was no fireplace as we know it—no stove of any kind.

## BOARDS FORM BED

"At the right of the entrance a few boards salvaged from the river bank were placed on the bare ground. These boards were bare, save for a nest of old rags in one corner, which, Henry told me, was the bed used by the old lady. The bed resembled a rat's nest.

"Squatting on the edge of these boards was the old Indian lady. Be-

Continued on Next Page, Col. One

OAKLAND, CAL. TRIBUNE  
NOVEMBER 27, 1931

## Dog Preceded Man on Coast

BERKELEY, Nov. 27.—The dog takes precedence over both the white man and the Indian in ownership of California, if prior residence has any legal meaning.

Evidence that a primitive form of dog was living in the state some 10 million years ago, about the time that man's ancestors were learning to walk erect, was presented today at the University of California.

The report is based on the classification of a skull found at Crocker Springs, in western Kern county, earlier this year. This skull represented the earliest fossil of a dog found in California and is also a new species never before reported, V. L. Vanderhoof, paleontologist of the university, said.

Determination of the age of the stratum in which the fossil skull rested was made by W. F. Barbat and A. Rllen Weymouth, geologists on the basin of prehistoric sea shells found nearby. Weymouth found the skull and turned it over to the university.

fore her was a low burning fire. The room was filled with smoke. The old lady was roasting a piece of venison, the bone of a deer's front leg upon which clung a vestige of flesh. This she held in her left hand at the top, while the lower end rested on a flat rock.

"I saw her reaching constantly with her right hand, palm open, to test the heat of the fire. Now and then she turned this bone or fed the blaze with small chips of driftwood. As soon as the meat was partially cooked she passed the bone across to her mate, old man White, who reclined in another nest of old rags a few feet away. The old Indian would eat the cooked meat from the bone and, once into the raw meat, again would pass it back to his wife for further roasting.

## MONGREL CANINE

"Between old man White and the wall, and across the tiny flames of the fire, there lay a dog—just dog, an Indian dog, a mongrel. His head lay flat upon his extended forepaws. Now and then he would give a low growl. He never moved, but not once did that dog vary his steady gaze from me. He seemed ready to spring at any mismove on my part.

"That dog gets all the meat and keeps those old people alive. He and the old lady seem to understand one another. When the meat is about gone that dog goes back of the house there on the hill, cuts out a deer, like a good cattle dog cuts off cattle, gets the deer, started across the gravel bar toward the river, and say that dog can catch any deer that ever lived on that bar. He upends them like a wolf and seems to kill them in a few minutes. Then he trots back to the cabin, and pretty soon the old lady comes out with her cane and feels around, gets her knife, and the dog takes her to the kill.

"Other examples of a dog's devotion and intelligence parallel this along the same lines. The big shows can tag well bred canines with blue ribbons for their fine breeding and fine external points, but the factories of the world, in my mind, cannot produce enough blue ribbon to adequately adorn this 'just dog,' because his reward must be measured by his great heart and eternal faithfulness."



## ARCHAEOLOGY

## Dog Got Special Place in "Heaven" of Pharaoh

A DOG so highly honored by an Egyptian Pharaoh over 4,500 years ago that the king personally arranged for the dog's place in "heaven," has been discovered by American Egyptologists.

The new hero of dog history is revealed by the Harvard University-Boston Museum of Fine Arts expedition exploring a cemetery near the Pyramid of Cheops, at Giza.

In the cemetery the expedition found an inscription telling of the dog's burial, in its own tomb, with its own coffin given by the king, and all the trappings of a human being's fine funeral in the style of Egypt's sixth dynasty. The dog's name was Abuwtiyuw.

The dog's tomb and the mummy itself have not yet come to light, Prof. George A. Reisner, director of the expedition, reports.

No meat bones, such as dogs delight in, were mentioned in the king's orders for the burial. But the dog that had guarded a king was given fine linen in great quantity, and incense, and perfumed ointment.

By having the animal buried like a human being, Prof. Reisner explains, the Pharaoh made it possible, according to Egyptian belief, for the dog to enter the after-life as an honored spirit before the great god, Anubis, and to continue in attendance on his Majesty.

*Science News Letter, December 12, 1936*

JUNE 24, 1911.] F&S - 995.

## INDIANS AND INDIAN DOGS.

THE population of Horse Island, in Lake Manitoba, says a writer in the Evening Post, consisted of one white man and two white boys, a hundred or so Indians, and several hundred Indian dogs summering on the island and living on the offal of the fisheries after it had been carted to the interior and dumped in heaps. The dogs looked so like coyotes, or most of them did, that you would not have hesitated to shoot them if you met them masterless on the prairie. Here, however, being well fed, they were fat and friendly—too friendly, in fact, for if you spoke to one of them, he immediately adopted you as a companion and invited his friends to come along. As their diet was entirely the cast out material from the fisheries and most of them were covered with fleas, we soon ceased to make encouraging advances.

I spent my nights in a little shack adjoining the main store. We did not get back from the fishing trip until long after dark, and I was just going to turn in when my friend and host, the manager of the fishing company, asked me if I would like some supper. When one has been living in the open air for a time, he is generally ready to eat at odd hours. I accepted his invitation. He led me down to a long, barn-like building.

The scene inside was theatrical in its unreality. There were tables running the whole length of the building, and seated at them were all the male Indians on the island. They looked grotesque as they sat there, dressed as deep-sea fishermen, in high boots, rough guernseys, and oil-skins. Somehow one never dreams of an Indian as a sea fisherman. Fancy an Indian in a sou'wester!

The room was lit up by oil lamps, dim and rather smoky, placed at intervals along the tables. The waitresses were squaws, padding noiselessly up and down with moccasined feet. Between the lamps were old tomato and meat cans containing bunches of tiger lilies and other vivid prairie flowers.

It was midnight before I went to bed. There was a window, curtainless and blindless, close alongside me, through which the moonlight poured, making the room almost as bright as day. Just as I was settling down to sleep, one of the Indian dogs set up a long-drawn howl outside. The solo continued for half a minute, and then, as if their conductor had waved his baton, all the dogs on the island joined in a chorus. But just as suddenly as it had begun, the noise stopped. I looked out and saw every dog rise to his feet. For another three or four minutes they threaded in and out among one another, single file, in lines of anywhere from three to a dozen dogs or more. Afterward I learned they went through the same performance at intervals in that night, and later I read a description of the same habit among the dogs of the Yukon.

The cause of it bothers me. It must be an ancestral trait derived from the time the dogs hunted in packs. But why? Is it to warn off possible enemies?

From the island I went to the mouth of the Saskatchewan, to shoot the rapids in a canoe. On my return the steamboat stopped at Horse Island again. We left just about midnight, and again that weird dog chorus echoed through the night-air. A mile away you would have sworn that children were singing, so human was the sound. When the dogs had ceased their howling, two pealed out a long, shrieking laugh of derision from the little crescent-shaped harbor of the island behind us. They say the interior of the island used to be the dwelling place of Wendigoes, and banshees, and wizards; but even a Wendigo could not stand these noises.



Dyes

C. Hart Merriam  
Papers  
BANC MSS  
80/18 c



# Dyes:

See Saunders Useful Wild Plants of  
US & Canada (NY, 1920)

pp. 220-228-

# Dyes

Cryptantha intermedia (red)

Datisca glomerata (for lacupin  
quill)

Alder: alnus rubra (basket strands)  
(rich red)

Black mud (iron infiltrated) Tubes

Information scattered

through my journals -  
com



1878

DYES USED BY INDIANS OF SOUTHERN CALIFORNIA

Professor F. W. Putnam, in a footnote to an article by Paul Schumacher on the Method of Manufacturing Pottery and Baskets Among the Indians of Southern California, states:

[Edw ]  
"Dr. Palmer informs me that the Coahuila Indians of Southern California make a black dye by steeping in water plants of the Sueda diffusa. A yellowish-brown dye is derived in the same way from plants of the Dalea Emoryi and D. polyadenia. Both these dyes are, according to Dr. Palmer, used by the Indians at Agua Caliete for dyeing the meshes of which the baskets are made. See also Dr.

Palmer's note on plants used for dyeing, in Amer. Nat. for Oct., 1878, p. 653.--F.W.P.

Report Peabody Museum, Vol. 2, ~~1876-79~~

Footnote p. 524, 1878

Dup

[1878

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Report Peabody Museum, Vol. 2 (1876-79)  
Footnote p. 524 1878



Epidemics

C. Hart Merriam  
Papers  
BANC MSS  
80/18 c

SMALLPOX AMONG THE KIOWA INDIANS IN 1816

James Mooney, Calendar History of the  
Kiowa Indians, 17th Ann. Rept. Bureau  
Ethn. (for 1895-1896), p.168, "1898" 1901.



SMALLPOX AMONG THE INDIANS

CALIFORNIA

Juan Bautista Alvarado, in his manuscript, History of California, estimates that three-fifths of California's Indian population perished from smallpox in 1838, 1839, and 1840.

J. B. Alvarado.--MS History of Calif.,  
[MS not dated] Vol. IV, p. 166.



## SMALLPOX AMONG THE INDIANS, 1837

Enrique Cemeti gives the following note concerning the small-pox epidemic among the Indians in 1837, which he says he secured from a document in the possession of Gen. M. J. Vallejo.

"I must also record that the stay of the Russians was [7] the cause of the almost total destruction and annihilation of the Indian races of California. For in 1837 General Vallejo, through the order of Capt. Salvador Vallejo, sent to Fort Ross Ignacio Miramontes, commander of the cavalry stationed at Sonoma, for the purpose of bringing from Fort Ross cloth and tanned hides to cloth the troop under his command. This man returned to Sonoma infected with smallpox which spread there with such virulence as to almost exterminate the entire Indian population of the valleys of Sonoma, Petaluma, Santa Rosa, Russian River, Clear Lake, Suysun, the tularas, and extended as far as the slopes of Mount Chasta or Shasta. It also invaded the missions and made extensive inroads among the whites. It was calculated that 200 whites, 3000 halfbreeds and 100,000 pure Indians died from it. [8]

It has been asserted that this disease was prevalent before this time, in 1770 when the Catalan, Gaspar de Portola, was governor of California, but in the Bible of the Vallejo family I find a note stating that this is false, for the epidemic that raged then was malignant fever which caused the death of scarcely 3 or 4 thousand people, particularly in the counties of Monterey, Santa Barbara, and Los Angeles."

Enrique Cemeti, Establecimientos Rusos de California. Datos sacados de Documentos en poder de Gen. M. J. Vallejo [Russian Settlements in Calif. Data secured from Documents in possession of Gen. M. J. Vallejo], MS, Bancroft Library, pp. 7-8, 1875.



**SMALL-POX AMONG THE INDIANS, 1861,1862**

A clipping from the Monitor, Feb. 1862 says

"Small-pox among the Indians.-- This dreadful disease raged among the Indians of Los Angeles, San Diego, and San Bernardino counties in 1861 and 1862. In Los Angeles, San Gabriel, and San Juan Capistrano, as many as 1,000 are said to have died of this dreadful scourge, besides those of many other old rancherias in the above countries. It is also said to have committed great havoc among the Gila, Mojave and Colorado tribes. In Vancouver Island, B.C., and the American northern territories, it also effected great ravages among the aborigines. In 1861-2, as many as 250 deaths from the small-pox occurred at San Luis Obispo, of which over 100 were young children. The disease however in all these parts attacked mostly Indians and the poorer classes of Mexicans. . ."

This clipping from the Monitor, Feb. 1862 may be found in the Hayes Collection, vol. 38, p. 24, in the Bancroft Library



Harry L. Wells in a chapter entitled 'Great Fur Companies and Their Trapping Expeditions to California,' published in Gilbert, Wells and Chambers, History of Butte County, California (1882), describes the effect of an epidemic upon the Indians of the Great Valley of California in 1833 as noted by Ewing Young's trapping expedition. Young's party entered the Valley at Tejon Pass in the fall of 1832, trapped as far north as Capay Valley, where they camped for a while, and then went on to the Umpqua and Columbia rivers, returning to the Sacramento Valley in the winter of 1833-34 and finally leaving by Tejon Pass. Wells states that Col. J. J. Warner of Los Angeles went with Young's party, and it is probable that Wells obtained his account from Warner. Wells writes as follows:

"The condition of the Indians in the valley [99] as Young passed down this last time was truly pitiful. During the previous summer an epidemic scourge had visited them and swept away whole villages and tribes. Where before had been many happy bands of natives who gazed upon their white visitors with awe and astonishment, now was mourning and desolation, and



the few remaining natives that had survived the general reign of death fled from the approach of the whites, for to them did they ascribe the visit of the death angel. The chief of a small band of these survivors, still living in Capay valley, says that the first white men came there and camped for a few days and hunted, then passed over the mountains to the west. When they had gone the Indians took sick and died, his father, mother and friends, and they believed the white men had brought the 'great death.' Col. J. J. Warner, of Los Angeles, was with Ewing Young on this expedition." --Harry L. Wells in Gilbert, Wells & Chambers, History of Butte County, California, p. 99, 1882.



## EPIDEMICS

## SMALLPOX

## CALIFORNIA

Description of about 300 words of the smallpox N of San Francisco Bay and W of Sacramento R., 1838, in Memorial and Biog'l History of North'n Calif., Lewis Pub'g Co., 24-25, 1891.

It is thought by some that the dead found on Calaveras R. by Capt. Moraga, the place being named for the skulls, "were the remains of those taken by the fearful scourge of 1833."

--Ibid 120. [Look up date of discovery of river.]

The Napa, a numerous tribe in Napa region, <sup>were</sup> ~~was~~ nearly exterminated by smallpox in 1838.--

--Harry L. Wells, Hist. of Nevada Co., Calif., 27, 1880.



## EPIDEMIC

## SACRAMENTO AND SAN JOAQUIN VALLEYS, CALIF.

In the history of northern California Col. J. J. Warner, who was a member of the Ewing trapping expedition which passed north through the Calif. valleys in 1832 and back in 1833, is quoted as saying:

'In the fall of 1832, there were a number of Indian villages on Kings River, between its mouth and the mountains; also on the San Joaquin R. from the base of the mountains down to and some distance below the great slough. On the Merced R., from the mts. to its junction with the San Joaquin, there were no Indian villages; but from about this point on the San Joaquin, as well as on its principal tributaries, the Indian villages were numerous, many of them containing some 50 to 100 dwellings, built with poles and thatched with rushes. With some few exceptions, the Indians were peaceably disposed. On the Tuolumne, Stanislaus and Calaveras rivers there were no Indian villages above the mouths, as also at or near their junction with the San Joaquin. The most hostile were on the Calaveras River. The banks of the Sacramento R., in its whole course through the valley, was studded with Indian villages, the houses of which, in the spring, during the day-time, were red with the salmon the aborigines were curing.

At this time there were not, on the S. Joaquin or Sacramento river, or any of their tributaries, nor within the valleys of the two rivers, any inhabitants but Indians. On no part



of the continent over which I had then or have since traveled was so numerous an Indian population, subsisting on the natural products of the soil and waters, as in the valleys of the San Joaquin and Sacramento. There was no cultivation of the soil by them; game, fish, nuts of the forest and seeds of the field constituted their entire food. They were experts in catching fish in many ways, and in snaring game in divers modes.

On our return, late in the summer of 1833, we found the valleys depopulated. From the head of the Sacramento to the great bend and slough of the San Joaquin we did not see more than 6 or 8 live Indians, while large numbers of their bodies and skulls were to be seen under almost every shade-tree near water, where the uninhabited and deserted villages had been converted into grave-yards; and on the San Joaquin R., in the immediate neighborhood of the larger class of villages, which the preceding year were the abodes of large numbers of these Indians, we found not only many graves, but the vestiges of a funeral pyre. At the mouth of Kings R. we encountered the first and only village of the stricken race that we had seen after entering the great valley; this village contained a large number of Indians temporarily stopping at that place.

We were encamped near the village one night only, and during that time the death angel, passing over the camping-ground of the plague-stricken fugitives, waved his wand, summoning from a little remnant of a once numerous people a



score of victims to muster in the land of the Manitou; and the cries of the dying, mingling with the wails of the bereaved, made the night hideous in that veritable valley of death."

--Col. J. J. Warner, quoted in Memorial and Biographical History of Northern Calif., Lewis Pub'g Co., 47-48, 1891.



## E P I D E M I C S

connection with  
In the population table for the Mariposa County, Fresno,  
and Mercede Indians, of "S part of California," it is said:

"A very malignant and fatal epidemic has been prevalent ~~and~~  
among these tribes during the past summer; <sup>[probably 1852] 1752-1753</sup> nearly all the  
aged persons have fallen victims to it, as well as very many  
of the younger portion of the population. The Indians  
living on the Fresno have been afflicted more severely than  
the others, which is attributed to the fact that they had  
food in greater abundance, of a character to which they had  
been unaccustomed. Recently, however, the ravages of the  
disease seem to have been stayed; and the survivors have been  
observed, dispersed along the lower hills of the Sierra  
Nevada, gathering up and storing, for winter consumption,  
large quantities of acorns, which are their usual and favorite  
food."

--Schoolcraft, Indian Tribes, IV, 608, 1854.



Rev. Samuel Parker, while visiting at McKey's and Jarvis's settlements, some 50 miles up the Willamette from Columbia River (the settlements were 12 miles apart), in Nov. 1835, writes as follows:

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"At the time of my continuance in this place, a singular epidemic prevailed among the Indians, of which several persons died. The subjects of the complaint were attacked with a severe pain in the ear almost instantaneously, which soon spread through the whole head, with great heat in the part affected; at the same time the pulse became very feeble and not very frequent--soon the extremities became cold, and a general torpor spread through the whole system, except the head--soon they were senseless, and in a short period died. In some cases the attack was less severe, and the patient lingered, and after some days convalesced, or continued to sink until death closed his earthly existence. . . .

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We attended the funeral of an Indian boy, who belonged to the school, and who died last night with the epidemic. . . .

I was called to visit a Mr. Carthre, who was taken severely with the epidemic. I bled him, which gave him immediate relief, and applied a blister, and, as I afterward learned, he recovered."

--S. Parker, Jour. of an Expl. Tour, 176, 177, 1842, 3d ed.



Gibbs, in his Journal, 1851, says that around Clear Lake there is "evidence of a formerly much larger population." Continuing he says : "As regards this fact, there is but little doubt, nor of the principal cause of the diminution in the ravages of the small-pox, at no very remote period. Some old Indians, who carry with them the marks of the disease, state it positively; and it is reported, by native Californians, that over 100,000<sup>✓</sup> perished of this disease in the valleys drained by the Sacramento and the San Joaquin."  
--Gibbs, in Schoolcraft, Indian Tribes, III, 107, 1853.

<sup>✓</sup>"Doubtful.--H.R.S."



Dr. Hewit, an early historian, in writing of the Carolina tribes, says: "But famine and war, however destructive, were not the only causes of their rapid decay. The small-pox having broken out among them, proved exceedingly fatal, both on account of the contagious nature of the distemper, and their harsh and injudicious attempts to cure it, by plunging themselves into cold rivers during the most violent stages of the disorder. The pestilence broke out among some nations, particularly among the Pemblicos in North Carolina, and almost swept away the whole tribe."

--Dr. Hewit, 1776, quoted in Schoolcraft, Indian Tribes, VI, 181, 1857.



Ravages of the smallpox among the Indians of the Missouri Valley in 1837 described in Schoolcraft, Indian Tribes, I, 257-258, 1851, and Ibid VI, 486-487, 1857.

In referring to the Missouri River region it is said: "The small-pox, which was brought over from the northern Mexican provinces about the year 1786, almost depopulated the country. There are many old Indians now living who bear its marks, and retain a vivid recollection of its horrible ravages. Again, in 1838, the same disease swept off at least one half of the prairie tribes. Hence the scanty population, which seems almost lost in the vast expanse of prairie by which they are surrounded."

--Ibid VI, 556 (quoting Col. D. D. Mitchell); 1857.

"The Pawnees, since their great loss by cholera in 1828, number about 4500."

--J.E.Burrows, 1839, in Ibid VI, 693, 1857.

John Miller, 1848, speaks of the ravages of smallpox and cholera among the Omahas having reduced their numbers.

--Ibid VI, 706, 1857.

In 1837 the Saganaws "lost 354 persons by the small-pox. Their present [1838] population, by a census just completed, is 993."--Supt. of Ind. Affrs. for Michigan, quoted in Schoolcraft, Ind. Tribes, VI, 498, 1857.



In regard to the diseases of American Indians encountered in his voyage round the world [Monterey Bay the only place visited on present U.S. coast], the journal of La Perouse gives the following: "Epidemic diseases, such as the small-pox and measles, exist only occasionally in America; that is to say, when imported by European vessels; but the natives are very susceptible of the infection, and the ravages of the small-pox, in particular, prove to them far more fatal than those of any other disorder. Its symptoms and progress are the same as in Europe; and it assumes the characters of distinct and confluent, or malignant; but it is under the last form that it most commonly shows itself."

--Voyage de la Perouse autour du Monde, IV, 51, Paris

1797 (4). Translation is from "A voyage round the world," printed by A. Hamilton for G.G. and J. Robinson and others, London, II, 365, 1799, 4<sup>o</sup>, but compared and found to agree with original French.

Same material is on p.213 of Vol.III of octavo edition in 3 vols. printed in London in 1798 for J. Johnson. (8<sup>o</sup>)



Science - March 1, 1907, 355.

TUBERCULOSIS AMONG THE INDIANS OF ARIZONA  
AND NEW MEXICO

UNDER the above title Dr. I. W. Brewer, of Fort Huachuca, Ariz., has given the results of a study recently made by him, with the assistance of the medical officers at the Indian agencies and schools (*N. Y. Med. Journ.*, Nov. 17, 1906). The wide-spread prevalence of tuberculosis among these Indians emphasizes very forcibly the fact that the climate of Arizona and New Mexico, with all its sunshine and dryness, is not a specific. No climate is a specific. It is certainly of great benefit to those in the early stages of tuberculosis, but is of little value when a patient is improperly nourished and is surrounded by filth, or lives in poorly ventilated houses.

R. DEC. WARD

HARVARD UNIVERSITY



Wahne?

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E P I D E M I C S

S M A L L P O X

The terrible scourge of 1837 is described at length in <sup>introduction to</sup> ^  
Leonard's Narrative: Adventures of Zenas Leonard, Fur Trader  
and Trapper, 1831-1836, pp.38-48, 1904 (repr.from original of  
1839).



Duflot de Mofras, 1840-1842, writes as follows:

"In 1832, intermittent fevers carried off more than 10,000 persons among the Chinook or Flathead Indians who inhabit the lower waters of the Columbia River. In 1834 a malady resembling cholera caused the death of more than 12,000 individuals in the valley of the Tulares in Calif.; and finally, in 1836, the plain watered by the Sacramento R. lost by a fever almost 8000 inhabitants. The Spanish missions, where the Indians were gathered to the number of 30,000, notwithstanding their proximity to the places decimated, were alone spared, thanks to the care of the missionaries."

--Duflot de Mofras, *Exploration du Territoire de l'Oregon*, II, 334, 1844. (Free translation.)



"Common report states that between 1830 and 1840, the fatal scourge of small-pox decimated the ranks very much of all the tribes in the Sacramento and bay valleys; but it does not seem that the Indians of this section [Lake Co.] were affected by it."

--L.L.Palmer, in Hist. of Napa and Lake Counties, Calif., Slocum, Bowen & Co., p.23 (of Lake Co.), 1881.



"In the fall of 1833 the cholera broke out in California, and raged with terrible violence among the Indians. So great was the mortality that they were unable either to burn or bury the dead, and the air was filled with the stench of decomposing humanity. A traveler, who passed up the Sacramento Valley at this time, relates that on his way up he passed a place where there were about 300 Indians, with women and children, encamped; when he returned, after an absence of 3 or 4 days, the ground was literally strewed with dead bodies, all having died except one little Indian girl; she occupied the camp alone, while around her lay the festering bodies of her dead companions, and the air was rendered noxious by the disgusting stench arising from the dead bodies which, not alone in this camp, but everywhere throughout the valley, strewed the ground."

--L.L.Palmer, in Hist. of Napa and Lake Counties, Calif., Slocum, Bowen & Co., p.592 (of Napa Co.), 1881.



## SMALL-POX AMONG THE INDIANS, 1837.

The following note on small-pox among the California Indians is given in data about the Russian Settlements secured by Enrique Cemiti from various documents in possession of General M.J.Vallejo.

"I must also record that the presence of the Russians was the cause of the almost total destruction and annihilation of the Indian race in California, for <sup>in 1837</sup> General Vallejo at the request of Captain Salvador Vallejo sent to Fort Ross, Ignacio Miramontes, Captain of the cavalry stationed at Sonoma, in order to get from the Fort, cloth and tanned leather for clothing for the troops at his command. This individual returned to Sonoma infected with small-pox which spread with such virulence that it almost wholly exterminated all the Indians of the valleys of Sonoma, Petaluma, Santa Rosa, Russian River, Clear Lake, Suysun, the Tulares, and extended even to the edge of Mount Chasta or Shasta. It also invaded the Missions and made extensive inroads on the white people. It may be calculated that it killed 200 among the white people, 3000 half-breeds, and 100,000 Indians. I have heard it said that this sickness had occurred previously in the year 1770, when the Catalan, Gaspar de Portola (first Governor of California) was Governor of California, but in the family Bible Vallejo states that this assertion is altogether false, for the epidemic that reigned then was malignant fever which caused the death of 3000 or 4000 people especially in the counties of Monterey, Santa Barbara, and Los Angeles."

Establecimientos Rusos de California. Datos sacados por Enrique Cemiti de documento en poder del Gen. M. J. Vallejo. [Russian Settlements in California. Data secured by Enrique Cemiti from documents in possession of Gen M. J. Vallejo. pp. 7-8, MS, Bancroft Library, 1875.]



" Epidemics on Lower Klamath

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By Lucy Thompson To the  
Am. Indian, 68, 1916



# Epidemics

1833 - Smallpox - San Joaquin & Sonoma  
Valleys & Mission Indians

---

1843 Great mortality

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Taylor, Calif. Farmer, May 11, 1860.

Ferkin



Typhoid epidemic  
at Hoopa Valley, Calif.  
June 1910 -



"In the fall of 1833 the cholera or some other fearful  
~~epidemic~~ scourge broke out among them [the San Joaquin Valley  
Indians] & raged with such fearful fatality that they were  
unable either to bury or burn their dead, & the air was filled  
with the stench of their decaying bodies." - Hist. of Counties of Fresno,  
Tulare, & Kern, California. p 44 [no author or date].



Small Pox in Sonoma, Napa, & Solano Counties.

Thompson states that in 1837 a Mexican officer caught small pox at Ross and spread it among the Indians, of whom <sup>60,000</sup> are said to have perished from the scourge in the counties of Sonoma, Napa, & Solano. — Thompson, Hist. & Desc. Sketch of Sonoma County, Calif. p. 11, 1877.



Ed. L.

McLeod tells me of a terrible epidemic believed to have been cholera among the Indians of the San Joaquin valley in the thirties. He was told about it by Capt. Richard Hudnut of Balzersfield (brother of the biggest Hudnut of N.Y.). A man named Jones who traversed the valley that year said the dead bodies were scattered over the valley in such numbers that he was nearly out of sight of them -

Oct. 30, 1905. E. L.



Epidemic of 1833 among Calif. Indians.

Wells in his History of Butte Co. (p. 99, 1882)

tells of the pitiful condition of the Indians in  
Sacramento Valley <sup>(according to the trader James Young)</sup> where an epidemic had  
swept away whole villages and tribes!



Epidemic in 1827-1830

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An old Indian trader, Fedediah Knitter, stated to Capt. Cooper between 1827 and 1830 that a distemper called 'fever and ague' "must have exterminated 50,000 of the Sacramentos and San Joaquin Indians."  
- Taylor in Calif. Farmer, March 2, 1860.

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Prior to 1820 measles & smallpox committed great ravages at the missions; & in 1828-29 (Ibid).



Small Pox & 'Plague'

In 1845 small pox raged in the  
Joaquin valley - Hist. San Joaquin Co.  
27, 1890.

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At no time would it appear that the number of the births among the mission converts was equal to the deaths. According to Bandine, the governor states, in a report for 1800, that the number of deaths is almost double that of births; and again, in 1815, the president of the missions stated that there were three deaths to two births. It was only by perpetual drafts upon the surrounding tribes that the missions were sustained at all. The high death-rate and small birth-rate explain what has become of the California mission Indian. The former can not be attributed to ordinary diseases, even when is taken into account the despondency of the Indians when sick and the lack of proper medical treatment. The records show that epidemics of small-pox, measles, pulmonary diseases, and intermittent fever prevailed at several periods, and all observers testify to the early introduction of syphilis among the natives and to its severe ravages. With this knowledge, perhaps it is not necessary to inquire further. When are taken into consideration the unnatural herding together of large numbers of Indians under the most unsanitary conditions, practically without medicines and without proper medical attendance, the ordinary effect of disease being heightened by the dejection of the patients, and then add an epidemic or two of any of the above diseases, and the probable result may easily be foretold. The wonder is, not that the Indians died off rapidly, but that any of them survived.

Mission Indians of  
Ref. Ser. Montezuma, N.M.  
Vol. 2, p. 483.



## INDIANS

In Beechey's Voyage of the Blossom, <sup>which visited California in 1826,</sup> it is stated that the Indians at the missions, ~~prior to 1826,~~ had suffered severely from small pox and measles, and that smallpox "many years ago" <sup>prevailed to an alarming extent, and</sup> carried off several thousand Indians; but since the introduction of cattle into the country, and with them the cow pox, it has not reappeared. Vaccination was practised in California as early as 1806, and the virus from Europe has been recently introduced through the Russian establishment at Rossi. The measles have also at times seriously affected the Indians and in 1806 proved fatal to thousands, while it is remarkable that none of the Spaniards affected with the disease died. Dysentery, the most prevalent complaint among the converted Indians, no doubt arises in a great measure from the coldness and dampness of their habitations. . . This state of <sup>ill</sup> health does not extend to the uncivilized Indians." // Voyage of Blossom, Pt. II, 396, 1831.



7. THE SMALL-POX, A SCOURGE TO THE ABORIGINES.

No disease which has been introduced among the tribes, has exercised so fatal an influence upon them as the small-pox. Their physicians have no remedy for it. Old and young regard it as if it were the plague, and, on its appearance among them, blindly submit to its ravages.

This disease has appeared among them periodically, at irregular intervals of time. It has been one of the prominent causes of their depopulation. Ardent spirits, it is true, in its various forms, has, in the long run, carried a greater number of the tribes to their graves; but its effects have been comparatively slow, and its victims, though many, have fallen in the ordinary manner, and generally presented scenes less revolting and striking to the eye.

This malady swept through the Missouri Valley in 1837. It first appeared on a steamboat, (the St. Peters,) in the case of a mulatto man, a hand on board, at the Black-Snake Hills, a trading post, 60 miles above Fort Leavenworth, and about 500 miles above St. Louis. It was then supposed to be measles, but, by the time the boat reached the Council Bluffs, it was ascertained to be small-pox, and had of course been communicated to many in whom the disease was still latent. Every precaution appears to have been taken, by sending runners to the Indians, two days ahead of the boat; but, in spite of these efforts, the disease spread. It broke out among the Mandans about the 15th of July. This tribe, which consisted of 1600 persons, living in two villages, was reduced to 31 souls. It next attacked the Minnetarees, who were living in that vicinity, and reduced that tribe from 1000 to about 500. The Arickarees, numbering 3000 souls, were diminished to some 1500.

The disease passed from these to the Assiniboins, a powerful tribe of 9000, living north of the Missouri, and ranging in the plains below the Rocky Mountains, towards Red River of Hudson Bay, whole villages of whom it nearly annihilated. This tribe had their principal trade with Fort Union, at the mouth of the Yellow-Stone.

The Crows, or Upsarokas, extending west from this point across the plains to the Rocky Mountains, who were estimated at 3000 strong, shared nearly the same fate, and lost one-third of their numbers.

It then entered and spent its virulence upon the great nation of the Blackfeet, who are known under the various names of Blood Indians, Piégans, and Atsinas. They have been estimated at 30,000 to 50,000. The inmates of 1000 lodges were destroyed. The average number in a lodge is from six to eight persons.



Granting everything that can be asked on the score of excitement and exaggeration, not less than 10,000 persons fell before this destroying disease, in a few weeks. An eye-witness of this scene, writing from Fort Union on the 27th of November, 1837, says:—"Language, however forcible, can convey but a faint idea of the scene of desolation which the country now presents. In whatever direction you turn, nothing but sad wrecks of mortality meet the eye; lodges standing on every hill, but not a streak of smoke rising from them. Not a sound can be heard to break the awful stillness, save the ominous croak of ravens, and the mournful howl of wolves, fattening on the human carcasses that lie strewed around. It seems as if the very genius of desolation had stalked through the prairies, and wreaked his vengeance on everything bearing the shape of humanity."

Another writer says:—"Many of the handsome Arickarees, who had recovered, seeing the disfiguration of their features, committed suicide; some by throwing themselves from rocks, others by stabbing and shooting. The prairie has become a graveyard; its wild-flowers bloom over the sepulchres of Indians. The atmosphere, for miles, is poisoned by the stench of the hundreds of carcasses unburied. The women and children are wandering in groups, without food, or howling over the dead. The men are flying in every direction. The proud, warlike, and noble-looking Blackfeet are no more. Their deserted lodges are seen on every hill. No sound but the raven's croak, or the wolf's howl, breaks the solemn stillness. The scene of desolation is appalling, beyond the power of the imagination to conceive."



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**Ethnobotany**



## ABORIGINAL TOBACCO CULTURE IN CALIFORNIA

Dr Pliny E. Goddard in his valuable work entitled 'Life and Culture of the Hupa' (Vol. 1, page 37, Sept. 1903), states: "The tobacco used was cultivated, the only instance of agriculture among the Hupa. Logs were burned and the seed sown in the ashes. The plant appears to be and probably is identical with the wild Nicotiana Bigelovii, but the Hupa say the cultivated form is better. The wild form found along the river they say is poison! It is believed that an enemy's death may be caused by giving him tobacco from plants growing on a grave."



Manzanita Berries.  
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Manzanita berries, called Ah-soor' by the Shasta Indians, are pounded and then roasted on a hot stone. These are the berries of Arctostaphylos viscida.

A delicious cider also is made from Manzanita berries. It is called Ah-soor'-kwe'-rah-hah-oo'-rah. Another species of Manzanita (A. patula) is called Wak-hi-e-u. - *can*



*Material from cones of Giant Sequoia*

Concerning this material Dr. C. A. Browne, Chief Chemist of the U.S. Dept. of Agriculture, writes me as follows: [May 6, 1922]

"This material, which we understand is a by-product of the preparation of Sequoia cones for planting, is as a matter of fact a high-grade natural dry tanning extract, some samples which we have examined running as high as 72 or 73 per cent of actual tannin absorbed by hide powder. If it were obtainable in any quantity, that is, in hundreds of tons, it would be a valuable commercial article."



TUCKAHO

"In June, July, and August they feed upon rootes of tockohow".

Name in Powhatan language as printed in a report on 'Geographic Nomenclature in the District of Columbia', published in Am. Anthropologist, Vol 6, No.1, p 52, Jan. 1893.

Copy on file in my Geog. files in District of Columbia envelope.

C.H.M.



INDIANS USE GRINDELIA AS ANTIDOTE  
FOR POISON OAK

The Marysville Weekly Express of October 28, 1858 states that Dr. C. A. Canfield, in a letter to the Santa Cruz Sentinel, recommends Grindelia as invariably successful as an antidote for poison oak, and adds "This plant is a remedy for the poison oak, used originally by the Indians of this vicinity, and by them its virtues have been communicated to the Spanish California people who are now commencing to use it."--  
Marysville Weekly Express (from Santa Cruz Sentinel), Oct. 28, 1858.

## Tobacco

Tobacco--called Sayri--was used by the Incas "only in the form of snuff and with medicinal intent, to clear the nasal passage".--Philip Answorth Means, Ancient Civilization of the Andes, 310, 1931.



USES OF PLANTS BY THE INDIANS OF MISSOURI  
RIVER REGION.

Cat-tail (Typha)--Down used for dressings for burns and scalds, and on infants to prevent chafing.

Yellow Water Lily (Nelumbo lutea)--Gilmore states that the Indians of the Northern Plains of the Missouri River Region believe this plant invested with mystic powers. It is also an important food plant, both seeds and tubers being used.

Melvin Randolph Gilmore, Uses of Plants by the Indians of the Missouri River Region, 33d Ann. Rept. Bureau Ethn. (for 1911-12), pp. 64, 79, 1919.

INDIAN CAKE OF NUTS OF CALIFORNIA LAUREL OR  
Pepper-tree (Umbellularia californica)

2-1873 Livingston Stone sent Prof. Baird,  
Secretary of the Smithsonian Institution, ~~in~~  
~~1873~~, an "Indian cake made of the nuts of  
the Pepper-tree. Used as food by the Clear  
Lake Indians." ✓ Feb. 10, 1873, No. 149,  
Stone's Catalogue of Specimens sent the  
Smithsonian.

U.S. Fish Commission / <sup>Rept.</sup> for 1872-3, p. 213,  
1874.



**CHEWING GUM OF THE SHASTE .**  
**Made from the Milk of the Milkweed (Asclepias)**

**Roland Dixon, The Shasta, Bull. Am. Mus. Nat.**  
**Hist., Vol. 17, part 5, p. 424, July 1907.**

USE OF ACORNS BY THE SHASTE

See Roland Dixon's The Shasta, Bull. Am. Mus.  
Nat. His., Vol. 17, part 5, pp. 423; 425-6,  
July 1907.



## USE OF MANZANITA BERRIES BY SHASTE

Roland Dixon, his paper entitled The Shasta, says that Manzanita-berries were used in the following manner by the Shaste Indians:

"Manzanita-berries were crushed, and used to make manzanita-cider in a manner similar to that described among the Maidu.<sup>12</sup> The winnowed meal was also mixed with the acorn-meal in making a special variety of the acorn-soup."

Dixon, The Shasta, Bull. Am. Mus. Nat. Hist., Vol. 17, part 5, p. 426, July 1907.

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<sup>12</sup> See p. 189 of <sup>same</sup> ~~this~~ volume.

## USES OF PLANTS BY THE INDIANS OF MISSOURI RIVER REGION

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USE OF MANZANITA BERRIES BY THE TAKELMA  
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Edward Sapir, in Notes on the Takelma  
Indians of Southwestern Oregon, says:

"A favorite food was the manzanita berry  
(lōxōm). These were pounded into a flour  
(p'abā<sup>a</sup>p'), mixed with sugar-pine nuts (t'gàl),  
and put away for future use; they were consumed  
with water. A peculiar implement used for the  
eating of manzanita was the bushy tail of a  
squirrel tied with sinew for the space of about  
a finger's length to a stick about six inches  
long."

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Am. Anthropologist, Vol. 9, No. 2, pp. 258-259,  
1907.

Cf. Goddard, Life and Culture of the Hupa,  
University of California Publications,  
American Archaeology and Ethnology, pp. 29-30.

Menzanito cider made by Yokut tribes

Lawson, Overland Monthly, IX, 108, Aug. 1873.



Manzanita cedar

Described (from Sierra foothills - prob. Nevada)  
by Major H.W. Wessells in 1853. - House Ec. Doc.  
76, 34<sup>th</sup> Cong. 3<sup>d</sup> Sess. p. 31, 1857.

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During his Third Expedition 1845-1846, Fremont ~~was~~ traveling in the valley of the Sacramento. On April 7, 1846 he says: "Leaving the Sacramento, at a stream called Red Bank Creek, we entered on a high and somewhat broken upland, timbered with at least four varieties of oaks, with mansanita (arbutus Menziesii) and other shrubbery interspersed. The mansanita is the strange shrub which I met in March of '44 in coming down from the Sierra Nevada to Sutter's Fort, and which in my journal of that time I described as follows: "A new and singular shrub, which had made its appearance since crossing the mountain, was very frequent to-day. It branched out near the ground, forming a clump eight to ten feet high, with pale green leaves of an oval form, and the body and branches had a naked appearance as if stripped of the bark, which is very smooth and thin, of a chocolate color, contrasting well with the pale green of the leaves." Out of its red berries the Indians make a cider which, put to cool in the running streams, makes a pleasant refreshing drink."

Fremont: Memoirs, I, 475, 1837.



Konomehoo (or Kehhootinerook?)

(D)

## SALMON RIVER INDIANS

The Indians on the Salmon are almost all extinct. There are none on the North Fork, on the South only one small band, and on the main river but one down to Woolleys creek.

The upper Salmon Indians belong to the Shasta tribe, that is from the forks up, though on the South fork they are connected with the Trinity Indians as the passage is a short one over and they intermarry.

Below the forks they belong to the Arra Arras. The remains of houses and their own report show very considerable numbers here at a former period.

I noticed a drink at the head of the South fork of Salmon in use among the Indians made from the berries of the manzanita. It was acid, but whether from the natural taste of the fruit or fermentation, I did not learn. The men said it tasted like cider.

Personal Memoranda, George Gibbs, 1852. (MS in Bureau Eth. S.G.)



PLANTS USED BY THE PIMA INDIANS

Frank Russell, The Pima Indians, 26th Ann.  
Rept. Bureau Ethn. (for 1904-1905), pp. 69-  
80, 1908.



ATHAPASCAN PLANT NAMES

L. L. Loud, Ethnogeography & Archaeology  
of the Wiyot Territory, Univ. Calif. Pubs. in  
Am. Arch. & Ethn., Vol. 14, p. 234, 1918.

WIYOT PLANT NAMES

L. L. Loud, Ethnogeography & Archaeology  
of the Wiyot Territory, Univ. Calif. Pubs. in  
Am. Arch. & Ethn., Vol. 14, p. 232, 1918.



## ETHNOBOTANY OF THE SHASTE

Roland Dixon, in treating of the food of the Shaste, mentions acorns, manzanita-berries, and a number of other plant products.

Dixon, The Shaste, Bull. Am. Mus. Nat. Hist., Vol. 17, No. 5, pp. 423-424, July 1907.

## FIBERS USED BY CALIFORNIA INDIANS

Lansford W. Hastings speaks of flax two to three feet high used by the Indians of interior northern California for nets and ropes; and also of hemp (having milky juice and tough fibrous <sup>bark</sup> and growing about three feet high) which was used also for nets, ropes, and other articles.

Hastings' Emigrants Guide to Oregon & California, p. 1845.



## INDIAN METHOD OF GATHERING PINE NUTS

The Marysville Weekly Express, Sept. 18, 1858, quotes the following note from a "Mountain paper."

"An Indian in one of the southeastern counties ascended a pine to knock down burs, fell and broke his neck. Pine nuts are esteemed a great delicacy by the mountain Indians, to obtain which they will scale trees of appalling altitude. They lean a pole against the tree, with another to it, and keep pushing the rude ladder up, adding to the lower end until the upper reaches a place of convenient size for climbing, then some nimble fellow ascends the pole and the tree.--Mountain paper."

Marysville Weekly Express, Sept. 18, 1858,  
(from a "Mountain paper").

For Ethnobotany File

The Koo'-pah of Warner Valley  
make a hair wash of acorn juice obtained  
while leaching the acorns. - *Jan* - 1933



## PISPEWAT, INDIAN CHEWING TOBACCO

The following was originally published in Santa Barbara Gazette in September 1860, and was reprinted by Oscar T. Shuck in his California Scrapbook (p.299), San Francisco, 1869.

"It seems that they had in the vicinity of Santa Barbara the original California Mint. The Indians of Tulare County generally came over once a year, in bands of twenty or thirty, male and female, on foot, armed with bows and arrows. They brought over panoche, or thick sugar, made from what is now called honey-dew and from the sweet Carisa cane, and put up into small oblong sacks, made of grass and swamp flags; also nut pipes and wild tobacco, pounded and mixed with lime. This preparation of native tobacco was called pispewat, and was used by them for chewing. These articles were exchanged for a species of money from the Indian Mint of the Santa Barbara rancherias, called by them "ponga." This "ponga" money consisted of pieces of shell, rounded, with a hole in the middle, made from the hardest part of the small edible, white muscle of our beaches, which was brought in canoes by the barbarians from the island of Santa Rosa. The worth of a rial was put on a string which passed twice and a half around the hand.-- i.e., from the end of the middle finger to the wrist. Eight of these strings passed for the value of a silver dollar, and the Indians always preferred them to silver, even as late as 1833. This traffic the Padres encouraged, as it brought them into peaceable connection with the tribes of the Tulare Valley.



## INDIAN PLANT FOODS

Charles A. Geyer, a German botanist, in a scientific treatise on the "Vegetation and General Character of Missouri and Oregon Territories," published serially in Hooker's London Journal<sup>of Botany</sup>/1845-46, gives the following notes on plants used by the Indians for food. Geyer made extensive botanical collections west of the Mississippi from 1835-1844, offering his specimens for sale at Kew Gardens. He accompanied Nicollet in 1836, Fremont in 1841, and in 1843-4 traveled with the party of Sir William D. Stewart as far as the Wind River Mountains, where he joined the Catholic caravan to the Flatheads, and from there went with the missionaries on their journeys to the tribes westward and to the Pacific coast.

Concerning a specimen of Astragaleae<sup>✓</sup>, Geyer says: "This plant is abundant on the saline sandy ridges of the Upper Missouri. The Teton-Sioux Indians dig it for its sweet root, which seems to surpass in sweetness that of the common liquorice."--Vol. 5, p.27 footnote. [27]

Rhus trifoliolata, collected near Scotts Bluffs.--"The somewhat viscid berries of Rhus trifoliolata, Nuttall, are eaten by the Indians and hunters. They have an agreeable sour taste, a little aromatic, much like those of Rhus aromatica, Pursh."--Vol.5, p. 37 footnote. [37]

✓ Identified as Astragalus gracilis, Nutt. in Catalogue of Mr. Geyer's Rocky Mountain Plants, Hooker's London Journal of Botany, Vol.6, p. 210, 1847.



Cymopterus glaucus and glomeratus, near Wind River Mountains.--

"These are 2 of the many tuberous dwarf Umbelliferæ, common in the higher regions here, and especially in Upper Oregon.

The Pawnee Indians gather the tubers for food."--Vol.5,p.41,ftnote.

Pinus ponderosa, Upper Oregon.--"The Indians eat the seeds of

this pine, but they are insipid even when roasted."--Vol.5,p.204.

Another Pinus, called 'Pinette noire' by the Canadians. Never taller

than 40-50 feet, bark grayish-black and coarse, thin branchlets,

cones small and seldom seen. --"This is the pine of which the

Indians eat the young cambium, which they scrape off with a

knife, after removing the bark. It is a very cooling and by no

means unpleasant article of food."--Vol.5,p.204-5.

Ferula<sup>↓</sup> on cold plateau near Cœur d'Aleine river.--

"a rare species and occurs only there, it has farinaceous tubers,

which are gathered by the Indians, like those of many other

species of this genus"--Vol.5, p.207.

"Arctostaphylus uva ursi, Spr. fills the surface of about one third of the woods of Upper and Lower Oregon. This is the famous tobacco ingredient, which the Indians use, mixing the same with one and a half of tobacco, which they get from the fur traders. For this purpose they select such as has grown."--

Vol.5, p. 289 footnote.

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↓ Identified as Peucedanum (Ferula, Gey.) farinosum, Gey, in Hooker's Catalogue of Mr. Geyer's Rocky Mountain Plants, Hooker's London Journal of Botany, Vol.6, p. 235, 1847.



Lakes in Coeur d'Alaine Valley. "Deeper inside [the stony [290] shores] are large tufts of Carices, groups of Typhae, so useful for the Indians who use the blades for making mats; with it also grows Calamus, the roots of which the Indians use but little. But on the borders of willow-shrubbery grows the Scirpus maritimus? for whose tubers the Indians dig every autumn as if for potatoes, which they also cultivate" In a footnote, Geyer adds: "The Skitsoe Indians, about 10 or 15 years ago, got possession of some potatoes from some of the fur traders, which they since have cultivated in their own way, and brought to a remarkable degree of perfection. . . During my stay with the Skitsoes, in November 1843, the chief used to walk about every morning, 2 or 3 hours before daybreak, in the woods, where the Indians had built their lodges, singing out in a loud voice the orders for the day; amongst others he repeated every morning: 'Eat the small potatoes, save the big ones for planting!' This his people did for a long period. The size of their potatoes (English white) was not so extraordinary, but in quality they surpassed what I before and afterwards tasted in potatoes. In planting they laid the potatoes whole, in rows a little elevated, filling them afterwards up with soil about a foot deep."--Vol. 5, p.290 & footnote.



Veratrum viride.--"This is the 'Racine amare' [Bitter Root] [297  
of the Canadian voyageurs. . . The Indians dig it [the root] [298  
throughout the year, and boil it in the same manner as  
Gamass; by that process the root assumes a texture like that  
of boiled beet, a brown colour, and an odour with somewhat  
of the taste of chewing tobacco. Hence the Canadian name  
'Tobacco root'."--Vol. 5, pp. 297-98 footnote.

"The digging of the Gamass bulb is a feast for old and  
young amongst the Indians; a sort of picnic which is spoken of  
throughout the whole year. The different neighboring tribes  
meet on the same plain and mostly at the same time, at the  
same spot where their forefathers met. Here the old men talk over  
their long tales of olden times, the young relate hunting  
adventures of the last winter; and pass most of their time  
in play and gaming; while on the women alone, young and old,  
rests the whole labour of gathering that indispensable food.  
They, especially the young women, vie with each other in col-  
lecting the greatest possible quantity and best quality of  
Gamass, because their fame for future good wives will depend  
much on the activity and industry they show here; the young  
men will not overlook these merits, and many a marriage is  
closed after the Gamass are brought home. I saw a young  
woman at the Skitsoe village, who had collected and prepared  
60 sacks of good Gamass, each sack containing 1-1/5 bushel;



she was spoken of in the best terms throughout the village.

As soon as the Indians have returned from gathering the 'Biscuit root', of which we shall speak afterwards, they begin to prepare for the Gamass grounds. The whole village is active in collecting the horses, getting sacks ready, which [300] are mostly of Thuja bass, or Helonias roots; and at last family after family leave the village, chatting merrily, and group after group arrive at the plains, where there all is bustle and activity. After dismounting, they strike their camp in the groups of tall pines; the boys take care of the horses, while the older people pay their visits from lodge to lodge. Hunters return with game, or some young men bring the first salmon from the distant river, to have something to feast the visitors. All is merriment and joy, when the numerous large pine-wood fires illuminate the wide classic plain in the evening. The digging of the Gamass takes place as soon as the lower half of the flowers on the raceme begin to fade, or better, when the time of flowering is entirely passed. For that purpose, the Indian women use a stick 2 feet long, curved like a sabre, of hawthorn wood, which is provided with a cross piece of elk-horn on the top, serving as a handle. This instrument they use with astonishing dexterity, so that they very seldom strike the point twice after the same bulb. 4 or 5 sacks of raw bulbs is a common day's labour, which dwindle to about 2 after baking and drying. With the first dawn of day



the industrious women and mothers start from the camp, which is frequently a little distant from the Gamass plains, on account of wood and water. They are generally accompanied by a little girl or boy to take care of the horses, and they return every evening loaded to the lodge. As soon as they have gathered a sufficient quantity of bulbs, they prepare for baking. For that purpose, they dig or scrape a hole in the ground of 3 or 4 feet in depth, make a fire and throw in a good layer of red hot stones, then a layer of clean grass over those, and now a layer of Gamass, the latter having before been cleaned from the adhering soil. This is repeated until the hole is level with the ground above. The fire is now moved on the top of the pit, and kept burning for about 24 hours or longer.

The raw Gamass bulb resembles in its substance, the common Squill. By baking, it acquires a sweet taste, and when boiled the taste is not unlike the syrup of Squills, but not so sweet. Those accustomed to that food, like the Indians, remain strong and fleshy; but a European falls off very soon if he has nothing else. Eating a great quantity produces flatulence, as has been observed by travellers before.

As soon as the first Gamass are baked, the Indians, young and old, pass from lodge to lodge to eat Gamass; every where is plenty and content. The stranger is offered Gamass as soon as he steps into the camp. But this only part of the



feast; the whole is perfect when the salmon begins to be plenty in the rivers, when the gathering of Gamass comes to an end. Nothing can make the Indian recollect that he, with his family, hungered and nearly starved for two months. His natural carelessness and improvidence return with the abundant seasons, he speculates away for trifles, or squanders, in gambling, night and day, the greater part of Gamass and other provisions, and imparts profusely of what he has, to those even who are too lazy to lay in provisions for winter. For this they have to suffer severally, particularly in the months of February and March, when they are compelled to fell trees, to gather the long moss from the pines, which they bake in the same manner as above, mixed with a few Gamass if they have any left. This composition is of a greenish-brown colour, like Confervae, has a wild acrid taste, like tan, so that one would think it would reduce a living man to a mummy. But the stoical Indian eats this now with the greatest complacency, remains strong and vigorous, and it is possible that the absence of tannin in our victuals, renders our stomachs so feeble; and on the contrary those of the Indians so indestructible by not removing those acrid particles ."-Vol.5,pp.307-8 footnote.

Clematis<sup>v</sup> . . . "The Saptona Indians use the root of this plant as a stimulant, when horses fall down during their excessive races. They hold a scraped end of the root into the nostrils of the

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<sup>v</sup> Identified as Clematis Douglassi, Hook. in Hooker's Catalogue of Mr. Geyer's Collection. Hooker's London Journal of Botany, Vol.6, p.65, 1847.



fallen horse. The effect of this is [instantaneous, it pro- [302]  
duces trembling; the animal springs up, and is led to the water  
to refresh its limbs. I have been told that it never failed,  
nor produced bad consequences. The scraped root leaves a  
burning sensation for half a day, if touched with the tongue."--  
Vol. 5, footnote pp. 299-302.

Ferulae: "Biscuit Root":--"By the first rays of the warm [305]  
sun in March or April, this humble useful plant emerges from  
the sand. In about 2 or 3 weeks, the plant is in bloom.  
This is the time when the Indians, especially the Saptonas  
and Spokans, turn out to gather its delicate tubers; which  
are commonly of the size of a small walnut, somewhat bread-  
shaped, but then they are at least 3 to 4 years old, far  
inferior to the thin spindle-form two year old tender tubers.  
The substance is farinaceous, snowy-white, and in the young  
tubers not entirely insipid. Like many of the tuberous plants  
in Oregon, this also has a very short time for vegetating  
above ground, for in 3 weeks after flowering, the wind sweeps  
already the dry stalks over the plains. These tuberous  
Ferulae are to the Indians here the same as the Cymopteri on  
the Platte are to the Pawnees in Missouri territory. Another  
and more remarkable species of Ferula, is the 'Pooch-Pooch root'  
of the Spokans, which I never met growing myself; and only  
know from what I could see from a few dried leaves, I found

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Hooker in his Catalogue of Mr. Geyer's Rocky Mountain Plants  
states that Peucedanum ambiguum, Nutt. is the 'Biscuit Root'  
of the Indians. Hooker's London Journal of Botany, Vol. 6,  
p. 235, 1847.



that it must be more than twice the size of the former, and according to all descriptions a rare plant. The tubers are of the size of a small potatoe, but somewhat bread-shaped, and contain, as the former, a white farinaceous substance, which has a rather strong, but pleasant aromatic odour and taste, resembling citron, which they keep for more than a year. The Indians gather them in but small quantities and file them on strings. It would be well for future botanists to get tubers and seeds for planting, as it would be a great acquisition for our kitchen-gardens."---Vol. 5, p. 305.

Bitter Root or Racine Amare, Lewisia rediviva.-- The [307]  
Indians, especially the Flathead tribes, value this root highly, and it is with them prepared with the marrow of the Bison, the most dainty dish. It has also acquired fame among Europeans, and travellers generally use it in those regions as a very wholesome food, and it is prized in spite of its strong bitter taste, which resembles the bitter of the China-bark. The root is dug during flower-time, when the cuticle is easily removed; by that it acquires a white colour, is brittle, and by transportation broken to small pieces. Before boiling it is steeped in water, which makes it swell, and after boiling it becomes 5 to 6 times larger in size; resembling a jelly like substance. As it is so small a root, it requires much labour to gather a sack, which commands generally the



the price of a good horse. Indians from the lower regions trade in this root by handfuls, paying a high price. . . . The Lewisia occurs sparingly on the plains of the Upper Platte; quite abundant, however on the Upper Clarke or Flathead River, which is, on that account, denominated 'Rivière aux Racines Amares', by the Canadians. Far more abundant is the same on the above plains; generally pale in colour on rocky ground; but a very elegant plant in the sandy woods."--Vol. 5, p.308, 8, footnote.

On the upper Koos-kooskee.--"Here reappears, for the first [510] time, the Celtis, since we saw it on south fork of Platte; it is probably Celtis crassifolia, Pursh, and forms low, scrubby trees; the berries are gathered by the Indians for food."-- Vol. 5, p. 510.

"Helosciadium (probably Californicum, Dougl.)--"On the plains [518] near Peloose river . . and in fact almost throughout Upper Oregon, on grassy, moist slopes and in shady meadows, grows the Umbellifera, Helosciadium?, the tubers of which are one of the dainty dishes of the Saptonas, and truly a delicious root." In a footnote, Geyer adds, "This is probably Helosciadium Californicum, Dougl., an inconspicuous Umbellifera, perennial, with a black tuberous root. By boiling the tubers, like potatoes, they burst open lengthwise, showing a snowy-white, farinaceous substance, which has a sweet, cream-like taste, and somewhat of the aroma of young parsley leaves. This

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✓ Identified as Edosmia Gairdneri, Torr. in Catalogue of Mr. Geyer's Rocky Mountain Plants, Hooker's London Journal of Botany, Vol. 6, p. 233, 1847.



plant, it seems to me, would be an excellent acquisition to our kitchen gardens."--Vol.5, p.518 & footnote.

Ferula ✓ . On moist plains of highlands near Koos-Kooskee River. "This plant grows also on the Platte River, in stony, moist meadows. It has an irregular tuber, much like celery, but with a many-headed rhizoma. The leaves and umbels with all their parts, are upright, and appear as if folded up; only during flowering time these parts spread for a short time. For this reason, the Indians assert that 2 kinds of bread-root grow together, which are, in fact, one and the same plant. The roots, when dug, are washed clean, dried, and powdered to a flour. To the bread, which they bake or rather smoke over their tent-fires, they give an oblong, rectangular form, about 3 feet long, 1 foot wide, and 3-4 inches in thickness, leaving a round hole in the middle to fasten it on the pack-saddle. Such bread keeps nearly 6 months, if well baked. It is insipid, when it has not acquired a mouldy or a smoky taste. It gets so hard when old, that it must be soaked in water for several hours before one is able to bite it; yet the Indians, who are accustomed to it from their childhood, like it much."--Vol.5, p. 520 footnote.

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✓ Specimen identified as Musenium tenuifolium, Nutt. in Hooker's Catalogue of Mr. Geyer's Rocky Mountain Plants, Hooker's London Journal of Botany, Vol.6, p.237, 1847.



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"Espeletia, very abundant and in place of Esp.helianthoides.

The root of this species is less resinous than that of the others, and was formerly dug by the Indians and eaten."--

Vol.5, p.519.

Charles A. Geyer, Notes on the Vegetation and general character of the Missouri and Oregon Territories, made during a Botanical journey from the State of Missouri across the South Pass of the Rocky Mountains, to the Pacific, during the years 1843 and 1844. Hooker's London Journal of Botany, Vol.5, pp.27 footnote, 37 footnote, 41 footnote, 204-5, 207, 289 footnote, 290 & footnote, 297-98 footnote, 299-302 footnote, 305 footnote, 307-8 footnote, 510 footnote, 518 & footnote, 519, and 520, London 1846.

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Identified as Balsamorhiza incana, Nutt., "open pine woods on ascent to Nez Percez highlands", in Hooker's Catalogue of Mr. Geyer's Rocky Mountain Plants, Hooker's London Journal of Botany, Vol.6, p.246, 1847.



## BREAD OF THE SOUTHWEST INDIANS

Beulah Donahue, a pupil in the Phoenix Indian School, Arizona, in an article on 'Native Indian Cookery' published in The Native American, writes:

The bread most commonly used by the different tribes is the tortilla and each tribe has its own method of making it. Besides this bread each tribe has breads of its own. For instance the Hopis have breads call piki, somiviki and many others made out of corn. The corn is ground between two stones as fine as possible. This meal is mixed with sugar and a liquid made from ashes of a brush or weed. A small amount of ashes is dissolved by boiling water. Then strained and a little is put into the meal to give it color. Besides this color they are also colored pink, blue and yellow in other ways.

The piki is made by mixing the meal into thin batter, coloring it also as stated before. Having a hot flat rock ready for the baking, a little of the batter is taken in the hand and with a sweep of the hand the batter is spread over the rock. This is repeated until they have the size required. When done it is taken up and either rolled or folded.

The method of making tortillas requires flour, salt, and water. The flour is either bought or ground at home. These are mixed in to a dough and fat is kneaded into it until light. Then take about a handful and shape into balls. These balls are patted and stretched until they are thin and round and as large as wanted. When this is done it is spread over the surface of a stove. It is turned over and over until done.

There is also a bread which is mixed by the same method as tortillas only baked between a layer of ashes. This is buried bread and is cooked in the Indian's sort of fireless cooker. When the bread is done it is taken out and washed lightly to remove the ashes. These are the breads on which some of the Indians thrive. --Beulah Donahue,



UNITED STATES DEPARTMENT OF AGRICULTURE  
BUREAU OF CHEMISTRY  
WASHINGTON, D. C.

ADDRESS REPLY  
CHIEF, BUREAU OF CHEMISTRY  
AND REFER TO

MAY 25 1926

Dr. C. Hart Merriam,  
1919 Sixteenth Street,  
Washington, D. C.

Dear Dr. Merriam:

Receipt is acknowledged of your letter of May 12, 1926, with further reference to the material from Sequoia cones and asking if it is the tannin that gives this material the quality of an ink or dye.

It is probably not the tannin, but rather an associated dye or coloring matter contained in the material that is responsible for the dyeing characteristics of the material. The color is absorbed by hide or by silk as is the tannin. It appears that the tinctorial properties of the material are as a matter of fact quite weak, practically no greater than those of extracts made from the commonly used raw tannin materials.

We have never identified the coloring matter in the Sequoia cones or the material recovered from them, nor have we so far found anything in the literature on it.

Very truly yours,

*C. A. Browne*

C. A. Browne,  
Chief.

USES OF PLANTS BY THE TO-WIN-CHE'-BÄ OR HOL-LO'-KOM-MAH

(a Southern Piute Tribe)  
At Cole Spring, Pine Ridge, Calif., East of Sycamore Creek &  
North of Kings River. October 1903 - *cm*

California Laurel (Umbellularia). Called No-dzib'.  
Wood used for bows. Branches with leaves attached  
used for canopies, because the leaves stay on longer  
than in the case of any other trees or bushes.

Bladder Bush (Staphylea). { Called Tse-gub-b'.  
{ Seed pod called See-gä-tä.  
Seed pod forms a natural rattle.

Sour Berry (Rhus trilobata). { The bush called Kwah-nah-noo-bä;  
{ the berry, Tä-kah-te.  
Shoots used for the horizontal rods in making baskets.

Milkweed (Asclepias). { Narrow-leaf called Sah-hi'b.  
{ Broad-leaf sp. called Eb-bah-nab-bä; ^  
Cord is made from the stems of both the broad- and the  
narrow-leaf species.

Turkey Mullein (Croton setigerus). Called Yah-wä-hob'.  
Plant pounded and thrown in water to poison fish.

Eriogonum nudum. Called Sah-rap.  
Used for medicine.

Aromatic Mint (Monardella). Called Sit-tahk-kwen-nä-eb'.  
Used for tea.

Brake Fern (Pteridium aquilinum). { Called Sab-bah-se-böb'b;  
{ the root, Pe-bö'b.  
Root used for the black design in baskets.

Wild Sunflower (Helianthus annuus). Called Po-kë.  
Seed used for food.

Indian Whisky (Datura). Called Tah-nah-nib'.  
Used for an intoxicating drink

Godetia.. Called Kow-win-num  
Large species 2 feet high, with flowers pink and white,  
with a spot on each petal. Seeds roasted, powdered,  
made into balls, and eaten when drinking acorn soup.

Wild Tomato (Solanum). Called Mo-gwan-ne.  
Berries used for food.

[For full list of plant names see my Towincheba vocab. list - *cm*]



NOTES ON PLANTS TOLD ME BY THE KAM-ME-I OR 'DIEGENO'  
Of Campo and Manzanita, in Southern San Diego County

Yucca whipplei

Called Ah-koo'eh

The stem is good to eat when roasted green.

Yucca mohavensis

Called Shah'-ah'

The bark is used for soap.

Hosackia glabra

Called Hi'-waht'

Used for thatching houses.

Ramona polystachya

Called Bil'-ti'-e

Used for seasoning roasted seeds of sunflower,  
grain, and so on.

Salix & Sambucus

Elder and Willow bark were used by the women  
for skirts.



## METHOD OF POISONING ARROWS BY THE DELAWARE INDIANS

"Buffalo bladders would be filled with the livers of the buffalo or deer well chopped up; a rattlesnake would be caught with forked sticks and the bladder filled with chopped-up liver, tied to the end of another stick, would be placed in front of the rattlesnake, for it to bite, until it exhausted all of the venom that was in its fangs. These bladders would then be hung on a pole until the liver, with the venom, was thoroughly inoculated and the contents changed to a dark green substance. The arrows would be pierced through the bladder containing this substance or poison. The poison would, perhaps remain on the arrow for 30 or 60 days, but care was always taken to have the arrows reinforced with the poison at the proper time. If one of these arrows even scratched a person, enough to bring blood, the effect was far more deadly than the bite of a rattlesnake and the suffering and agony began at the instant of the touch, even more so than a bee sting. There was no known remedy that could save one from death when this poison took effect."

These arrows were not used by warriors in regular warfare, but by the women to repulse invasion and for the defense of their homes and babies.

R.C. Adams in 'Philosophy of the Delaware Indians', pp. 51-52, 1917.



GRAINS USED BY INDIANS, EAST SHORE TULARE LAKE, CALIF.

The San Francisco Daily Pacific News of June 17, 1850 gives the following note on grains on eastern banks of Tulare Lake on a route hitherto unknown.--

"A gentleman just down from the Mariposa states that on entering the San Joaquin Valley, from Los Angeles, in September last, he passed along the eastern banks of Tulare Lake, by a route not traveled previously to that time. He found large and flowing streams emptying into the lake from the east, and numerous well-disposed Indians with their flocks of cattle and horses. The most singular objects that met his eye, were several varieties of grain which he believes to have never been met with before. One of these resembled barley, and grew in vast quantities, often covering areas of thousands of acres. Another variety was smaller, like millet, but no less beautiful. But the most singular variety of them all, and equally abundant, was what our informant termed pop-corn. He stated that the natives cut and threshed out large quantities of this, which he supposed they lay up in store. This grain they 'parch' like pop-corn."

San Francisco Daily Pacific News, June 17, 1850.

FIBER OF IRIS LEAVES USED BY WIYOT INDIANS FOR MAKING  
NETS AND ROPE

*In the Humboldt Bay region in northern California,*

^ "Nets and rope, for snaring game such as elk and bear as well as smaller animals, were made from the fiber of iris leaves."<sup>1</sup>

"The Wiyot occasionally went to the top of the ridge and camped while killing elk or deer, snaring bear or panther, and gathering huckleberries, hazelnuts, acorns, and other food."<sup>2</sup>

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<sup>1</sup> L. L. Loud (quoting from Goddard), *Ethnogeography & Archaeology of the Wiyot Territory*, Univ. Calif. Pubs. in Am. Arch. & Ethn., Vol. 14, p. 234, 1918.

<sup>2</sup> *Ibid.*, p. 253, 1918.



THE POMME BLANCHE (Psoralea esculenta) AS FOOD FOR INDIANS

In a review by Dr. Washington Matthews of J. Owen Dorsey's revised edition of Stephen Riggs' Dakota-English Dictionary (dated 1890 but not published until 1892)

Dr. Matthews states:

"The Psoralea esculenta (Pursh), the Pomme blanche of the French Canadians, the tipsinna of the Dakotas, is referred to under two headings (owobopta, tipsinna,) as 'Dakota turnip,' and under two other headings (bopta, owopte,) as 'turnip.' In the English-Dakota part of the earlier publication tipsinna is given as the Dakota equivalent for the English word turnip. This is misleading. The Psoralea esculenta belongs to the Leguminosae or Pulse family, and is far removed from the true turnip in its botanical characters. Hewáktokte is not the Dakota name of the Arickaree Indians. This is a point on which the reviewer has reason to believe himself specially fortified, and therefore ventures with some confidence to differ with the 'Dakota-English Dictionary.'" )

Am. Anthropologist, Vol. 6, No. 1, pp. 97-98, Jan. 1893.



## USE OF ACORN FLOUR BY CHOCTAW INDIANS.

John R. Swanton says: "They sometimes make bread without lye, but rarely, because that consumes too much corn, and it is difficult to make, since they reduce it to flour only with the strength of their arms; after which it is kneaded or they boil it in water, or wrap it in leaves and cook it in the ashes, or finally having flattened out the paste to the thickness of two crowns (ecus), and the diameter of the two hands, they cook it on a piece of a pot on the embers. They also eat it with acorns. After having reduced the acorns to flour they put them in a cane sieve placed near the bank of a stream, and from time to time throw water upon them. By means of this lye they cause it to lose its bitterness, after which they put the paste around a piece of wood which they cook in the fire. When they have meat they boil it in water, however dirty it is, without washing it, saying that that would make it lose its flavor. When it is cooked they sometimes

put some of the acorn flour into the broth."  
John R. Swanton: *Memoirs Am. Anthropol. Assoc.*, Vol. 5,  
No. 2, p. 58. April--June 1918



## CHIA (Salvia columbariae)

"Chia is the Spanish name of this plant, which grows on a few warm slopes along our lower limits, reaching the borders of Yosemite Valley. In the foothills and in southern California, where it is much more plentiful, the Indians still gather its seeds by knocking the old flower-heads with a stick and catching the seeds in a flat basket as they are thrown out. After they have been parched and ground the seeds are added to wheat flour and the whole mass is pounded up together. This dark-looking meal, or 'pinole,' is baked into small cakes or loaves, which have a pleasant, nutty flavor. Chia is one of the most important and famous of the Indian plants."

H. M. & C. C. Hall, A Yosemite Flora, p. 210, 1912.



## PREPARATION OF CACTUS FRUIT FOR FOOD

Beulah Donahue, a pupil in the Phoenix Indian School, Arizona, in an article on 'Native Indian Cookery', published in The Native American, writes:

The cactus fruits are not very easily procured since the cactus produces its fruit at the very tip of the branches. A large family or band of women and men equip themselves for the gathering of the fruit. Each trip lasts from three days to a week. A long pole with a hook at one end is used in obtaining the fruit. The fruit is taken home and made into syrups, jelly, jam, and is sometimes dried in large balls. In making the syrup the fruit is peeled and put into a large kettle adding enough water to make it moist then placed over the fire until it boils. After it boils it is taken out and strained through a thin cloth, then the juice is put on to boil until it thickens. The fruit being sweet enough already no sugar is added. It is then taken off, cooled and preserved in ollas holding approximately a gallon to three gallons. These ollas are sealed air tight by covering first with cloths then a layer of clay put on top. The preserves are stored for the winter's use as they can be kept a period of time.

Beulah Donahue, Native Indian Cookery,

The Native American, p. 167, Vol. 27, No. 12, ↗

June 4, 1927



## BREAD OF THE SOUTHWEST INDIANS

Beulah Donahue, a pupil in the Phoenix Indian School, Arizona, in an article on 'Native Indian Cookery' published in The Native American, writes:

The bread most commonly used by the different tribes is the tortilla and each tribe has its own method of making it. Besides this bread each tribe has breads of its own. For instance the Hopis have breads call piki, somiviki and many others made out of corn. The corn is ground between two stones as fine as possible. This meal is mixed with sugar and a liquid made from ashes of a brush or weed. A small amount of ashes is dissolved by boiling water. Then strained and a little is put into the meal to give it color. Besides this color they are also colored pink, blue and yellow in other ways.

The piki is made by mixing the meal into thin batter, coloring it also as stated before. Having a hot flat rock ready for the baking, a little of the batter is taken in the hand and with a sweep of the hand the batter is spread over the rock. This is repeated until they have the size required. When done it is taken up and either rolled or folded.

The method of making tortillas requires flour, salt, and water. The flour is either bought or ground at home. These are mixed in to a dough and fat is kneaded into it until light. Then take about a handful and shape into balls. These balls are patted and stretched until they are thin and round and as large as wanted. When this is done it is spread over the surface of a stove. It is turned over and over until done.

There is also a bread which is mixed by the same method as tortillas only baked between a layer of ashes. This is buried bread and is cooked in the Indian's sort of fireless cooker. When the bread is done it is taken out and washed lightly to remove the ashes. These are the breads on which some of the Indians thrive. --Beulah Donahue,



## P O N E

The term 'pone' is of Indian origin and was published by Smith as early as 1612 in his 'Map of Virginia' (p. 17).

William Gerard, in a paper on 'Virginia's Indian Contributions to English,' writes:

"Pone.—Among the Virginia Indians, a ball or flat round cake made of a paste of corn-meal and hot water, covered with hot ashes in a fire-bed until baked, and then immediately dipped in water to cleanse it, and afterward allowed to dry by its own heat; or, a similar cake or ball made of flour obtained from certain edible roots and seeds, and sometimes 'buttered' with deer's suet (*rûnga*).<sup>1</sup> (2) A kind of bread or cake made of corn-meal, milk, and eggs, and baked in a tin pan; called also 'corn pone.' (3) 'Sweet-potato-pone,' a kind of cake made by grating sweet potatoes, expressing the juice, mixing the residue with sugar and spices, and baking in a tin pan. 'Better than pone and molasses' is a homely simile used in reference to a thing considered superlatively good."<sup>2</sup>

He quotes Norwood, 'Voyage of Virginia' (p. 47, 1649): "We made a good provision of Pone to bait on by the way." And gives the following quotation from Beverly, "Their [the poor people's] constant bread is Pone, not so-called from the Latin Panis, but from the Indian name Oppone."<sup>3</sup>

<sup>1</sup>The cake or ball was sometimes put into a pot and boiled, and afterward laid upon a smooth stone and allowed to harden.

<sup>2</sup>Am. Anthropologist, Vol. 9, pp. 102-103, 1907.

<sup>3</sup>Ibid, ft. note p. 102, 1907.



## MEDICINE FOR CHILDBIRTH USED BY THE YUROKS

The old women give the prospective mothers a medicine made of the pitch or gum of the fir tree that has dropped into the water of a stream and lain there for a long time until brittle and hard. A piece of this is pounded until it becomes as fine as flour and then put into a cup of water and given to the woman to drink.

To *The American Indian*, by Lucy Thompson, pp. 42, 1916.



## MEDICINAL USES OF SUGAR PINE

If a woman dies at childbirth, or while the child is still very young, the Indians make a fine flour of sugar pine nuts or hazel nuts, which they stir in water, making a milky substance. This is fed to the child, and children so fed are said to thrive as well as if nursed by the mother.

The sugar of the sugar pine is used as a remedy for poisoning from eating mussels in August or September.

The sugar pine grows plentifully on the high ranges of mountains on the north side of the Klamath River and the trees are preserved with great care.

The tree is so highly esteemed that Indians, even members of their own tribes, who willfully injure a sugar pine were punished by a very heavy fine, or ~~are~~<sup>even</sup> put to death.

To The American Indian, by Lucy Thompson,  
pp. 28-29, 1916.



## COTTON CULTIVATION BY THE PIMOS

In November 1846 Emory passed through the Pimos villages. He describes their thatched huts, and adds: "In front is usually a large arbor, on top of which is piled the cotton in the pod, for drying."

--Emory: Military Reconnoissance from Ft. Leavenworth to San Diego, 1846-7, 85, 1848.

In his report to Albert Gallatin, October 8, 1847, Emory says: "Specimens of the seed of the cotton grown by the Pimos were obtained, but they have not yet reached me." --Ibid, 131.



Chia - an Indian Food

Salvia columbariae

{ Tejon Region  
& elsewhere

J.T. Rothrock, in the Botanical Bulletin for March 1876, gives the following account of Chia of Southern and Central California:

"During the <sup>past</sup> summer [of 1875] my attention was called, while in Southern California, to a mealy preparation in popular use among the Indians, Mexicans, and prospectors. On inquiry, I found it was called 'Chia.' Further examination proved that it was furnished by the seeds of Salvia Columbariae, Benth. The seeds are collected, roasted, and ground in the native way, between two stones. This puts it in the condition in which I first saw it. It is used as a food by mixing it with water and enough sugar to suit the taste. It soon develops into a copious mucilaginous mass, several times the original bulk. The taste is somewhat suggestive of linseed meal. One soon acquires a fondness for it, and eats it rather in the way of a luxury than with any reference to the fact that it is exceedingly nutritious besides. It is in great demand among the knowing ones who have a desert to cross, or who expect to encounter a scarcity of water, and what there is, of bad quality. By preparing it so thin that it can be used as a drink, it seems to assuage thirst, to improve the taste of the water, and, in addition, to lessen the quantity of water taken, which in hot countries is often so excessive as to produce serious illness. As a remedy it is invaluable, from its demulcent properties, in cases of gastro-intestinal disorders. It also holds a place among domestic remedies, for the same purpose that flaxseed



occasionally does with us, i.e., a grain of the seed is placed in the eye (where it gives no pain) to form a mu- cilage by means of which a foreignbody may be removed from the organ. I have found it of great service as a poultice. As a matter of archaeological interest, it may be noted that quantities of this seed were found buried in graves several hundred years old. This proves that the use of the seed reaches back into the remote past. Indeed, I find several allusions to the name Chia in the second volume of Bancroft's great work on the 'Native Races of the Pacific States,' pp. 232, 280, 347, 360." ^

Rothrock: Botanical Bulletin, v.1.1, p.17, March 1876. .  
[ [Wheeler] Survey W. 100th Meridian, Vol.VI Botany, p.48-49, 1878]. The same matter quoted in [Wheeler] Survey W. 100th Meridian, Vol.VII Archaeology, p. 80, 1879.

"Chianpinoli appears to have been made by the so-called Aztec races from corn which was roasted and ground as the Chia was. From this, however, I conclude that the term Chia was then a generic name applied to meal derived from several sources. At present the name is almost restricted to the product of Salvia columbariae. Chia was among the Nahua races of Ancient Mexico as regularly cultivated as corn, and often used in connection with it. I would state that my attention was first called to it by Mr.Kennedy, of Fort Tejon, California, a gentleman whose long and varied experience in that region makes him a good authority upon all its products."



THE NAME CHINQUAPIN.

William R. Gerard, in an article entitled Virginia's Indian Contributions to English, gives the following terms:

"Chinquapin, Chinquopin, Chincapin, Chincopin; earlier, Chechinquamin, Chichiquamin, Chincomen." (88-89)

He calls attention to the earlier mentions of it, as follows:

"They haue a small fruit growing on little trees, husked like a Chestnut, but the fruit most like a small Acorne. This they call Chechinquamins, which they esteeme a great daintie." (Smith's Map of Virginia, p. 11, 1612.) (footnote, 89)

"Many goodly groues of Chincomen trees with a huske like vnto a Chestnut, raw or boyled, luscious and harty meate." (Hamor, A True Discourse of the Present Estate of Virginia, p. 23, 1615.) (footnote, 89)

"A Chincopine, which is like a Chasnut with a Burry huske, but lesse by far." (Glover in Philosoph. Transact., XI, p. 629, 1676). (footnote, 89)

"Chinkapins have a Taste something like a Chesnut." (Beverly, Hist. of Virginia, bk. II, p. 16, 1705.) (footnote, 89)

Continuing, he writes:

"The fruit of Castanea pumila, consisting of a very small ovoid pointed nut scarcely half the size of a



common chestnut, enclosed in a bristly and prickly bur. This nut, which is very sweet, and tastes somewhat like a fibert, was gathered in large quantities as it lay on the ground, after the frosts of autumn, by the Indian women, who, after drying it, stored it in large baskets in the wigwam for future use. It was highly prized by the Virginia Indians, whose women, after boiling it four hours, made from it both broth and bread for the chief men, or for use at the greatest feasts; or, converting it into meal, employed it as an ingredient in their soups."

"Etymology: With erroneous change of suffix from -mĕn or -mĭn, meaning 'seed,' 'nut,' 'fruit,' to -pĭn, meaning 'root', from Renape of Virginia tshĭ<sup>n</sup>komen or tshĭ<sup>n</sup>kwĕmĕn, an aphaeretic form of tshĭtshĭ<sup>n</sup>kwĕmĕn, 'rattle-nut;'  
from, or from the same root as, Virginia tshĭ<sup>n</sup>kwan, a rattle, an aphaeretic form of tshĭtshĭ<sup>n</sup>kwan, cognate with Nipissing and Montagnais (Cree) shĭshĭkwan, Ojibwe jĭshĭgwan, Prairie Cree sĭsĭkwan, Menomini ssĭsĭkwan.

"The change of the suffix -mĕn or -mĭn to -pĭn seems to have occurred at the beginning of the last quarter of the 17th century.

"Since the nuts do not rattle in the dry bur, the name is probably due to the fact of their having been used by the Indians in their squash-shell rattles or tchĭ<sup>n</sup>kwanâk. By the Renape of Roanoke island, the nut



was called sapuměn, or 'transpiercing fruit' (in allusion to the prickly burs), a name which, in the form of sabomín, is applied by the Ojibwe to the prickly gooseberry (Ribes Cynosbati), which in turn, was called by the Kenâpe of Virginia ärâkoměn, 'scratch fruit.' (89,89-90)

Am. Anthropologist, Vol. 9, 88-89, 89, 89-90).



## PINE NUT BEADS USED BY THE SOO-LAH-TE-LUK

In describing the carbonized articles dug up with the remains of Indians buried on Gunther Island in Humboldt Bay, Llewellyn L. Loud, in his 'Ethnogeography & Archaeology of the Wiyot Territory,' says:

"With each of the bodies, nos. 18 and 13, there were over two pints of carbonized pine nut beads. Smaller amounts of the same bead were found with six other human remains. The shell of each nut has a perforation in the larger end and another in the side through which a string could pass (see text fig. 7a). Nut beads of the same species, Pinus sabiniana,<sup>[???</sup> are found on the skirts of Hupa and Yurok women, and are illustrated in volume 1, present series, plate 8, figure 2. In this illustration, however, the nuts are perforated at both ends. In another skirt from the Klamath River region (Mus. no. 1-2333), strands of string are covered with nuts bored like those from Gunther island. The manner in which the nuts are arranged upon the string is shown in text figure 7b. Though these skirts are a part of the female attire, it is not necessary to consider all the interments with pine nut beads as being the remains of females. A reference to table 5 and table 10 [this publication] would show that about 73% of all artifacts were with the bodies which also had pine nut beads.<sup>47</sup>

<sup>47</sup>L. L. Loud, *Ethnogeography & Archaeology of the Wiyot Territory*, Univ. Calif. Pubs. in Am. Arch. & Ethn., Vol. 14, No. 3, p.386, December 1918.



He further adds in a foot-note: "The nuts upon Hupa and Yurok skirts as well as the nuts from Gunther island are large, being sometimes a full inch in length, and in consequence can not belong to Pinus attenuata (synonymous with P. tuberculata), as stated by P. E. Goddard, (present series, I, 20), as this species produces very small nuts and is limited in its range, so far as the Klamath river region is concerned, to the tops of the highest mountains east of Trinity river--a distance of nearly 50 miles from Humboldt bay. On the other hand, P. sabiniana ranges westward as far as the redwood belt."<sup>2</sup>

✓ L. L. Loud, Ethnogeography & Archaeology of the Wiyot Territory, Univ. Calif. Pubs. in Am. Arch. & Ethn., Vol. 14, No. 3, ft. note p. 386, December 1918.

Note - Pinus sabiniana probably error for P. lambertiana.  
C. L. M.



## THE SACRED FORKED ROOT, WALTH-PAY, OF THE POLIKLA

The first woman, whose name was Kay-y-yourn-nak, was made by the transformation of the forked root called Walth-pay. (p.57) This root has always been regarded with special veneration by the <sup>Polikla</sup> Yureks and is believed to be endowed with peculiar powers. It was brought with them from their original home in the far North to their present territory <sup>on the lower reaches</sup> of Klamath River.

The stalk of the Walth-pay <sup>plant</sup> is used as a divine rod of strength, endurance and courage, a Savior to the tribe. During their long journey, "With it the Talth <sup>cc.</sup> would command food for their famished members and bring peace and rest to their wearied bodies. The Walth-pay stalk kept perfectly green and blossomed all the while, <sup>and</sup> the High Priests carried it with them on their long journeys and years of wanderings." (p.59). When the people became weary and dissatisfied and hungry the Talth would command food with the Walth-pay rod. The food came in the form of acorn dough, out of which they made bread or pop-saw. (62)

<sup>cc</sup> The Talth would plant the herb Walth-pay at their stopping places during their travels, and it would readily take root and grow." (62)



The Talth kept the Walth-pay in commemoration of the creation of woman and their travels, and planted it in a few selected places back in the mountains.

All the Talth know where to find it, but it is fading so only a few are left who know where to find it. (63, 115)

During one of their ceremonies the roots of the Walth-pay are put into pure, clean water in a marble bowl; then certain of the people and workers wash themselves in the bowl and after washing, each one washes and combs the hair until it is clean and glossy. 114

On the evening of the second day the Master puts fresh, clean water into the bowl, pounds the Walth-pay roots and places them into it ready for use. 117

At the time of the deluge the precious Walth-pay plant, which as before kept perfectly green and in blossom, was <sup>taken</sup> on the raft, and after the waters had subsided it was carried down from the mountain top. (128, 129)

To The American Indian, by Lucy Thompson, pp. 57, 59, 62, 63, 114, 115, 117, 128, 129, 1916.



## USES OF ~~THE~~ HAZEL NUTS by the Yurok

Hazel nuts are greatly prized by the Yurok Indians, and the hazel flats are carefully cared for. The nuts are gathered and stored and kept for a long time to be pounded into flour when needed. The flour is put into warm water and used as a substitute for milk in feeding weak and sickly children, and in some cases, grown people who are ill and in need of nourishment. Hazel nuts and nuts of the sugar pine are used in the same way for making milk.

Hazel shoots are extensively used by the Yuroks in basket making. In summer or early fall the hazel brush on the flats is burnt over so that the following spring the young shoots start up from the old roots. In the month of May when the sap rises and the roots begin to grow the women gather them when they are from 1 to 3 feet in height. These sprouts are gathered by the thousands and taken home where men, women and children join in peeling off the bark; when peeled they are placed in the sun and allowed to bleach and dry, after which they are assorted, according to size and length, tied in bundles and laid away for future use. The smallest



shoots are used in making fine baskets, ~~and~~ the larger ones for making large baskets.

Another use to which the hazel shoots is put is in making withes for tying boats and other things.

To The American Indian by Lucy Thompson,  
pp. 29-30, 42, 1916.



Cattails as Indian food

California

Roots and bases eaten by Indians of Mendocino Co. Tender, spiny shoots, seeds and flowering spikes also used by various Indians.

H. G. Allard, in Cont. <sup>U.S.</sup> Nat. Herb. Vol. VII,  
p 310, 1902.



Cooking Camas & Lemnion

Cooked in pits over coals on bed of green grass & sticks  
covered with more grass & fire on top.

Cooked 12-18 hrs.

Bulbs edible only when plants in flower.

Henry Tennyson - High. Sci. Monthly, 262, March  
1933. (v/s)



The Grand Bear of the Northern  
Plains Indians is Falcata canosa.

See important remarks by Melvin R.  
Gilmore in and sent to Vernon Bailey  
in Dec. 1919.

Most Indian women and some of the  
men possess an intimate knowledge of  
the medicinal and textile & decorative (for  
color designs) values of plants not  
possessed today by any civilized person.  
com -



Some Notes on Ethno-Botany  
[of Canada] by F.W. Maugh

Atlanta Nat. XXXI, no. 2, May 1917

ff. 27-29

Some Plant Names of  
the Ute Indians. By Ralph

V. Chamberlain -

Am. Antrop. J., No. 1, 27-40. 1909

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[ copy in Ute envelope in our files  
room ]



Ethnobotany of the Tsimé Indians  
by Matilda Case Stevenson

<sup>30<sup>th</sup></sup>  
~~1908~~ Ann. Rep. Bureau Am. Eth. for  
1908-1909. Wash. 1915 [not issued till 1916]  
ff. 35-100.

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Life vine (Aristolochia)

called Do-we choon (Coyote rope - for in ancient times

Coyote-man used it in fishing in deer + wood.

So say Kah'-tah-we chemin' (= We-schem tat'-tah)



## THE "METAMORPHOSIS" OF EUCHLAENA INTO MAIZE

G. N. COLLINS

THE close relationship of maize (*Zea*) and teosinte (*Euchlaena*) has been recognized since Harshberger's work on *Zea canina* in 1896. Although very unlike morphologically, the two genera hybridize freely and produce fertile offspring. It is, therefore, but natural that the origin of maize should be sought in some form of the genus *Euchlaena*.

It was reported in 1921 that Burbank had succeeded in deriving maize from *Euchlaena* as a result of eighteen years' selection. So far as I know, the only published account of Burbank's work is that of Robert H. Moulton, entitled "Changing a Wild Grass Into Corn in Eighteen Years," which appeared in the Sunday supplement of the *St. Louis Post-Dispatch* for June 12, 1921.

To anyone familiar with teosinte-maize hybrids it was obvious from the photographs that the material with which Mr. Burbank initiated his selection was a hybrid between teosinte and maize. This view was confirmed when we were informed by Dr. H. V. Jackson, of Durango, Mexico, who had supplied Mr. Burbank with seed of Mexican teosinte, that the seed furnished undoubtedly had been contaminated with maize. Dr. Jackson communicated this fact to Mr. Burbank and presented him with photographic material illustrating several stages between teosinte spikes and ears of corn derived in two generations from the hybrid seed. Since Mr. Burbank had published no description of his experiments, it seemed unnecessary to challenge the newspaper report.

More recently Blaringhem<sup>1</sup> reports

and interprets experiments by Bento de Toledo, of Campinas, Sao Paulo, Brazil, in which results practically identical with those of Mr. Burbank are announced.

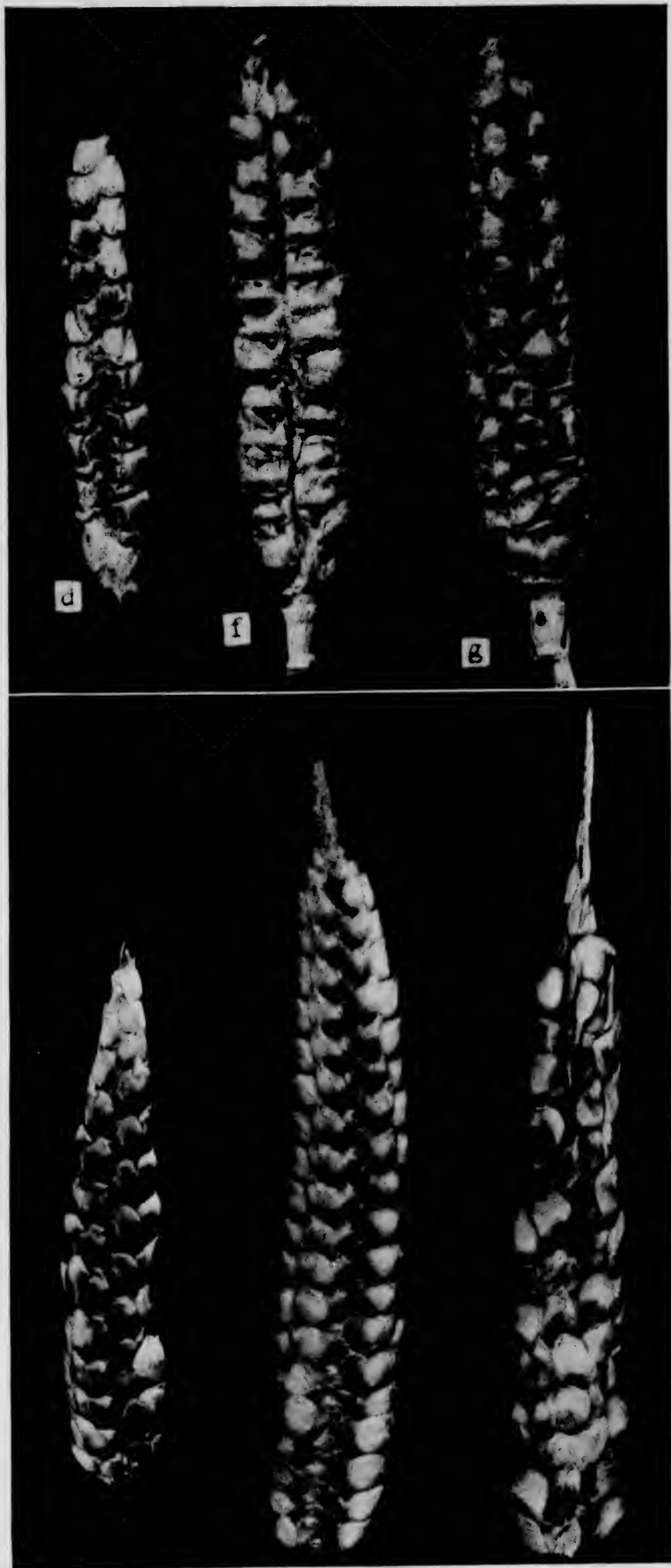
Working with *Euchlaena mexicana*, Toledo succeeded in the course of five years in deriving forms that resemble degenerate maize in all essential particulars. The intermediate stages are carefully described and figured. These are so exactly like the segregates from teosinte-maize hybrids as to arouse at once the suspicion that the *Euchlaena* used was contaminated with maize.

### Is Annual Mexican Teosinte a Hybrid?

No statement is made regarding the source of the original *Euchlaena* seed, but from the description and illustrations it is clear that it belongs to the annual type growing in Mexico. The Mexican form of annual *Euchlaena* differs markedly from that grown in Florida. The morphology of the pistillate inflorescences is sufficiently different in the two forms to warrant their specific separation, were it not that forms resembling the Mexican type always appear in hybrids between Florida teosinte and maize. It seems highly probable that the Mexican form has resulted from crosses between maize and either *E. perennis* or the Florida type.

If this is indeed the origin of the annual teosinte of Mexico it is not surprising that one of the parental types, in this case maize, can be obtained from it by selection. It is rather remarkable, however, that progress toward the maize parent should be so

<sup>1</sup>BLARINGHEM, L. Note sur l'origine du maïs. Métamorphose de l'*Euchlaena* en *Zea*, obtenue au Brésil par Bento de Toledo. *Ann. Sci. Nat. Bot.* X, 6:245-263. July, 1924: No. 3-4.



**"METAMORPHOSED" TEOSINTE AND TEOSINTE-MAIZE HYBRIDS**

**Figure 12**

The upper picture has been reproduced from Blaringhem's article, and shows three steps in the metamorphosis of teosinte into maize, as reported by Toledo. The lower picture shows three segregates of a known teosinte-maize hybrid, that have been selected as representing similar stages. Toledo's material so closely resembles that produced by crossing teosinte and maize as to leave little doubt that he is dealing with a hybrid.



This summer (1923) a friend here in London, Ontario, knowing I was interested in butterflies, told me one day of having seen a Giant Swallowtail in his garden. As he had a number of clumps of the Gas Plant I went around in the course of a few days and found, as I had hoped, a number of the larvæ busily engaged on it. I brought some of them home and they duly spun and hatched. I am sorry I kept no data as to the time between spinning and hatching, which might perhaps have been of interest.

From the foregoing it would appear that this butterfly, which has been extending its range northward, has found in the Gas Plant (*Dictamnus fraxinella*), in our neighborhood, at least, a plant to its liking.—(MRS.) ETHEL G. DALE.

The following letter is published as being of interest because of the unusual lateness of the records given.—EDITOR.

EDITOR, *The Canadian Field-Naturalist*,  
Ottawa, Ont.

Dear Sir:—

As Honorary Game Guardian for this part of Northern Alberta, I recently reported to the Canadian National Parks, Wild Life Division, that I had noted grey Geese and Mallard Ducks on the lakes in this district as late as the 17th day of December.

The Supervisor of this Department has written me suggesting that I write you a few lines in regard to same, giving details of such, which may be of interest to your publication.

On December the 11th, whilst making Fisheries patrol of the Whitefish Lakes, some forty miles north of Lesser Slave Lake, I noted a flock of about 20 Mallard Ducks, at the outlet of Little Whitefish Lake, which is the head of Narrows Creek, and connects with Big Whitefish Lake. This Creek was open at the time, although the lake was frozen over. There were a number of smaller Ducks there also, but I was not close enough to distinguish what species.

On December the 17th, on the south shore of Lesser Slave Lake, east of the Narrows, I was informed that a flock of grey Geese had been seen there in the open water as a part of the lake there had not yet frozen over.

I personally saw a large number of grey Geese on December the 4th in Auger Bay, Lesser Slave Lake; there must have been at least 200 in this flock.

Yours truly,

S. TRAVERS,

*Fishery Overseer.*

Grouard, Alta.,  
January 24th, 1924.

The splendid pictures of the Black-billed Cuckoo and its nest in this number of *The Canadian Field-Naturalist* were provided through the generous financial assistance of Mr. P. A. Taverner. The illustration of a "mystery band" was kindly provided by the Canadian National Parks Branch. Our thanks in both cases are hereby tendered.—EDITOR.

### BOOK REVIEW

ETHNOBOTANY OF THE MENOMINI INDIANS, by  
*Huron H. Smith. Bulletin of the Public  
Museum of the City of Milwaukee, No. 1, Vol.  
4, pp. 1-174, plates 1-36. December 10, 1923.*

*Ethnobotany of the Menomini Indians* gives a list of plants found in the Menomini country. Plants not known to have Menomini names or uses are included, as it is probable that further investigation will disclose both names and uses, especially medical, for many of them. Where possible, the literal translation of the Indian name is given. The Menomini have Indian names for certain species that have only been recently discovered as valid species by the white man. The Menomini, for instance, have from time immemorial given the Juneberry (*Amelanchier canadensis*) two names, showing that they recognized the difference in the tree long before we did.

The plants have been listed under their Menomini uses as follows: Medicines, foods, fibres, dyes and miscellaneous. Under each of these

captions they are arranged alphabetically by families. In regard to each plant listed the Menomini uses, supposed properties and any known myths are given, also the white man's estimate of the value of the plant as a drug. There is also a finding list of plants arranged by both scientific and English names.

The writer of this monograph having often been called upon to identify plants or parts of plants used by various Indian tribes became interested in the Indian uses. The following contains much material quoted directly from Mr. Smith's interesting bulletin. This may help to characterize it. The use of many plants is rapidly being abandoned by most tribes and knowledge of their ethnobotany will soon be no longer even a memory. Four field trips, each of three weeks' duration, were made to the Menomini reservation in Shawano County, Wisconsin. These periods were in June, October, May and September, in 1921 and 1922. Different periods were necessary because the Indian usually does not recognize the species



he uses at all seasons of the year, any more than most white men recognize plants when they are not in bloom.

Several groups of Menomini talked over the plants obtained, thus affording a check on the Indian name as well as on its different uses. The writer lays no claim to being a linguist, but was able to pronounce the words so that Mr. Alanson Skinner could give him the correct phonetic spelling.

The introduction gives a brief picture of the Menomini, touching on many other subjects as a setting for that of ethnobotany.

The Menomini are of Algonkian stock, and number at present about 1,745. They are typical forest Indians, versed in woodcraft, hunting and agriculture. They are known as the wild rice men. Since our first knowledge of them they have been largely dependent on plants for food and many other uses. Their present reservation contains about 230,400 acres, is well wooded with a large variety of conifers and hardwood, and is well supplied with streams and lakes.

While these Indians are known to be progressive in agriculture, there are yet a number of pagans among them who are well versed in the aboriginal uses of plants for foods, textiles, medicines and various other uses. The outstanding advisors of the tribe are fine old pagans.

Many of the Medicines are worthless, so far as drug value is concerned, but others are valued as drugs by the white man. He even obtained his use of some of them from the Indian. Medicinal history in Menomini lore is inextricably bound up with their religion. The secrets of the medicine lodge are in many ways similar to those of Masonry. Since the Menomini have been taught that the medicines are very valuable, and that it would offend the various spirits to value them lightly, they guard the lore jealously. Though a remedy may be for a trifling ailment, the patient must pay well for the information, even though he be a close friend or relative. For the song, which accompanies the digging of one of the simplest remedies, two ponies and a rig were demanded in one case. There is a proper season for obtaining each medicine, which, so far as the writer observed, coincided closely with the proper time of the white man for gathering drugs when the medicinal ingredients are at their best.

When securing remedies songs are chanted. For instance, "I am inserting my hand into your bosom, Grandmother Earth, to get this root." The medicine man repeats this four times, tells Grandmother Earth why the root was chosen, and how he intends to use it, at the same time asking that she lend her power to the medicine, that it may heal and that she be not displeased. In the

cavity from which the root was taken is left a gift of a little tobacco. Some plants were more powerful than others, and the greater number of plants in a medicine, other things being equal, the more powerful it was supposed to be.

Because of the sanctity of most Menomini medical knowledge, it is difficult to obtain full information on the uses of plants as medicines. The author, like others who have worked on Indian ethnobotany, has come to the conclusion that no white man will ever get all of the data, names and uses of plants from the Indians. No one Menomini has a full knowledge of the uses of plants in his tribe. To get this one would need the co-operation of every pagan family, for they all have different lore handed down to them by word of mouth from their parents. The reviewer has found this to be true among both the neighboring Ojibwa and the far distant Bellacoola of the Pacific coast. That certain plants have been given no Indian names or uses does not necessarily mean that they have no Menomini names and are not used by those Indians. It is a common experience that many such plants are later identified by other individuals of the tribe as powerful medicines.

The foods include nearly every native edible plant, except some of the mushrooms. Several Menomini still gather and make good use of the old-time foods. They prize them above store food. Many old Menomini take pride in telling about the palatable dishes formerly made from native herbs and berries. They say that, in aboriginal times, the food of the tribe was closer to nature and was the same as medicine in that it contained the pure substances occurring in nature. The old people believe that because they have taken up store food they have the white man's diseases. Especially in the spring, they gather native foods and consider them a tonic. This is not confined to Indians.

These foods are becoming harder to find as civilization encroaches on the Menomini, and are becoming of greater monetary value to them. Even wild rice cannot be gathered in large enough quantities to last over the winter. As a consequence, they do not like to sell it and when they do, it sells for ninety cents a pound.

The fibres used from native plants have become almost a thing of the past, being replaced by the white man's manufactured materials, which are usually better and cheaper. The author believes that some of them are not known to the present Menomini and that another ten years will see the end of the native fibre industry among a people who use many automobiles and sewing machines. It is refreshing to learn that the Indian children are encouraged in their art and craft work at the



government industrial school on their reservation to preserve the Indian designs, and the author believes it likely that the government schools rather than Indian parents may be expected to perpetuate Indian art and design.

Strictly speaking, the use of woods for houses, utensils and implements, is not a fibre use, but the author has thought best to list such uses in this section of his paper. The leaf of the Mountain Maple (*Acer spicatum* Lam.) was used for the maple leaf design found in Menomini bead-work and appliqué work. The outer bark of the Spreading Dogbane (*Apocynum androsæmifolium* L.) furnished their finest thread, and Slender Nettle (*Urtica gracilis* Ait.) and Wood Nettle (*Laportea canadensis* (L.)) were used for twine. Nettle and Dogbane were widely used for string in North America, even as far as the Pacific coast.

Plant dyes were apparently all obtained by boiling the part of the plant that yielded the colour—leaves, root or bark. While the use of native fibre has been replaced by the use of the white man's materials, the native plant dyes are still depended upon to a large extent for red, yellow and black.

Under miscellaneous uses the author considers plants used in tanning, for love charms and for sacred or ceremonial uses. In the latter class, much of the information might be regarded as superstition. Much of the tanning was not done with plant material but with animal and mineral matter, yet there are roots and herbs that were used in the preparation of skins with the fur left on to prevent moths and other insects from injuring the furs. The leaf sprays of the cedar (*Thuja occidentalis* L.) were used as we use moth balls, that is, they were put in layers among clothes when they were stored away.

The author frequently exhibits his sympathy for the Indians. In fact his conclusion does not relate to his subject, Ethnobotany, but laments the passing of the old Indian life which he considers was in many respects a happier one than that of the whites.

With this bulletin as a basis, he expects to investigate in like manner the ethnobotany of the Chippewa, Winnebago, Oneida, Sauk and Potawatomi Indians, all of whom are now or were formerly in Wisconsin. Such studies will certainly be welcome. The reviewer for one hopes the author will eventually give us a complete tabulation or cross reference, including a classification, from the standpoint of material culture, to these lists of plants, showing for instance a list of diseases with all the remedies for each. The various decoctions, the various uses of bark, etc., would be of interest. The 36 plates include pictures of typical Menomini Indians and characteristic views of their country. Most of them, however, are

beautiful representations of plants. The paper, printing and book-making are good. The chief use of the bulletin will doubtless be as a book of reference.—H. I. S.

CANADIAN NATIONAL PARKS ASSOCIATION BULLETIN, Number 1. January 1st, 1924.

This interesting Bulletin is devoted to the preservation of the National Parks of Canada. It sets forth clearly that various commercial interests are putting forth great efforts to exploit certain resources in our National Parks, the property of the Canadian people, in the expectation of private pecuniary gain. The application of the Calgary Power Company to dam Spray River and thus flood the basin of the Spray Lakes for a reservoir to be used for power purposes is dealt with in particular, as being the most imminent of such efforts. The granting of such an application to destroy for commercial purposes some of the marvellous scenery of our National Parks would create a precedent which would open the way for the granting of further concessions, thus leading to the spoiling of the National Parks for the purposes for which they were created, namely, the providing of great natural recreation areas, and the keeping inviolate of the wonderful scenery and wild life which they contain.

To assist in meeting this situation the Canadian National Parks Association was formed, with a membership from coast to coast. This Association aims at the preservation of the National Parks of Canada in their entirety for the use of the people of Canada and of the world and at the preservation of their natural beauties for the benefit of mankind, and of the fauna and the flora intact, for educational, scientific, artistic and recreational purposes. The President is Lt.-Col. W. W. Foster, D.S.O., Vancouver, B.C.; the Secretary is Arthur O. Wheeler, Sidney, B.C.; and the Treasurer is Andrew S. Sibbald, Saskatoon, Saskatchewan. Provision is made for various classes of membership for individuals, clubs and associations, with fees ranging from one dollar a year for annual members to fifty dollars in one payment for life members.

An appeal is made in this number of the *Bulletin* for financial support, to enable the Association to become strongly organized and to carry on necessary publicity work. It is also requested that all who favor the preservation of our National Parks in their entirety should make this very clear to their representatives in Parliament.

The cause of the Association is a most meritorious one and the need for its activities is great and urgent. It is sincerely to be hoped that it will obtain the assistance and the success which it deserves.—H. F. L.



other members of which have any vestige of a spinous dorsal fin. It seems certain that this family will have to receive reallocation.

American zoologists who may desire to examine this astounding little fish will be gladly supplied with specimens on request.

HUGH M. SMITH

DEPARTMENT OF FISHERIES,  
BANGKOK, SIAM

### CRITICAL POTENTIAL MEASUREMENTS

IN your issue of Dec. 11, 1926, there appeared an article by Dr. George Glockler on "Critical Potential Measurements: A Correction for High Emission Currents." The author notes that when the emission current becomes appreciable one must no longer consider the resistance of the tube to the infinite. He suggests that the p.d. between anode and cathode as calculated by a potentiometer scheme be corrected for this condition. I would like to suggest that there is nothing original in this suggestion. The tube simply acts as a shunt across a section of the potentiometer resistance and the calculations are carried out in precisely the same manner as for any shunted instrument.

I might add that I have used this correction factor for the last five years in measurements on vacuum tube characteristics. However, I have never regarded the matter as an original procedure.

JOHN G. FRAYNE

DEPARTMENT OF PHYSICS,  
ANTIOCH COLLEGE

### "DATA IS" OR "DATA ARE": WHICH?

It is far from my desire to be unduly critical in regard to the use of scientific terms, but I have long hoped that some one would call attention to the incorrect use of the word "data" now too prevalent.

"Memorandum" and "memoranda," words seldom seen or heard now-a-days, seem to have been comprehended readily and honored by correct use almost invariably: why not "datum" and "data"? Yet in about one scientific article in six, often in those sponsored by institutions of the highest reputation, there will be found the careless, ignorant or indifferent use of these words. Sometimes the blame may be laid to inadequate editing, often where we least expect it; but primarily it is the fault of authors—even though their names are followed by a generous share of the alphabet, indicating that much time has been spent in scientific circles, and correctness should be expected. In the interest of scientific precision and to maintain proper standards it is time to call a halt on this unfortunate practice.

Probably the expressions "this men is" and "much

children does" would grate even upon the sensibilities (at least, let us hope so!) of those who make use of "this data indicates," "much data has," etc.

A. P. MORSE

PEABODY MUSEUM,  
SALEM, MASS.

### THE INDICATION OF QUOTATIONS

MR. S. M. NEWHALL has recently<sup>1</sup> called attention to the need for a pair of equivalents, in oral speech, for the unwieldy phrases "quotation begun; . . . quotation closed."

May I suggest that we find in ordinary telegraphic language many instances of the reduction of such cumbersome expressions to others more concise, graphic, and effective?

In this case the usual rendering is "quote . . . unquote."

JOHN W. ARNOLD

WESTERN UNION TELEGRAPH COMPANY

### SCIENTIFIC BOOKS

*Coffee.* By RALPH H. CHENEY, New York University. Pp. 244, 77 plates. The New York University Press, 1925.

THIS book is a very unusual combination of scientific research and practical information. It is a curious fact that coffee, one of the most familiar and important plants, has never before been adequately investigated. Cheney has certainly filled this gap in our knowledge in a most complete way, so that everything known about coffee is now on record.

Part I contains the scientific presentation of the botany of coffee. Its four chapters give in detail taxonomic descriptions of the nineteen known economic species. Associated with these scientific descriptions, much interesting information is given as to the native names, the history and the uses of coffee. The bibliographical references are remarkably complete, so that the whole literature of the subject is available.

Part II consists of an economic discussion of coffee. The story of the indigenous distribution of the economic species and the principal countries where they are now grown is most interesting. All these data are given with a wealth of detail that is surprising. A full description is also given of the preparation of the coffee-bean, the plantation treatment and the treatment by wholesale distributors. A very interesting chapter describes commercial sophistication and substitution, giving the botanical sources of coffee-substitutes and adulterants and also the methods of

<sup>1</sup> SCIENCE, LXIV, 427.



detection. An important chapter deals with the chemistry of coffee, which should be of great interest to investigators.

Having to deal with so many nations through such a stretch of time, Cheney has presented in two appendices an interesting ethnological discussion, showing the effect of the introduction of coffee on the political and social life of the metropolitan centers of Egypt, Arabia, Asia Minor, Europe and America. In the derivation of the term "coffee," Cheney presents a new theory, based on philological and botanical research backward through several oriental languages, and resulting, as is said, "in the correction of an error which has existed since the tenth century."

This book deserves wide attention, for it is a new kind of presentation of an important economic plant. A well-known coffee firm has made the following statement: "For exhaustive scientific research, for wealth of bibliographical reference to a species of plant life that has become a great economic factor, it is likely to be accepted as an authoritative and standard work."

JOHN M. COULTER

THE BOYCE THOMPSON INSTITUTE

## SPECIAL ARTICLES

### CONIFERS AND THE COAL QUESTION

FOR over a century and a half a controversy has raged in regard to the origin of that all-important mineral, coal. On the one hand it has been maintained that its raw materials are the result of transport by water and that consequently coal is essentially of the nature of an aqueous organic sediment. On the other hand, the opinion has been held that coal is in the main the result of vegetable accumulations similar to those in actual circum-polar peat-bogs, consisting of the subaerial deposits, representing successive generations of fallen peat plants. The first view of the origin of coal is usually called the allochthonous or transport theory. The second is known as the autochthonous or *in situ* hypothesis. European geologists have in the main in recent years held to the latter view and their American colleagues have for the most part followed them in this opinion. It is important to emphasize however that the earlier and even the current views in regard to the origin of coal are for the most part arrived at in complete ignorance of its organization. Except in very recent years figures revealing the organization of coal are conspicuously absent in geological works, even in those which particularly deal with coal. It is apparently not without significance that the French, who above all others gave early attention to the actual organization of coal, are supporters of the transport or aquatic

hypothesis of the origin of coal. Although new methods and improved old methods now give us real insight into the organization of coal, there is as yet unfortunately in general little observable rational improvement in geological theories regarding the formation of coal deposits.

The Tertiary coals as being nearest to our times and consequently representing conditions most easily compared with those of to-day, suggest themselves as most likely to resolve finally existing controversies. In this connection the lignitic remains in a large number of Tertiary coals have been examined in the writer's laboratories with results which are apparently highly significant. It has long been the custom in central Europe to compare the Tertiary coals with such formations as occur to-day for example in the Dismal Swamp. The characteristic Conifer of such swamps is *Taxodium distichum* and the abundant remains of wood in German coal deposits were referred to this or a similar species under the generic name *Taxodioxylon*. A notable difficulty in this connection is the fact that the conspicuous "knees" or pneumatophores of *Taxodium* have never been found even in the often excellent preserved remains of supposed *Taxodium* stumps, in the central European brown coals.

Over two decades ago the present writer pointed out that a reliable diagnostic feature of our two living species of *Sequoia* is their reaction to wounds. In *S. washingtoniana* (the Big Tree) and *S. sempervirens* (the Redwood) resin canals are formed in the wood of the wound cap. This feature distinguishes *Sequoia* from all other genera possessing the Cupressinoxylon type of wood and holds also for the Laramie (upper) Cretaceous (the most remote epoch in which true *Sequoias* have been found). It now turns out that in many cases the supposed *Taxodiums* of the German Tertiary coals are in reality *Sequoias*. Both our living species of the genus are mountain trees and in no case are they ever found in swamps. As a result of this addition to our knowledge of the most important ligneous remains of the central European coal deposits, a change of view is necessary in regard to the conditions under which they have been accumulated. It is now admitted even by some of our German colleagues that there must have been inundations (*Ueberschwemmungen*) by means of which the remains of *Sequoias*, at that time abundant throughout the northern hemisphere, were washed into the coal bogs. Unfortunately this concession does not go far enough, for an examination of Tertiary coals, in the writer's laboratories, covering North America, Europe and Asia, shows not only the presence of *Sequoias*, but at the same time a general organization typical of the organic sediments found in the



fairy-tale of the Taulipáng, and also reproduced by the phonograph a number of dance songs and flute melodies. The incantations, of which he has recorded a number in the original text with interlinear translation, represent the most important results of the expedition, as up to the present time such material from South America was unknown.

A. Poznanski discussed the archeological excavations in Tiahuanaco at Lake Titicaca.

F. N.

**Indian Remains in Maine.**—Early this year the Department of Archeology of Phillips Academy at Andover, Mass., sent an expedition to Maine to conduct an exploration of various sites. By the end of August the party had located and mapped a hundred or more shell-heaps and village sites. Forty-eight shell-heaps were found within ten miles of Bar Harbor, and if the circle be extended to fifteen miles, there must be at least 75. Several of these were examined, and hundreds of bone and stone implements taken therefrom. The coast from below Blue Hill to Bar Harbor (excepting the Castine region) was carefully investigated in the hope that a "Red Paint People" cemetery might be discovered; but in spite of much searching, no undisturbed site could be located, although disturbed cemeteries were found at Blue Hill and at Sullivan Falls, and about two hundred stone objects removed therefrom. The largest shell-heap lies on Boynton's Point in the town of La Moine. This deposit is more than 200 meters long and 20 to 30 meters in width. It is roughly estimated that some 7,000,000 clam-shells are in the heap. About 1100 articles of bone and stone were taken from this heap. The harpoons collected by the expedition number 185 or more, and present several types of hafting and barbing. Sections of the shells were removed in an undisturbed condition and sent to Andover in order that a cross-section may be exhibited for the purpose of giving visitors and students a better idea of shell-heaps than the usual exhibits of articles removed from such places. Altogether about 4200 objects were collected from the sites during the season. The expedition ended its labors about September 15. Dr Charles Peabody directed the work, with Mr W. K. Moorehead as curator in charge through the season. Francis Manning, of Harvard, was assistant, and Ernest Sugden surveyor. The party numbered twelve or fourteen persons and the work done was extensive.

**A Haida Food Plant.**—In the Haida stories recorded by the writer in 1900-1901 on Queen Charlotte islands, British Columbia, several references are made to a plant called in the Skidegate dialect *taga'nskia*



and in Massett *ta'nsk!ia*, the roots of which were used as food. This has since been identified by Dr Charles F. Newcombe, of Victoria, British Columbia, well known for his scientific researches along the north Pacific coast. In a letter written to Professor Boas about two years ago he has the following to say regarding it:

"The Skidegate people always told me that it grew at Tl'el [about 10½ miles north of the entrance to Skidegate inlet], but this year they were able to show me a few plants growing in the graveyard at Skidegate, and later I found one family using it, in a fish camp near Massett, under the same name. They had a lot of roots, about as thick as a lead pencil, and were about to roast them slowly in the embers of the fire at which they were toasting fish. They said that the pith of the roots would then become as sweet as sugar.

"The plant is evidently a Lupin, probably *Lupinus littoralis* Dgls., and I found a quantity of it growing on the sea-shore, near Rose Spit, close to some very old driftwood camping places, with long roots with granular excrescences. The roots reached far into the loose sand, exactly as described by the original collector, Douglas, on the coasts to the north of Columbia river, where, too, the natives cooked them in the same way. The plants agree with his description so far as I can say."

J. R. SWANTON

A MISCELLANY in honor of the sixtieth birthday of Dr William Ridgeway, professor of archeology in Cambridge University, is in course of preparation for publication. The volume will contain some congratulatory verses by A. D. Godley, public orator in the University of Oxford, Greek verses by Professor John Harrower, a photogravure portrait of Professor Ridgeway, and a series of articles on classics and ancient archeology, medieval literature and history, and anthropology and comparative religion. In the latter subjects the contributions are as follows: E. Thurston, "The Number Seven in Hindoo Mythology." T. A. Joyce, "The Weeping God." S. A. Cook, "The Evolution and Survival of Primitive Thought." J. G. Frazer, "The Serpent and the Tree of Life." W. Boyd Dawkins, "The Settlement of Britain in the Prehistoric Age." W. Wright, "The Mandible from the Morphological and Anthropological Point of View." C. G. Seligmann, "Ancient Egyptian Beliefs in Modern Egypt." W. L. H. Duckworth, "Craniological Notes." W. H. R. Rivers, "The Contact of Peoples." J. Rendell Harris, "The Dioscuri in Byzantium and its Neighborhood." C. S. Myers, "Primitive Music." Henry Balfour, "Some Peculiar Fishing Appliances and

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Once more the anthropological reader feels profoundly grateful for the enterprise of the publisher in providing this profusely illustrated and in most respects admirable work of reference.

ROBERT H. LOWIE

*Studies on the Origin of Cultivated Plants.* N. VAVILOV. (Bulletin of Applied Botany and Plant-Breeding. 26: 1-248, 139-248 in English, maps in the Russian text, Leningrad, 1926.)

This monograph, dedicated to the memory of De Candolle, seems to be the most substantial contribution made since his day to the history of our main cultivated plants. Vavilov particularly stresses the importance of a strict differentiation of a cultivated plant into Linnean species; and the "determination of the centres where the diversity of genetically allied species is concentrated." Thus, in contrast to De Candolle, who assumed a single origin for all cultivated wheats, the author recognizes three "genetical groups of species," distinguishable by the number of chromosomes and showing in crossing with one another complete or partial sterility while species within the same group are readily crossed with one another and yield fertile offspring. Applying his second point to the group of *Triticum vulgare*, Vavilov finds that

The entire diversity of morphological and physiological characters, established at present for soft wheat, is contained in the mountainous districts of South-Western Asia. (P. 156).

On the other hand the *Triticum durum* type by the same token is connected with Northern Africa, and the third type is traced to Asia Minor and the adjoining region (pp. 158-162).

Similarly, two autonomous centres—one in Abyssinia, the other in South-eastern Asia—are recognized for barley. Crosses between the two groups resulted in a marked partial sterility (pp. 168-173). Even more definitely polyphyletic are the species of oats, of which five geographical and genetical groups are recognized. Contrary to the received opinion that *Avena sativa* is a definitely European crop, Vavilov finds many varieties of it in Mongolia and Northern China, while the genetically kindred *A. nuda* forms belong in their whole diversity exclusively to China and the Southern adjoining countries. (pp. 173-178)

Regarding millet, Vavilov makes some unexpected statements. He accepts Buschan's conclusion that the cultivation of this crop in Egypt in prehistoric times is not proved



and remarks that

Evidently, millet has moved from Asia into Europe together with the nomads.

The maximum of diversity is displayed by Eastern and Central Asia (pp. 178-181). This criterion leads the author to seek the origin of flax in or near India, where (as he points out) it is raised exclusively for oil, while in Asia Minor and ancient Egypt this is combined with the cultivation for fibre (pp. 182-195)

In agreement with Engelbrecht, Vavilov derives cultivated rye from weed-rye mixed with wheat and, to a lesser extent, with barley.

The whole diversity of the forms of rye, the varietal riches, are concentrated in regions where rye as a cultivated plant is either of secondary importance or of no importance at all,

that is, in Afghanistan, Persia, Transcaucasia, Asia Minor, and Turkestan. Here rye is simply considered a nuisance jeopardizing the real crops of wheat or barley. But in the mountain districts of Bokhara, Afghanistan, and Asia Minor,

rye from a weed gradually changes into an independent crop,

pure rye being sown at an altitude of 2000 m. and upward.

It is a curious fact, that at the border line of the struggle between winter rye and winter wheat it is an ancient custom with the farmers to sow out a mixture of rye and wheat. Not expecting to obtain a return of wheat every year, the farmer sows out the mixture of rye and wheat on purpose, hoping that if the wheat is killed by an adverse winter, rye will stand it and produce at least half of the expected yield.

In this case also the author contends for a plural origin of the cultivated crop (pp. 196-209).

Similar to the connection of rye with wheat is that of oats with emmer, of *Eruca sativa* with flax, and of several other plants, all of which Vavilov separates as "secondary crops" from the "primary" group including wheat, barley, flax, rice, and cotton (pp. 209-217).

Unfortunately, it is impossible now to restore the process of introduction of oats into cultivation, as the initial crop, emmer, has vanished to a large extent and many stages of the history of cultivated oats cannot be traced back in detail. We see here a curious fact of a crop being carried into the North by another, at the present time an almost extinguished one.

Since the

entire varietal and racial diversity of the field and vegetable crops is concentrated in mountainous districts,



the author deprecates the theory that agriculture evolved in the great river valleys ordinarily connected with the higher civilizations and favors its origin in such areas as the Caucasus, mountainous Bokhara, Afghanistan, Asia Minor, and Abyssinia (pp. 218-220).

Concerning hemp (pp. 221-233), Vavilov points out that wild and weed hemp settle on rich fertilized soils; they thus naturally followed man

keeping near his dwelling places, settling on rubbish and everywhere where the soil was manured . . . . During famines, when man turned to the seeds and fruits of wild plants, he naturally chose hemp with not shattering large fruits.

Later hemp was utilized for fibre, hashish, and finally for oil manufacture.

To account for the origin of the primary crops, the author advances the ecological principle, foreshadowed in the discussion of hemp, that wild species form one ecological group with the most closely related cultivated plants.

The nearest wild forms must be sought in conditions approaching those of cultivation . . . . There is little doubt that the primitive species of some wild plants had already ecological tendencies, which induced man to utilize them. It is evident to us, that man took in most cases what was offered to him. For many plants the process of their introduction into cultivation took place almost independently of the will of man (pp. 234-236).

Geographically regularities are noted in so far as the Mediterranean area produced large-fruited, large-seeded and large-flowered forms, while in Southwestern Asia (India and vicinity) there are small-seeded, small-fruited and small-flowered forms (pp. 237-240).

At least five world centres of cultivation are defined (pp. 241-245). (1) South-western Asia, including India, Persia, Afghanistan, Asia Minor and Transcaucasia, has given rise to soft and club wheats, rye, small-seeded flax, small-grained peas, lentils, horse-beans, cotton (*Gossypium herbaceum*, *G. arboreum*). (2) Southeastern Asia, including mountainous China, Japan, Nepal and adjoining regions, is connected with naked oats, hull-less barley, millet, etc. (3) The Mediterranean, including Northern Africa, as well as Palestine, Syria, parts of Asia Minor and Southern Europe, produced durum wheats, a series of oat species, of large-seeded flax, large-grained peas, horse-beans, lentils, beet-root, etc. (4) Abyssinia has a great diversity of hulled barley forms, violet-grained wheats, original races of peas, peculiar races of oats. (5) The New World centres.

An Island centre, including the Philippines, is referred to as a probable sixth area, but one not yet adequately studied.

It cannot fall within an anthropologist's province to criticise the botanical findings of such a monograph. The purpose of this review is merely to direct the attention of culture historians to a monograph otherwise easily overlooked by them and which, notwithstanding its repetitiousness and occasional anthropological naïveté, contains a vast amount of suggestive material for us. One point, however, may be made regarding the constantly stressed multiple origin theory advanced by Vavilov. From the botanical distinctness of species-groups it does not follow that the *idea* of cultivating a plant such as wheat evolved independently: that idea may well have been diffused, the borrowers applying it to new forms of the same genus.

ROBERT H. LOWIE



Ethnobot

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~~Discussion.~~ The paper was discussed by Messrs. WHITE, L. H. ADAMS, and HAWKESWORTH.

~~W. P. WHITE presented an informal communication, Some results obtained during tests of a crude calorimeter. This communication was discussed by Messrs. Humphreys and Tuckerman.~~

~~J. P. AULT, Recording Secretary.~~

## THE BIOLOGICAL SOCIETY

### 659TH MEETING

The 659th meeting of the Biological Society was held in the lecture hall of the Cosmos Club January 5, 1924 at 8 p.m., with Vice-President OBERHOLSER in the chair and 60 persons present.

New members elected: C. S. BRIMLEY, FRANK C. BALDWIN.

The membership of the following committees was announced: *Committee on Communications*: E. A. GOLDMAN, chairman, S. A. ROHWER, H. C. OBERHOLSER, C. E. CHAMBLISS, J. S. GUTSELL, W. R. MAXON; *Committee on Publications*: C. W. RICHMOND, chairman, J. H. RILEY, T. E. SNYDER, F. C. LINCOLN, G. S. MILLER, JR.; *Committee on Zoological Nomenclature*: G. S. MILLER, JR., chairman, P. BARTSCH, S. A. ROHWER, E. A. CHAPIN, H. C. OBERHOLSER.

President J. W. GIDLEY was elected a vice president of the Academy of Sciences as representative of the Biological Society of Washington.

Under *Short Notes*, S. F. BLAKE, announced the observation of a Bluegray Gnatcatcher in Washington on January 1, 1924.

W. E. SAFFORD: *Economic plants as indicators of the origin and migrations of primitive races* (illustrated). Ethnologists and anthropologists often disagree as to the importance of the arts and industries of a primitive tribe or the physical characteristics of a people as factors in determining its origin. In contrast with the similarity between arts which may have originated separately and with resemblances which may be more or less fortuitous or imaginary, the botanist has something definite to offer when he contributes his aid in solving questions of origin and relationship of primitive races.

When the earliest explorers of the Pacific Ocean encountered the Polynesians they found that they were cultivating a number of plants for food and for economic purposes, nearly every one of which had been known for centuries in southern Asia and the adjacent islands. The most important were coconut, breadfruit, bananas, plantains, common yam (*Dioscorea alata*), turmeric, Polynesian arrowroot (*Tacca pinnatifida*), sugar cane, species of screwpine (*Pandanus*), also a number of trees such as *Hibiscus tiliaceus* and the candlenut (*Aleurites moluccana*). The plant from which the Hawaiians derive their *poi* and the Samoans their *palusami* proved to be identical with *Colocasia esculenta*, the qulqás of the Arabs and the arum of ancient Egypt. Nearly all these plants could be traced to the Malay Archipelago and many of them even retained their ancient Malayan names. The dialects of the Polynesians themselves could also be traced back to the same source, demonstrating the absurdity of the theories, so often repeated in recent times, that the Polynesians are of Caucasian origin.

Turning to America there is a striking contrast. Every cultivated plant encountered in the New World by Columbus and his companions and by their successors on the mainland both north and south of the Equator was unknown before the discovery. No foodplant or other cultivated staple from Europe, Asia, or Africa had reached this continent in Precolumbian times. Even the various species of cotton used for textile purposes in the Antilles and on



the mainland were so distinct that they would not cross with Old World species. All the plants cultivated by the various tribes had been developed from wild American plants,—maize from a wild grass, beans from vines in thickets, sweet potatoes from wild morning-glories, squashes and pumpkins from wild gourds, white potatoes from wild *Solanums* growing in the Andine region of South America, and tobacco from wild species of *Nicotiana*.

Very little is known regarding the connection between the tribes of North and South America. By linguistic methods, however, it is possible to trace connections between the Aztecs of Mexico and various tribes in North America as far as the Shoshones to the northward, and a relationship to other tribes of Salvador and Costa Rica to the southward. Making use of the common foodplants, tobacco, peanuts, cotton, *Bixa orellana* and *Genipa americana*, used for painting the body, it is possible to trace the origin of the Caribs and Arawaks encountered by Columbus in the West Indies to the very heart of South America. Similarly the black Caribs of Guatemala, descended from negro slaves and their Carib masters of the West Indies, can be traced by means of their manioc, or cassava, and other food plants to the Caribs of the Antilles; and this relationship is corroborated by the language which they still speak, that of the women and the men differing from each other, as it did in those islands.

There is a difference between the intrusion of a plant with its complex method of cultivation and preparation, and the introduction of a plant by means of seeds or roots sent from one country to another. An example of this is the manioc just referred to. When the black Caribs were transported from their island home to the east coast of Central America, they took with them their method of preparing the cassava, expressing the poisonous juice by means of a long hollow woven snake-like cylinder. When manioc roots were sent to Africa, not carried there by immigrants, no knowledge of methods of manufacture of cassava accompanied them; and the natives at present prepare it by allowing the root to ferment and thus destroy its poisonous qualities. They do not have the peculiar snake-like tubes, which were first invented by tribes in Brazil, carried into the Antilles and thence to the mainland of Central America. This is a striking example of the difference between the introduction of a plant and of the bringing into a new country of a complex by migrant tribes or groups of people. Maize found its way to the Island of Guam together with the *metatl* and *mano*, and was prepared in the form of tortillas; thus establishes the fact that Mexicans migrated from Mexico to Guam, as we know to be the fact, when the Spaniards transported Mexican troops to reduce the native Chamorros. The introduction of corn, beans, and squashes into North America from the south was a very different matter. Evidently the seeds were carried there by people not familiar with Mexican or Central American methods of preparing these articles for food. Thus it may be seen that cultivated plants are important as indices of the origin and migrations of primitive peoples. (*Author's abstract.*)

VERNON BAILEY: *Some habits of the grasshopper mouse, an insect-eating rodent* (illustrated). The speaker exhibited a specimen of *Onychomys leucogaster melanophrys*, a grasshopper mouse from northern Arizona, and described its habits, both in the wild state and in captivity. The animal is very active, almost weasel-like in some of its actions.

#### 660TH MEETING

The 660th meeting was held at the Cosmos Club January 19, 1924 at 8 p.m., with President GIDLEY in the chair and 41 persons present.



for astronomy, for aluminum surfaces make telescopes work so much better that a 60-inch mirror instrument is as good as a 100-inch instrument. The difference in cost is nearly a million dollars.

Coating of the present world's champion telescope mirror with aluminum is the culmination of a series of experiments rushed through in the last few weeks.

Just a few days ago the 60-inch mirror at Mt. Wilson was aluminized and hurried back into place to test its im-

proved reflecting power. Ten smaller auxiliary mirrors have likewise been coated.

The previous champion of aluminized telescopes was the 36-inch mirror at Lick Observatory, also coated by Dr. Strong with his vacuum evaporation apparatus. This mirror was found to give fifty per cent. better reflection than ordinary silver for photographic purposes. The aluminum surface does not need to be re-applied frequently as does silver.

*Science News Letter, March 9, 1935*

Use of short-wave radio in medicine is no new thing; it has been successfully employed for several years in the treatment of certain diseases requiring a rise in temperature. Hitherto, however, the whole patient has been put into a state of "artificial fever." Dr. Nagelschmidt's advance consists in finding a method for localizing the effect.

*Science News Letter, March 9, 1935*

#### MEDICINE

## Short Radio Waves Used For Treating Parts of Body

**S**HORT radio waves promise speedy relief for the particular kind of painful and often disabling lame shoulder or elbow which physicians call bursitis. This new medical use of short radio waves was announced by Dr. Willis R. Whitney, vice president in charge of research of the General Electric Company.

Bursitis was described by Dr. Whitney as "sand in the human bearings."

**S**HORT radio waves can now be used in medical treatment of selected regions of the body, by a technique developed by Dr. Franz Nagelschmidt of St. Bartholomew's Hospital, London, England. Dr. Nagelschmidt interposes a cylinder of wax and ebonite between the radio generator and the patient, localizing the heating effects of the radiations, which have wave lengths of from three to twenty meters (*Nature*, Feb. 23).

#### ARCHAEOLOGY

## Cornfield Discovered Beneath Georgia Mound

**A**N INDIAN cornfield of the "deep South" so old that, after it was abandoned, an Indian mound was built on the furrowed ground, has been discovered near Macon, Ga., in perfect condition.

The cornfield reveals a system of cultivation known to the ancient mound builders of the South but entirely different from the typical Indian method of corn-growing. The field, discovered under the mound, was preserved through perhaps a thousand years by the sand mound raised over it and a thick cap of red clay loam over that which shut out rain and weather influences.

Discovery of the field is announced by Dr. A. R. Kelly, who has been mak-

ing extensive explorations of Indian mounds and village sites near Macon for more than a year. The work was inaugurated as a Smithsonian C. W. A. project, and is now being continued by the State and local F. E. R. A. in cooperation with the Society for Georgia Archaeology.

Air views show the parallel rows of furrows that crossed the ancient field, as plain as the furrows in a modern cornfield near by. The ancient and modern fields look strikingly similar. But this is a superficial resemblance, says Dr. Kelly, for the straight rows today are achieved by the plow, something unknown to the prehistoric farmers of America.

The so-called Indian way of planting corn, taught to colonists of New England by friendly Indians, was to heap up little hills of earth at intervals all over a field. Each hill was planted with a few kernels, and manured, hoed, and tended as a separate farm unit.

The cornfield discovery, explains Dr. Kelly, shows that prehistoric agriculturists of Georgia hoed their corn, pulling up the soil around the plants in close-set hillocks arranged in furrows. So regular was the pattern of hillocks that only a slight curving contour shows when the field is seen from a height or distance.

*Science News Letter, March 9, 1935*

no alteration in the Heaviside layer could account for the large size of the time discrepancies. In considering these aspects it was found that the average length of time required for trans-Atlantic transmission is approximately .04 second.

*Science News Letter, March 9, 1935*

#### ENGINEERING

### Use Colored Concrete in Fight Against Accidents

**R**OADS the hue of the gay, orange-colored marigold flowers are the latest idea tried by British highway engineers in their intensive campaign to reduce the toll of accidents.

Short experimental stretches of this marigold road have already been laid down in several parts of the country, and Leslie Hore-Belisha, Britain's energetic Minister of Transport, has approved further trials on a large scale.

The chief advantage claimed for this coloring is that it reduces sunlight glare during the day and dazzle at night, while it is also suggested that these colored roads will give pleasure to the traveler's eye.

This experiment has already been tried out in the Channel Islands—Britain's small islands off the coast of France. Here the marigold roads were

#### GEODESY

## Moon Varies Distance Between Europe and U. S.

### 63-Foot Difference Found by Harvard Astronomer And New York Scientist By Study of Radio Signals

**T**IDES in the solid earth which alter the distance between the North American and European continents by as much as 63 feet have been discovered by Prof.

from the Naval Station at Arlington, Va., English time signals checked at Greenwich and broadcast from Rugby, and French time signals checked at





FIG. 16.—WILD-CHERRY BARK Cherokee 21

*Wild-cherry bark.*—For intermittent fever. This disease is believed to be caused by the colonization of malicious insects or worms under the skin. In the preparation of the medicine, the bark is infused in water into which seven coals of fire have been put. The patient is placed with his head toward the rising sun; the doctor, standing in front, with medicine cup in hand, invokes in succession the spirits of the air, of the mountain, of the forest, and of the water; after each invocation he takes some of the liquid in his mouth and blows it on the head, the right shoulder, the left shoulder, and the breast of the patient. The ceremony may be repeated each day for four days (fig. 16). Cat. No. 143160, U.S.N.M.

Whitehead in Proc. U.S. Nat. Mus. vol. 67, p. 21, 1925

# EXPLORING FOR PLANTS

By David Fairchild

Plants, lands, and people are described by this tireless plantsman who traversed the globe's strange corners from the Balearic Islands to Sumatra in search of useful plants that could be introduced into American agriculture.

David Fairchild is an honored name among plantsmen and naturalists the world over. Most of his life has been devoted to furthering the work of the Office of Foreign Plant Introduction of the U. S. Department of Agriculture. From Panama to Puget Sound there are foreign plants that are growing up into useful trees, vines and plants - all brought here under Dr. Fairchild's supervision.

The sixty-three chapters of EXPLORING FOR PLANTS take you with the expedition into Ceylon, the Canary Islands, Minorca, Sumatra, Algeria, Morocco, Mogador, Java, Sibolangit, Singapore, The Medan, Switzerland, Takengon, Het Bovenland, French Guinea, Liberia, Fouta Djallon, Malaga, Colombia, and Java.

Dr. Fairchild writes a plant book that is also a travel book in EXPLORING FOR PLANTS. With his scientific training and his lively curiosity, he brings us new material and fresh impressions from these ports of call. The 190 illustrations crowd the book with color and there are abundant anecdotes.

580 Pages, 190 photographs, index, set in clear, readable type, bound in green cloth - Special Offer \$2.50

## CURIOUS FACTS FROM THE BOOK

A black landscape on the slopes of Montana de Fuego which is almost devoid of vegetation receives only the moisture of dew and clouds, yet grapes from this strange vineyard sometimes produce 100 gallons of wine from a single vine.

A dwarf maize growing in the volcanic ash of Lanzarote takes as long a time to become two feet high and produce one ear as our Kansas corn does to produce four ears and reach a height of twelve to eighteen feet.

## ABOUT THE AUTHOR

David Fairchild has held many offices and been awarded distinguished honors. Director of the National Geographic Society, and President of the American Genetic Society, he inaugurated in 1897 the plant explorations which have since grown into the Office of Foreign Plant Introduction. In 1931 he received the George Robert White medal, the highest horticultural award in America. Under his supervision, more than thirty expeditions have been sent out and 30,000 species and varieties of useful plants have been introduced into the United States.

Among the possible ancestors of our American corn is a dwarf maize discovered by David Fairchild in the volcanic ash of Lanzarote.



THE BRINTON LECTURES.—Dr. Daniel G. Brinton delivered a course of six lectures on general archeology before the Academy of Natural Sciences of Philadelphia between January 29th and March 5th. The titles of the individual lectures were: The aims and methods of archeology, Africa in the semi-historic and pre-historic periods, Asia in the semi-historic and prehistoric periods, Europe in the semi-historic and prehistoric periods, and the Island World in the semi-historic and prehistoric periods.

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“CAMPHOR LANGUAGE” IN MALAY.—The camphor tree (*Dryobalanops camphora*) grows abundantly in certain parts of the peninsula, but only occasionally contains camphor crystals. Now, the camphor in question is not at all similar to that obtained from the camphor laurel; it is known in commerce as Borneo camphor, or Borneol, and is in great demand by the Chinese, who use it in embalming their dead, as an incense, and in medicine. Being rare, it always commands a high price. As it by no means follows that each camphor tree contains this valuable product—in fact, it being rather the exception than the rule—recourse must be had to the species of witchcraft known as “Patang Kapor.” Therefore, to insure good luck, the hunters while on their expedition must speak the camphor language and observe certain practices in order to propitiate the spirit of the camphor tree, which is known by the Jakun name of *Bisan* (lit., a woman). Her resting-place is near the trees, and at night when a peculiar noise, much resembling that of a variety of cicada, is heard in the forests, the *Bisan* is abroad, and camphor will surely be found in the neighborhood. The language of the camphor spirit consists of a mixture of Jakun and Malay words, with a large proportion of words of Malay origin, but curiously altered or reversed.—*Lake in The Geographical Journal, London, April, 1894, p. 286.*

If individual Eskimo could repeatedly cross the Atlantic in their kayaks, even with the aid of storms, the comparatively easy voyage from Labrador to Greenland would surely be feasible. The papal letter of 1448 speaks of a fleet of heathen coming (about 1418) to lay waste the greater part of the Greenland colony and carry off many of its people, but it does not say whence the fleet came. In present conditions, or any past conditions that we know of, this point of departure could hardly be in northern Greenland, where sleds take the place of water-craft. The most probable starting point for any Eskimo fifteenth century invasion would be on some fairly open and relatively well populated coast. Labrador fulfils these conditions better than any region above Davis strait, and the suggestion seems in accord with the most natural understanding of the traditions preserved by Packard. It is well known that the Labrador Eskimo were regarded as belligerent and dangerous by the early explorers, and the long struggle of the former against the neighboring Algonquian tribes and their heavy losses, for example on Esquimaux island, are matters less of legend than of history. Moreover, they sharply attacked Davis in Greenland. So we cannot gauge their past capabilities of aggression and enterprise by their present very docile temper.

WILLIAM H. BABCOCK

WASHINGTON, D. C.

#### COONTI

IN the *Handbook of American Indians* Professor Chamberlain states that this word refers to "a cycadaceous plant (*Zamia integrifolia*), or the breadstuff obtained from it by the Seminole of Florida." He adds that "*kunti* is the name of the 'flour' in the Seminole dialect." This information is evidently drawn from MacCauley's paper on The Seminole Indians of Florida in the *Fifth Annual Report of the Bureau of Ethnology*, where the method of making coonti flour is described at some length. In the course of my investigations among the Alabama (Alabama) of Texas, I heard much of this plant, called by them *kā'nta*, and obtained a specimen of it, which Mr Paul Standley of the National Museum has identified as *Smilax lanceolata*. It was evidently a smilax that had been previously described to me as coonti by an old Creek Indian born in Alabama before the removal of the Creeks, "a brier that climbed up on trees like a vine." William Bartram, in his *Travels through North and South Carolina*, speaks of "a very agreeable cooling sort of jelly, which they call conte." "This," he goes on to say, "is prepared



from the root of the China briar (*Smilax pseudo-China*; *Smilax aspera*, fructu negro, radice nodosa, magna, lævi, farinacea; Sloan, tom. I, p. 31. t. 143. f. i. habit. Jamaica, Virginia, Carolina, and Florida): they chop the roots in pieces, which are afterwards well pounded in a wooden mortar, then being mixed with clean water, in a tray or trough, they strain it through baskets; the sediment, which settles to the bottom of the second vessel, is afterwards dried in the open air: and is then a very fine reddish flour or meal: a small quantity of this mixed with warm water and sweetened with honey, when cool, becomes a beautiful, delicious jelly, very nourishing and wholesome. They also mix it with fine corn flour, which being fried in fresh bear's oil makes very good hot cakes or fritters." Hawkins also says the China briar "is called Coonte," and he describes the way in which flour was extracted from it. It is therefore evident that at least two species of smilax were known as coonti by the ancient Creeks, and, since the cycadaceous plant which now bears that name among the Florida Seminole is confined to southern Florida, it is evident that it could have been used only after the Seminole reached that country from the north. Originally it is evident that the term must have been applied to several species of smilax having large reddish roots. It is not a little curious that Dr Havard, in his paper on "Food Plants of the North American Indians,"<sup>1</sup> refers to the *Zamia integrifolia* as coonti and also quotes Bartram regarding the use of the China briar without noting that Bartram applies the same native name to the latter.

That the *Zamia integrifolia* was used by those Indians who occupied southern Florida before the Seminole is indicated by Fontaneda (about the middle of the sixteenth century), who says of the Indians around Lake Mayaimi (presumably Lake Okechobee) that they "live on bread made from roots during most of the year. They can not procure it, however, when the waters of the lake rise very high. They have roots which resemble the truffles of this country [Spain]."<sup>2</sup>

JOHN R. SWANTON

BUREAU OF AMERICAN ETHNOLOGY  
WASHINGTON, D. C.

<sup>1</sup> *Bulletin of the Torrey Botanical Club*, vol. XXII.

<sup>2</sup> French, *Historical Collections of Louisiana*, 2d ser., vol. II, pp. 248-249, 1875.

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BOOK NOTICES.

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~~In reviewing the Dorsey-Riggs Dakota-English Dictionary the old edition, we are told, contains about 16,000 words, but we are not told how many the new contains. In order to arrive at some idea of the extent to which the dictionary has been increased, the writer counted in each volume the different leading words beginning with one of the following eight letters: c', g, k, p, t, u, z, and z'. These letters were selected to save labor, as the words beginning with them are few. There are 305 such words defined in the old volume and 392 in the new, an increase of 87 words, or about 28 per cent.~~

~~In examining these additional words it is surprising to find that the great majority of them are dialectic—mostly from the Teton dialect; very few seem to belong to the Dakota language in general or to the Santee (Isanti), dialect which the writers of the old dictionary chiefly sought to represent. Of the 87 words referred to, only about 16 are not dialectic. This shows how thoroughly the pioneer members of the Dakota Mission did their scholarly work, and if further evidence of this were needed it might be found in the rarity of instances in which the definitions show amendment in the new volume. The dialectic additions, beginning with the eight letters referred to above, are about 71, or over 23 per cent., added to the old dictionary; but these additions are only of words used as headings and followed by definitions. Besides such, many dialectic synonyms are presented which follow the definitions and do not appear as headings. In a number of instances the dialectic word differs from the standard word only in one or two interchangeable consonants or in the addition or subtraction of the nasal  $\eta$ .~~

~~It would be presumption in any one, even in one to whom the sonorous Sioux is a mother tongue, to imagine he could correct anything in this great work; yet, emboldened by the example of the school boy who differed with Webster, the writer has allowed himself to fancy that in a few instances he could improve the definitions; but he will not dare to mention all of these instances, lest confusion and shame should eventually overtake him. The following will suffice: The *Psoralea esculenta* (Pursh), the *Pomme blanche* of the French Canadians, the *tipsina* of the Dakotas, is referred to under two headings (owobopte, *tipsina*), as "Dakota turnip," and under two other headings (bopta, owopte,) as "turnip." In the English-Dakota part of the earlier publication *tipsina* is given as the Dakota equivalent for the English word turnip. This is misleading. The~~

Washington  
Missionaries:

over



*Psoralea esculenta* belongs to the *Leguminosæ* or Pulse family, and is far removed from the true turnip in its botanical characters. Hewáktokto is *not* the Dakota name of the Arickaree Indians. This is a point on which the reviewer has reason to believe himself specially fortified, and therefore ventures with some confidence to differ with the "Dakota-English Dictionary."

It is to be regretted that Dakota local names, which no one could so ably translate as the lamented author of this work, are not more numerous in the dictionary.

W. MATTHEWS.

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~~*Atlas der Völkerkunde. Fünfzehn Kolorierte Karten in Kupferstich mit 49 Darstellungen. Bearbeitet von Prof. Dr. Georg Gerland, Straßburg. Gotha: Justus Perthes, 1892.*~~

~~This meritorious work, with its vast assemblage of details, may be called unique in its execution, though not in conception. It is an enlargement of the ethnological or seventh part of Heinrich Berghaus' "Physikalischem Atlas," and Berghaus' maps are here so thoroughly recast that even their outlines are scarcely recognizable, for modern research has made too many additions necessary.~~

~~Preliminary remarks are added in form of a preface, and their perusal is absolutely necessary for the comprehension of the maps. These are subdivided into little squares by lines drawn from east to west and by other lines intersecting them vertically, so that any name mentioned in the index can be found by consulting the squares.~~

~~One planisphere serves to represent the color of the skin in the different races, another that of the hair, of which there are two great subdivisions, straight and curly. The density of the population is very graphically represented by the increasing density of the shades. Religion, religious conceptions, endemic distempers, epidemics of the nineteenth century, dress, foods, human occupations and dwellings fill each one planisphere. Then come the races, nations, and tribes of the five parts of the world, represented on seven full-size maps, with cartoons on the margins showing tribal distribution in mountainous or other countries where the races are more mixed than in others, all of special interest to the ethnographer.~~

~~The languages of the world are represented, some by stocks, others by groups of stocks, and eleven colors are employed to show their principal elements. Six cartoons are added on the margins.~~

~~The volume closes with a racial map showing the distribution of~~

## A NATIVE AMERICAN DINNER

The monthly meeting of the Society of Friends of Our Native Wild Life on November 9, 1920, took the form of a dinner. The menu was exclusively native to the New World. The items were for the cereal part corn in the form of muffins and wild rice as dressing for the fowl. The meat was turkey and wild duck. For vegetables there were baked potato, baked squash and succotash. Of jellies there were wild plum, wild grape, buffalo-berry, choke-cherry and pembina. A sweet was provided in the form of maple sirup.

The beverage was chocolate. For dessert there were Concord grapes and pecans.

The table talk was upon the origin and development of the cultivated articles of the menu, and the possibilities of the uncultivated articles. Mr. George F. Will spoke on the subject of some varieties of corn, beans and squashes which have been introduced into the agricultural and horticultural channels of trade in recent years from the stock of the same cultivated from time immemorial by the Mandans and the Arikaras, the two most noted agricultural tribes of Indians of the upper Missouri River. In times long prior to the coming of the white men, the Mandans and Arikaras were noted as farmers and as merchants of their surplus farm products in trade with the non-agricultural tribes of the non-arable lands of the high plains and mountains to the west. From the non-agricultural tribes the Mandans and Arikaras received in exchange for their agricultural products the animal products and wild plant products brought in by the people of the plains and mountains. And after the coming of the white men as trappers and traders they also became customers of the Mandans and Arikaras for their surplus farm products.

Dr. Melvin R. Gilmore told of the origin and development of corn, beans, squashes and pumpkins by the Indians of Mexico by their cultivation and selective breeding from the wild ancestors of these species of plants in that country. He also told of the use and cultivation of chocolate by the ancient Mexicans. It is to the ancient Peruvians that we owe the domestication, culture and improvement of the potato.

The making of maple sirup was originally learned by white men from the Indians of the eastern woodland region of Canada and the United States.

The turkey was domesticated in Mexico and Arizona long before the coming of white men to America. From Mexico it was introduced into Europe.

Dr. Gilmore told of the origin of some varieties of cultivated grapes and plums from the native wild stock of America. In particular he gave briefly the history of the development of the Concord grape at Concord, Massachusetts, by cultivation and selection from native wild grapes growing near that village. He told also of the selection and cultivation given to pecans within only about twenty years past. He urged the possibilities, at present unknown, in the cultivation of many other species of our native fruits.



Vol. 6, no. 1.

Jan-March 1904.

~~Wyeth, John K. Townsend, Maximilian of Wied-Neuwied (including the fine Atlas), Edmund Flagg, Jean de Smet, and Thomas J. Farnham. Altogether the series of reprints will form an admirable library descriptive of the aborigines and the social and economic conditions of the Middle and Far West during the period of early American settlement.~~

**The Navaho Yellow Dye.** — In a paper bearing the title *Navajo Weavers*, published in the Third Annual Report of the Bureau of Ethnology (Washington, 1884), while describing the native dyes, I say: "There are, the Indians tell me, three different processes of dyeing yellow; two of these I have witnessed. . . . In the second process they use the large fleshy root of a plant which, as I have never yet seen it in fruit or flower, I am unable to determine,"—and then I describe the process of dyeing by means of this root.

Soon after this paper on *Navajo Weavers* appeared, I discovered that the plant in question was *Rumex hymenosepalum*; but I never announced my discovery in a way which would easily attract the attention of the ordinary investigator. Twenty years have passed since my paper was printed — years marked by a great increase of interest in the textile art of the Navahoes. Of late many articles, of varying degrees of merit, on this subject, have appeared in popular form. Some of the writers refer to this method of dyeing in yellow which I call the second method; but it seems that none of them has yet found out from what plant the dye-stuff is derived. Therefore I take this opportunity of informing those who may in future discuss the textile art of the Navahoes.

WASHINGTON MATTHEWS.

*Ethnobotany*

Beauchamp (W. M.) Onondaga plant-names. (J. Amer. Folk-Lore, Boston, 1902, xv, 91-103.) Gives list of names of trees, fruits, vegetables, plants, weeds, etc., with interpretations into English and explanatory notes. This paper is interesting alike from a linguistic and a psychological point of view. The uses of the various plants considered are indicated where known. According to Dr Beauchamp, "Virginia creeper," "poison ivy" and "bitter-sweet" all have the same name; the Indians not making always "the nice distinction we might expect." With one or two prominent exceptions, "the grass family was of moderate importance to the Iroquois." Many weeds (especially if not troublesome) go without names. Moreover, "a very large number of our native plants are now unknown to the Onondagas, and if they ever had names they have disappeared." Corn, beans, and pumpkins (squashes) were termed collectively "those we live on." The names of plants introduced by the whites deserve special attention.

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SCIENCE

and *Dryobates pubescens medianus* were stated to intergrade along the western side of tide water in the region named, and the range of *medianus* was extended from South Carolina to this section.

Vernon Bailey spoke of 'Sleepy Grass and its Effects on Horses,' stating that this grass grew luxuriantly in some sections of the California Sierras. Horses eating this grass were rendered very drowsy for several days, and it was reported that in some instances they were temporarily too sleepy for use. The effects gradually wore off, and it was said that horses or cattle having eaten this grass would not do so a second time.

F. V. Coville described 'The Use of Sagebrush among the Klamath Indians of Oregon' and illustrated by experiment the manner in which it was employed to make fire by friction. The reason that sagebrush was particularly adapted for this purpose was due to the fact that the rings of growth were not of uniform texture, some being soft, others hard. Owing to this the end of a piece of this wood did not wear smooth, but remained rough, causing continued friction, and eventually producing enough heat to light the very dry bark employed in place of tinder.

FEBRUARY 28, 1896.]

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SCIENCE

FEBRUARY 4.

PROF. CARTER, of the High School, described a tree about eighteen feet long and ten inches in diameter from ten feet below the surface of a sandstone quarry in Montgomery county, Pa., which had been turned into iron. The Haematite had been entirely leached out of the sand in the vicinity of the tree.

MR. F. J. KEELEY described the characters of a microscopic preparation of jade. It was of interest in connection with the ethnological discussion at the last meeting, as Dr. Brinton believed that American jade could be distinguished from the Asiatic mineral by its microscopic characters.

FEBRUARY 11.

A letter was read from Dr. Karl A. von Zittel, expressing in complimentary terms his gratification at the action of the Academy in conferring upon him this year the Hayden Memorial Geological Award.

Papers under the following titles were presented for publication: 'The Earliest Record of Arctic Plants,' by Theodore Holm; 'A Note on a Uniform Plan of describing the Human Skull,' by Harrison Allen.

PROF. COPE exhibited and described a portion of a cetacean cranium from the Neocene beds of the western shore of the Chesapeake Bay. For a whalebone whale which it probably was, the frontal and parietal bones are of an unusual character. The presence or absence of dentition had not been determined. The specimen indicated a new genus and species for which the name *Metopocetus durinasus* was proposed.

EDW. J. NOLAN,  
Recording Secretary.

BIOLOGICAL SOCIETY OF WASHINGTON, 255TH  
MEETING, SATURDAY, FEBRUARY 8.

F. V. COVILLE exhibited specimens of a poisonous cactus *Anhalonium Lewinii* from Ensisal Co., Texas, stating that the tops were sliced and dried and used by the Indians as an intoxicant and stimulant during their religious dances. The cactus was a spineless species and its poisonous juice was apparently for protection.



ENCE. Nov. 7, 1902 [N. S. VOL. XVI. No. 410. 744

~~Biological Soc. meeting of Oct. 28, 1902  
as evidence of a possible physico-chemical ex-  
planation.~~

Mr. Frederick V. Coville spoke on the 'Plants of the Klamath Indians.' He stated that the country inhabited by these Indians was situated where the wooded western region extended upward and into the plains country east of the Sierras, and that favorable surroundings had made this tribe decidedly superior to their neighbors. The speaker dwelt at some length on the Indian names for the plants, stating that the origin of many was obscure, as they were not derived from roots of other words, but were used only for this class of names. Mr. Coville then described some of the plants most extensively used and stated that the Indians distinguished the plants by their properties rather than by botanical characters. Thus they recognized the differences between two very similar species of *Cornus*, while they had but two names for several species of willows.

F. A. LUCAS.

## ARCHAEOLOGY

## Milkweed Lines Moccasin Of Arkansas Cave Baby

**A** TINY BABY'S moccasin, softly lined with the down from milkweed seeds, is among the finds reported by Prof. S. C. Dellinger of the University of Arkansas, from a cave dwelling in the northwestern part of the state.

Some fond Indian mother made it for her papoose nobody knows how many centuries ago; for the other relics of human occupancy of the cave are of types that tie in closely with the ancient Basket Maker culture of the Southwest, and the Basket Makers are known to be very old—older than the Pueblos, whose history runs back into medieval datings.

The culture represented by the Basket Makers and the Arkansas cave people may have been very extensive, Prof. Dellinger suggested. Recent discoveries in caves in Kentucky hint that this early type of Indian culture spread well into the eastern part of America.

Whoever the occupants of these caves may have been, they were certainly farmers as well as hunters, for the shelter explored by Prof. Dellinger's party had so many corncobs on its floor that it bears the name "Cob Cave." The cave dwellers also raised pumpkins, gourds, two kinds of squashes, and used the seeds of a weed like goosefoot or lamb's-quarters for food. They were skilled weavers, using reeds, grasses and split cane for making baskets, mats, moccasins and many other objects.

*Science News Letter, January 30, 1932*



# Tells Why Chuchupate Mountain 364 Park on Frazier Is So Called

By EVELYN DERBY

**F**EW PEOPLE in Bakersfield have sufficiently adequate knowledge of the history of the Indians who formerly roamed through Kern County to be familiar with the lovely legends which they have handed down. Therefore many are wondering why the new playground has been given the name Chuchupate, the significance of which is this:

Once, before the pale-face had brought his strange laws and customs to California, there dwelt among the fathers of her tribe a lovely maiden called Chuchupate. The Great Spirit smiled upon her and gave her a deep love for all the flowers which carpeted the earth in spring, and the power to effect wondrous cures through the medicinal qualities of certain herbs. Visitors from neighboring tribes brought gifts of plants and grasses to Chuchupate, and these she planted and cared for. In times of plague and famine she aided her people, and when spring came again she read in the open faces of her loved flowers the messages of the Great Spirit. Thus she became high in the councils of the tribe and beloved of her people.

At last winter came no more for Chuchupate and the young braves mourned for the lovely maiden, light-

ing watch fires for her spirit. Without her the tribe suffered many ills, until the Great Spirit promised that Chuchupate would return to them again. At last when spring broke the icy clasp of winter, a little blue flower appeared, growing near the wigwams of the tribe and the Indians know that the spirit of Chuchupate had returned in the flower which now bears her name.

Now, when a child is born, the Indian mothers gather the pollen from the little blue flower and dust it over the new treasure in order that the blessing of Chuchupate might rest upon it. Also when a young brave of the tribe who loves a fickle maiden contrives to make her eat the leaves of Chuchupate, his affection is reciprocated.

Chuchupate is still the guardian of the wild flowers, and when anyone in a spirit of vandalism destroys them, she is said to disappear and return no more. They alone are left to tell her story and truly she could have found no fairer reminder of her gentle spirit.

These blue flowers grow abundantly on Frazier Mountain and persons sponsoring the playground project think it only fitting the park should bear the name of the Indian goddess of love and flowers.

NOVEMBER 23, 1925

# New Indian Variety Bean Supplanting Over-Produced Small Whites In Valleys

Big changes are taking place in the bean acreage and the bean crops of Santa Barbara county, according to reports from ranchers north of the mountains. The small white beans which have been the standard in the north are said to be doomed. Henderson bush limas, hitherto grown on the coast, almost equalled small whites in tonnage throughout Lompoc valley this season and in the Santa Ynez valley a small white lima variety of bean is producing a tremendous yield per bush.

Eastern states, according to Eugene Kellogg, county horticultural commissioner, are producing enough small white beans to glut the market and are producing the crop more cheaply than California ranchers. Small whites that were over seven cents a pound are now priced at a little over four cents a pound with no market.

Lompoc and the Santa Ynez and Santa Maria districts now have discovered that they can grow the lima type of bean and they have a produce with which the east does not compete. Indications now are that the Henderson bush lima will far exceed small white beans in the Lompoc district next year.

In the Santa Ynez valley a bean known to the Hopi Indian and

raised with success in the arid lands of the southwest has been experimented with and this year enough of this variety has been raised to seed in commercial quantities next year. When these beans were brought from the Hopis for trial in this district they were distinctly a pink, red and brown colored bean varying in shade, but of the size and shape of a baby lima. However, in the few sacks of these beans brought to Santa Ynez valley for experiment there were a few white beans that were so like baby limas that only an expert could tell the difference.

On these few white beans from the arid southwest the Santa Ynez ranchers experimented on their unirrigated, dry climate land of the Santa Ynez valley. The beans thrived well and produced big crops with the percentage of white beans increasing until only white beans are now produced.

Until now the lima bean district has been confined to a small coastal area in southern California. If the eastern markets approve the new variety of lima being grown in the Santa Ynez valley a tremendous new area will be opened for bean growing and the volume of Santa Ynez valley's yearly harvest will be increased many times.



### Manzanita Cider

Indian Maggie is probably the most popular of her race in Yosemite Valley this year—and the answer is manzanita cider. Maggie demonstrates the customs of her ancestors in a tepee behind the Yosemite Museum, and has captured the entire tourist trade by passing out a delicious drink. She crushes a quantity of the red manzanita berries, removes the seeds and pours a pitcher of cold water through them twelve times—no less than twelve—and a clear, yellow punch, tart and yet sufficiently sweet, is ready for consumption. Visitors say it is as good as lemonade, and is one of Maggie's finest achievements.

**Nature Magazine**

**Nov. 1931 p. 324**

### ANTHROPOLOGY.

INDIAN ROPE AND CLOTH.—The *Apocynum cannabinum*, Indian hemp, or silk plant, as it is sometimes called, is very extensively used by the Indians of Arizona for the manufacture of twine and cloth. The bark of the plant is tough and strong and something like flax. The Indians cut the plant when ripe and rub it so as to separate the fibres, with which they make very strong and beautiful fishing lines, and a fine thread which they use in sewing and also make into cloth. In the Department of Agriculture, there is a fine specimen of rope made of this fibre by the Ute Indians, which I obtained from them and presented to the Department. In the Smithsonian Collection there are also good specimens of strings and a fishing net made of this plant by the Indians of Arizona. Near Camp Lincoln in Arizona we obtained, from some old Aztec ruins, cloth that had been manufactured by hand from this plant.

The root gives out a very bitter milky fluid that is used as a medicine by the Indians.—DR. EDWARD PALMER.

Am. Nat. VII, No. 12, 755, Dec. 1873.



*A Forgotten Cereal of Ancient America:* W. E. SAFFORD.

Among the tributes paid to Montezuma by the various pueblos of Mexico were maize, beans, cacao, capsicum peppers, maguey syrup and bees' honey, salt, salvia seeds called *chian*, and *huautli* or *guautli*. Concerning the last-named, Albert Gallatin wrote as follows: "I can not discover what is meant by *guautli*. It is interpreted as being *semilla de blédo*; but I am not aware of any other native grain than maize having been, before the introduction of European cereals, an article of food of such general use, as the quantity mentioned (an annual tribute of 18 granaries full, each granary containing about 9,000 bushels) seems to indicate."

This seed was described in 1629 by Hernando Ruiz de Alarcon as "smaller than mustard seed" and ripening when the temprano maize begins to tassel. The Mexicans made of it certain dump-lings (*bollos*), "which in their language they called *tzoalli*, and these they eat cooked like their tortillas." It was of these seeds, ground and made into paste, or dough, and mixed with agave syrup, that they made certain idols in human shape which they placed upon altars and to which they made offerings of pulque, incense and lighted candles or splints of pitch-pine (*ocotillos*). The following day the idols were divided into small pieces and administered to the worshippers like communion. Padre Acosta (1590) speaks at length of the use of this seed in the worship of

the god Uitzilipuztli. In his honor an idol was made by young virgins, who "*molian cantidad de semilla de bledos juntamente com mays tostado, y despues de molido amassabanlo con miel.*" It was undoubtedly this grain which Alvar Nuñez Cabeza de Vaca found on the west coast, where it took the place of maize as a food-staple. He refers to the plant as *bledos*, and states that the natives ate nothing else than flour made of it. The identity of the plant called *huautli*, *uauhtli*, or *guautli*, has long been a mystery. In the economic collections of the United States Department of Agriculture are certain seeds collected by the late Dr. Edward Palmer at Imala, Sinaloa, bearing the vernacular name "*guaute*," which are used for food when maize is scarce. They are ground into paste, mixed with brown sugar, and made into balls called *suales*, which are wrapped in corn-husks and sold in the markets of Jalisco in strings called *rosarios de suale*. The seeds have been identified as those of *Amaranthus cruentus* L., a species closely allied to *A. caudata* L. At Colima Dr. Palmer saw a handsome variety with red spikes occurring both in cultivation and spontaneously, and in the vicinity of Guadalajara, both red and yellow varieties cultivated either alone or among maize. This species has a white-seeded form which was described by Sereno Watson as *A. leucocarpus*. It is interesting to note that very closely allied, if not identical, species, also having white-seeded forms, are cultivated as cereals in Tibet, the mountains of India, and in Peru and Bolivia.

Science 862-863, June 16, 1916.



## Klamath Indians

### Meeting of January 16, 1906

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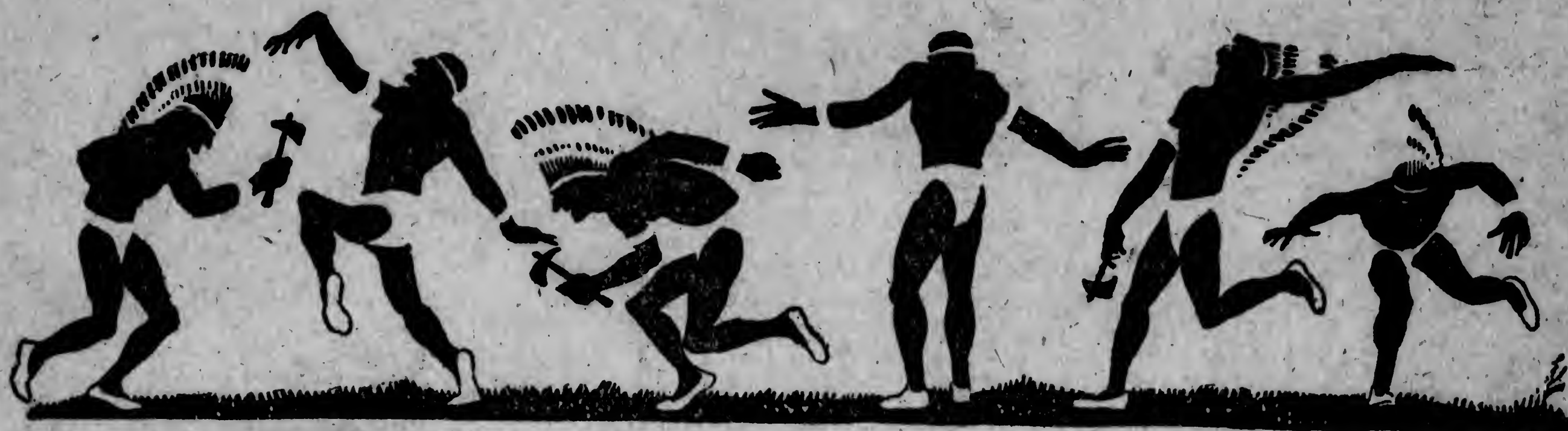
The 383d meeting was held January 16, 1906, the president, Dr George M. Kober, presiding, and 26 members and guests present.

The first paper of the evening was by Mr F. V. COVILLE, on *A Native Moxa (Cautery) among the Klamath Indians*. These Indians used a cautery of a special kind which was made by chewing and reducing to fine pulp the bark of the "buck brush" (*Kunzia tridentata*). This pulp is pressed into small cones, one of which is placed on the part affected, lighted, and allowed to burn down to the skin, scarifying it. Mr Coville said that while moxa was in general use among the people of the eastern hemisphere, its employment among the American Indians was very rare.

Am. Anthropologist, Vol. 9, No. 2, April-June, 1907



# The Mystery of Mexico's Sacred Mushroom



By Rene Bache

**A** LONG-PUZZLING mystery of ancient Mexico is now being worked out by scientific experts of the United States government, with the expectation of turning it to useful and profitable account. It relates to the "sacred mushroom" of the Aztecs, revered by them as a holy plant, and to this day eaten by some tribes of Mexican Indians in religious ceremonies.

It is a powerful narcotic, producing the most fantastic visions, and is regarded by the Indians as a key which, in the ceremonial, opens to them all the glories of another and better world.

The plant grows wild, though not plentifully, in the valley of the Rio Grande, in barren and even rocky soil. But the government experts have recently undertaken successfully to raise it under glass in pots; and the active principle, a hitherto-unknown alkaloid, has been separated from it in the form of white, needle-shaped crystals.

In all likelihood this alkaloid—called "anhalonin," after the botani-

cal name of the plant—will prove very useful in medicine. Dr. Lyman F. Kebler, chief of the division of drugs in the chemistry bureau at Washington, is at present conducting preliminary experiments with it.

## Its Virtues as a "Bracer."

For one thing, the narcotic is said to have a wonderful potency in subduing the unpleasant after-effects of over-indulgence in alcohol. It is likely, therefore, to achieve great popularity as a "bracer," when, after a while, it finds its way into the hands of the apothecary. The ease with which (as newly ascertained) the plant may be cultivated under glass would suggest that the cost of the drug derived from it ought not to be excessive.

Indeed, it has been found that a tincture made by simply chopping up the plant and allowing it to soak in dilute alcohol for a couple of weeks is a most serviceable remedy for nervousness, headache and insomnia. When chewed (the Indians say) it stops the painful coughing of consumptives.

So far as ascertained, the narcotic does not affect in any way the intellectual faculties, even after long and habitual use. Furthermore, it is remarkable in having no Nemesis. In other words, there is no depressive or other disagreeable after effect.

It was Mr. W. E. Safford, a botanist of the government plant bureau, whose original researches identified the plant with the "sacred mushroom" of the Aztecs. But it is not a mushroom at all. It is a species of cactus, somewhat resembling a radish in shape, covered with sharp prickles, and with a button-shaped top—the latter being all of it that appears above ground.

The early Spanish missionaries in Mexico, finding it employed for vision-producing purposes in the native religious ceremonials, naturally disapproved of the plant. They called it "devil's root," and pronounced the eating of it a crime not less heinous than that of eating human flesh.

Even at the present time the buying and selling of it is forbidden in Oklahoma, where the Kiowa Indians (who formerly dwelt in the Rio Grande valley) still use the plant in their religious festivities, obtaining it from traders. The missionaries complain of it, and—though none of them, nor any agency physician, has tested it or taken the trouble to witness the ceremonial—their representations have caused the federal government to inflict severe penalties for the offence of using or possessing it.

The government experts, however, have recently made a number of in-

teresting experiments with the plant. In one of these a young chemist was the "subject." Before going to bed he swallowed three of the "buttons" (cactus tops), and then awaited results. The first sensation he felt was one of slight nausea. This soon passed, and, closing his eyes, he experienced a series of curious optical impressions. Beautiful designs, more or less geometrical, in brilliant and ever-changing colors, floated before him.

He swallowed a fourth button, and thereupon passed in review a series of delightful visions. His mind, in the mean time, remained clear and active. Stretched on his bed, he watched with utmost pleasure an ever-changing panorama of infinite beauty and grandeur. To some extent he was able to control the visions. By fixing his mind on something unpleasant, he summoned into view myriads of crawling monsters and multitudes of gruesome forms with human faces. But, though horrible enough to frighten anybody under normal circumstances, these nightmare phantasms were to him merely jolly and amusing.

There was no distressing subsequent reaction. But experiments with other persons proved, rather curiously, that the sound of a monotonous

drumming (such as the Indians make when they eat the plant in the ceremonial) greatly enhances the beauty

and variety of the visions. It is easily understood, then, why the aboriginal cactus-eater indulges in this per-

formance—the group thus engaged sitting all night with their blankets drawn about them, and each man ready to take his turn with drum and rattle.

The sensation they experience is said to be one of ecstatic happiness. Their hallucinations are supposed by them to be a supernatural grace, by which they are permitted to pass





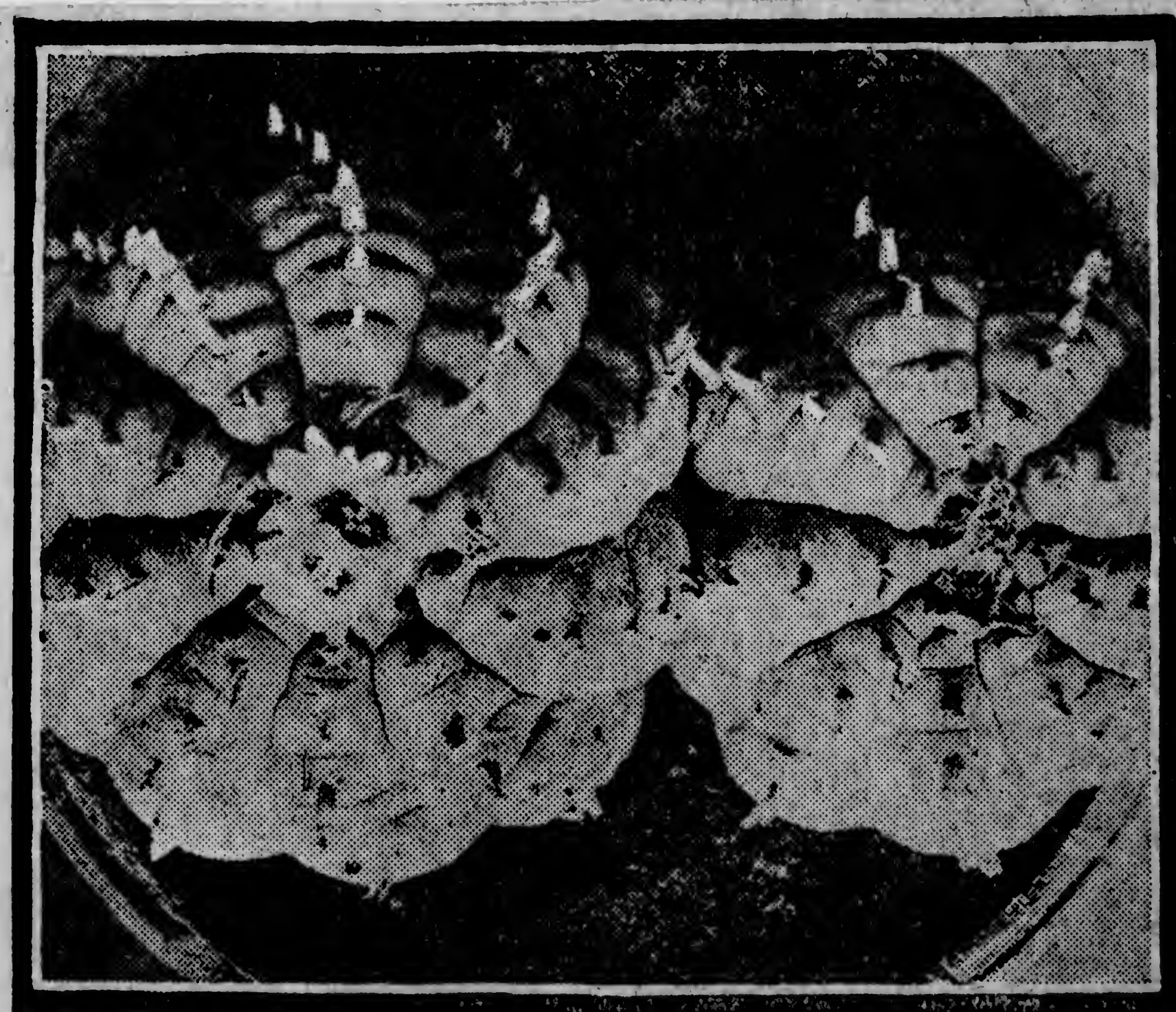
The Mystery Man, with the Aid of a Few Cactus "Buttons," Can Foretell the Future.



Drums Used to Stimulate the Effect of Cactus Dreams.



Types of Some of the Sacred Mushrooms.



The "Dream Plant" as Grown in a Greenhouse Pot.

through the portals of Paradise and communicate with the gods. Some of the religious societies among the Mexican natives look upon the ceremonial as a kind of communion, in which the cactus is eaten as an incarnation of Deity. A popular name by which it is known is "flesh of God."

The plant is believed to possess not only medicinal value, for the cure of many diseases, but also to sustain the body against fatigue. One who eats it, it is claimed, feels neither hunger nor thirst, but it gives him courage to fight, and protects him from danger. Nay more, it is even said that it gives to the person, under its narcotic influence the power to penetrate beyond the barrier that limits normal knowledge, to see into the future, and to predict what is soon to happen—for example, a change of weather, or an attack by an enemy.

The prickly root as well as the top contains the narcotic alkaloid, but, for some reason unexplained, the buttons have commercial preference. In the dried state they are brown in color, hard and brittle, but soften quickly in the mouth. They have a rather nauseous and bitter taste. The

"button" of the growing plant forms a sort of compact tuft, and at the proper season bears a flower.

#### Analysis of Wild "Dream-Plant."

Incidentally to the process of "taming" the wild dream-plant here described, with a view to rendering it useful to mankind, the government experts have subjected it to a thorough analysis. Dr. Kebler obtained from it, by maceration in alcohol, a brown sirupy liquid which, on being taken to pieces by laboratory methods, yielded not only "anhalonin"—the active principle already mentioned, which took the form of brilliant white, needle-shaped crystals—but also another alkaloid, very poisonous.

The possible importance of this newly-discovered alkaloid, "anhalonin," is not to be lightly underrated. One should remember that two of the most valuable of known medicinal substances, quinine and cocaine, were made known to modern civilization through a previous acquaintance with them by Indians who had ascertained the usefulness of coca leaves and cinchona bark—the latter as a remedy for malaria.



Strange Ecstatic Dances Performed Under the Influence of the Plant Narcotic.



Datura

Thom and Bryce  
Nature  
Notes



Sept. 1935  
Vol. 7  
No. 3



DEPARTMENT OF THE INTERIOR  
National Park Service  
Zion and Bryce Canyon National Parks, Utah

Vol. 7  
Zion-Bryce Nature Notes

No. 3  
September, 1935

This bulletin is issued monthly for the purpose of giving information to those interested in the natural history and scientific features of Zion and Bryce Canyon National Parks. Additional copies of these bulletins may be obtained free of charge by those who can make use of them by addressing the Superintendent, Zion National Park, Utah. PUBLICATIONS USING THESE NOTES SHOULD GIVE CREDIT TO ZION-BRYCE NATURE NOTES.

P. P. Patraw, Superintendent

C. C. Presnall, Park Naturalist

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# THE DATURA

By C. C. Presnall

More by accident than otherwise this issue of Nature Notes has become chiefly a Datura issue, to which the following resume of the subject may be a fitting introduction.

Ever since Zion National Park has been open to visitors, the auto bus drivers have pointed out the large, trumpet-shaped flowers in Zion Canyon, calling them Zion Lilies, probably not realizing that they were neither lilies nor confined to Zion. They are properly called Datura meteloides, and are found throughout the southwestern states and much of Mexico; and there are other kinds of Daturas in the eastern and southern states, South America, and Asia.

The genus is notable principally because of its narcotic properties, due to certain alkaloids contained in the leaves, roots, and seeds; chief of these drugs are hyoscyamine and scopolamine. The narcotic effects of Datura have been known for many centuries among many peoples. In India the natives have long used the metel-nut or Dhatura (from which is derived the present latin name); a knowledge of the medicinal value of Datura metel was known to the Arabs in the eleventh century; and the Chinese wrote of its properties in the sixteenth century. When white men first settled in the Americas they found New World forms of the plant in common use among many Indian tribes of both North and South America. The Indians of Virginia used Datura stramonium (which has come to be commonly known as Jimson or Jamestown Weed) in the boys adolescence ceremony. The Indians of Mexico used several different species of Datura, principally Datura meteloides, the magic plant of the Aztecs, known as "coatlcoxouhqui" or "green snake weed"; and Datura innoxia, known as "toloatzin" (from the way in which the seed pods droop). This name became corrupted to "toloache" by which the Datura is known today among Indians of southern California.

The various "toloache cults" among California Indians, from the Mariposa and Yokut tribes in the north to the Cocopa in the south, have attracted much attention among ethnologists, who find that the religious use of Datura spread throughout these tribes in comparatively recent times, and was an entirely separate thing from the customary and previous medicinal use. A possible outgrowth of the "toloache cults" is seen among the Paiutes, who use the plant simply as an intoxicant. In some other tribes the use of the Datura was limited to the medicine men; as among the Hualpais, whose medicine men made prophecies while under its influence. The

Note: Much of the material in this article is from Safford's paper in the Annual Report of the Smithsonian Institution for 1920, "Daturas of the Old World and New; etc."



Zuni doctors probably attained greater knowledge of the uses of the plant than those of any other tribe north of the Rio Grande, as is narrated in the article by Ranger-Naturalist Reid.

Many visitors to Zion, interested in the prehistoric peoples inhabiting this canyon, ask whether they used the Datura. It seems likely that they did, since Miss Alice Eastwood, of the California Academy of Science, found Datura seeds and seed pods in the Pueblo ruins in southwestern Utah.

In conclusion it might be well to summarize the principle kinds of Datura found throughout the world.

Datura metel L. is the form occurring in southern Asia and parts of Africa.

In the United States there are three common forms, Datura stramonium L., or Jimson Weed, in the eastern states; Datura meteloides DC. or Sacred Datura, throughout the southwest; and Datura discolor Bernh., in the warmer parts of the southwest.

Mexico has at least eight forms of Datura, including the three in the United States. One of the Mexican forms (Datura ceratocaula) is aquatic.

In South America, particularly in Columbia, Ecuador, Peru, and Chile, there are at least a dozen kinds of tree Daturas, some of which are also found in the West Indies. Datura arborea L., and Datura suaveolens H. & P., are two of the better known forms. The latter is often cultivated in hot-houses, and is known as Angel's Trumpet. It is a native of Brazil. Some of these arboreal forms have beautiful red or yellow flowers.



A Mexican species

Datura ceratocaula

## ETHNOBOTANICAL NOTES

By K. E. Weight

According to legends and studies made by students interested in the early people of the Zion region, plants played a very important role in their lives. Before white man came into this section of southern Utah the Paiutes and the Pueblos or Cliff Dwellers were absolutely dependent upon the biological environment for their food. Game animals were killed for their meat diet, but from all indications, plant foods played the most important part in their diets.

Indians who inhabited the southwest lived with the plants. According to M. C. Stevenson \* they were very sacred to each tribe. Some species were dropped to the earth by the Star People; some were human beings before they became plants; others were the property of the Gods, and all, even those from the heavens, are the offspring of the Earth Mother, for it was she who gave the plants to the Star People before they left this world and became celestial beings.

Plants were used in many ways by these aborigine people. In addition to those that were edible, they selected many for their medicinal value, for weaving, dyeing, basketry, pottery decorations, toilet, clan names, and for their ceremonials. A full discussion of each of the above listed uses of plants cannot be made in this article, but some of the plants common to Zion that were used in a medicinal way will be described.

It is often said that medical treatment is older than intelligence in man. To substantiate this statement, the dog is cited who goes to the field and hunts his special grass medicine; the bear dresses the wound of her cubs with almost human intelligence. Primitive man certainly did not know why his plant medicine cured, but from the result he no doubt could see some advantages in the effort made.

Probably the outstanding herbaceous plant, at least from the tourist point of view, in Zion National Park is the Sacred Datura (Datura meteloides). From a medicinal point of view this species was no doubt the most important plant of the early Indians. This plant according to Indian legend was once a boy and a girl. In the olden times A'neglakya (name of mythical boy) and A'neglakyatsi'tsa (name of mythical girl), brother and sister, lived in the interior of the earth, but they often came to the outer world and walked about a great deal, observing closely everything they saw and heard, and repeating all to their mother. This constant talking did not please the Divine Ones (twin sons of the Sun Father). One day the boy and girl met the Divine Ones and a conversation soon started. They told how they could

(\* Ethnobotany of the Zuni Indians, 13th Annual Report of the Bureau of American Ethnology.)



make one sleep and see ghosts, and how they could make one walk about and detect the person who had committed theft. After this meeting the Divine Ones concluded that the people from the interior of the earth knew too much and that they should be banished for all time from the world. From that time on they never did appear on the earth again. A beautiful flower sprang up at the spot where the two last stood on the earth. This original plant in time had many offspring that scattered over the earth. From this beginning came the beautiful Sacred Datura.

Datura yields a powerful alkaloid drug (narcotic) known to the medical profession as Hyoscine. It has been in constant use by modern medical men since 1762. Long before that time it was employed by the Indian priests. It was prescribed for many ills and disorders. Each doctor collected his own medicine and prepared it for use. The powerful root was given as a narcotic. At the time of operating, a small dose was given internally. Soon the patient became unconscious and the operating was done without pain. Ground roots and flowers of the same plant were used as an antiseptic, producing rapid healing effects. According to reports there was very little evidence of any ill effects from the use of this drug.

Ephedra nevadensis S. Wats. (Joint-fir) is another common plant of the park. It was utilized in the making of a tea. The stems and leaves were ground and boiled for some time in water. The tea was used for nearly all ailments. It no doubt helped in some cases, because a recent study reveals the fact that it is a good tonic, aiding in the restoration of the appetite, and also that it contains small amounts of Vitamin D. \*

The common sunflower (Helianthus annuus L.) was employed in conjunction with other plants to cure rattlesnake bites. After sucking the blood from the snake wound, the ground roots of the sunflower (combined with Psilostrophe tagetina and Ansonia brevifolia, not in the park) was applied to the wound with a bandage. Should the patient be troubled with throbbing in the part affected, the priest would unbind the wound and puff smoke from a corn-cob pipe filled with native tobacco (Nicotiana attenuata Torr.). Death due to rattlesnake bite was seldom known to the early Indians.

Puccoon (Lithospermum linerifolium Goldie) an early spring flower of Zion, was used to relieve sore throat and the swelling of any part of the body. The root was ground to a powder in the morning on a ceremonial grinding stone in the room of the patient, and gathered into a deer-skin sack. The remainder of the plant was made into a tea by boiling in water, which was given warm to the patient as soon as made. The powdered roots were applied direct to the swollen parts. Goldenrod (Solidago canadensis Gray) one of the fall blooming plants of Zion, was also given as a medicine for the same troubles.

The above plants are but a few of those used by the Indians in their medical practices.

(\* Dr. L. L. Cullimore, Provo, Utah)

## THE SACRED DATURA AMONG THE ZUNI

By H. L. Reid

Without doubt the most spectacular plant within Zion National Park, so far as the traveler is concerned, is the Sacred Datura (Datura meteloides), with its large white trumpet-like blossoms. Many popular names, such as Jimson Weed, Moon Flower, Zion Lily, and Angel's Trumpet, have been given to the plant.

The Datura is a genus of the solanaeous plants and is closely related to the tomato, the potato, and the night shades. Within Zion Canyon the first blossoms appear in early June and continue with increasing productivity throughout the summer, ceasing only with the approach of the frosty nights of autumn. During the height of the blooming season it is not uncommon to find from sixty to seventy blooms on one plant, while as many as one hundred twenty-three have been counted on one of the larger specimens.

This plant is not only attractive to the eye, but it has a long and interesting history. Years before white men first visited the West, the Datura was used by the Indians in their medical practice and in their ceremonies. The Zuni ascribed to it a sacred origin as is revealed by the following legend. \*

In olden times a boy and his sister, named respectively A-neglakya and A-neglakya-tsi-tsa, lived in the interior of the earth. They often came to the outer world where they would walk about observing with care everything they saw and heard, and upon their return repeated all to their mother. This constant talking was displeasing to the Divine Ones, twin sons of the Sun Father.

One day the Divine Ones chanced to meet the brother and sister, and they made inquiry as to how they were enjoying themselves. The couple replied to the effect that they were happy, and then continuing the conversation they explained to the Divine Ones how they could make a person go to sleep and see ghosts, and how they could also make one walk about and while walking see one who had committed a theft. After this meeting the Divine Ones concluded that this boy and his sister knew too much, and in consequence should, for all time, be banished from this world. Following their banishment beautiful flowers, exactly like those worn on each side of the head of the boy and girl while on their earthly visits, sprang up at the spot where the two had descended. The Divine Ones called the plant Aneglakya, after the boy's name.

(\*Ethnobotany of the Zuni Indians by Matilda Coxé Stevenson, Thirteenth Annual Report of the Bureau of American Ethnology.)



The original plant, so the legend avers, has many children scattered over the earth, the colors of which belong to the four cardinal points. Some of the flowers are tinged with yellow, some with blue, some with red, while some are all white.

The use of the Datura by the Indians has been known for many years. While our own medical science was still in its dark ages, the Royal Society of London gravely inquired of Sir Philberto Vernatti "whether the Indians can so prepare the stupefying herb Datura, that they make it lie several days, months, or years, according as they will have it, in a man's body, and at the end kill him without missing half an hour's time."

The Datura was widely and variously used by most of the tribes of the southwest, especially those in south and central California; the Paiutes, and the Zuni. The last-named trike was the most advanced in its use, as shown by the following facts gleaned from the Stevenson reference already mentioned.

Among the Zuni the rain priests administer Datura that one may become a "seer", while the Zuni "doctor" gives the powdered root of the plant to render his patient unconscious while he performs minor operations such as setting fractured bones, treating dislocations, and making incisions for the removing of pus.

Matilda Coxe Stevenson reports that she "observed the late Nai-uchi, the most renowned medicine-man of his time among the Zuni, give his medicine before operating on a woman's breast. As soon as the patient became unconscious he cut deep into the breast with an agate lance, and inserting his finger, removed the pus; an antiseptic was then sprinkled over the wound, which was bandaged with soiled cloth. When the woman regained consciousness she declared that she had had a peaceful sleep and beautiful dreams. There was no evidence of any ill effects from the use of the drug."

Among the Zuni the medicine of the Datura is the property of the rain priests and the directors of the Little Fire and Cimex fraternities, who are the only ones to administer it medically and then with the greatest of care. Each director must collect the medicine which he uses, and he must also prepare and deposit prayer-plumes to the sacred plant in order that his treatment may be successful.

The powdered root of the Datura is given as a narcotic, while the root and flowers ground together into meal are applied to wounds of every description by the directors of the Indian medical fraternities. Wounds are said to heal very rapidly under this treatment. The plant also figures very prominently in the Indian ceremonials. A minute quantity of the powdered root was put into the eyes, ears, and mouth of the rain priests when they went at night to ask the birds to sing for rain. It was said that the birds were never afraid to tell the rain priests that they would sing for rain when the priests had the powder in their eyes, ears, and mouth.

Considerable preparation was necessary before a complete rain ceremony could be carried out. Each rain priest must prepare four plume-offerings, one to Aneglakya and one to Aneglakyatsitsa, and two to his deceased predecessors. Each plume-offering must contain an underwing plume of the turkey,

one white fluffy plume of the top of the eagle's tail, and one tail plume from the teal duck. It must also contain one tail or wing feather from the long-tailed chat, bird of the North, one from the long-crested jay, bird of the West, one from the macaw, bird of the South, one from the purple martin, bird of the Zenith, and one from the painted bunting, bird of the Nadir. The plume-offerings being prepared, the rain priest deposited each of the four offerings in separate excavations which he had previously made with an ancient bean planter, and then addressing Aneglakya and Aneglakyatsitsa and his ancestors he would say:

"I place my prayer-plumes and I take your medicine that I may talk to the birds of the six regions, that the rains may come and fructify Earth Mother and make her beautiful".

A small quantity of the powdered root of the Datura was at times given to an individual in the hope of securing rain, and "it was believed that rain will surely come the day following the taking of the medicine unless the man to whom it is given has a bad heart." It was also administered by the rain priests to put one in a condition to sleep and see ghosts.

The Zuni say that when one touches a Datura blossom with moist hands, the impression will be imprinted on the hand and also on the body at whatever place the hand touches the body. The blossom, they say, will appear on the hair if the hand is placed on the head.

If one of the Indians has been robbed and wishes to discover the thief, he summons to his aid the rain priest, who prepares plume-offerings similar to those previously described, and then on the day that the man who has lost his property is to be treated by the rain priest, at sunrise he plants the plume-offerings with the following prayer to Aneglakya and Aneglakyatsitsa and his ancestors:

"I give you plume-offerings and collect your medicine which I will give to my child at night that he may see the one who has robbed him."

As night approaches the rain priest goes to the home of the plaintiff, where he finds him seated in the darkness of an inner room, dressed in a white cotton shirt and trousers, and blue leggings, but no shoes or head-kerchief. There must be no fire in the room. The rain priest takes a seat by the side of the man and taking a bit of the Datura root from the palm of his hand places it in the man's mouth, telling him to chew the medicine that he may sleep soundly and be possessed of the power to see the one who has robbed him.

The patient then lies down upon a pallett without speaking a word. The rain priest retires to an adjoining room and sits near a communicating door that he may hear every sound. Soon the man leaves his bed and walks about the room, the rain priest eagerly listening for any word that may be uttered. The patient spends the night in the room alone, alternately walking and lying down. At daybreak the rain priest enters the room and taking the man by the arm leads him into an adjoining room where they take seats side by side,



facing eastward. The rain priest here repeats to the man what he heard him say during the night and gives to him the name of the person he mentioned while under the influence of the Datura. The patient declares that he has no recollection whatever of anything that happened during the night. The rain priest now directs the man to go to the house of the one whose name he called during the night, but before he is permitted to go the rain priest makes a fire, heats water and gives the man about a quart of it to drink, which induces vomiting. This drinking of the water followed by copious vomiting is repeated four times. After this procedure the root of the Datura is supposed to be entirely ejected from the body. Should this ejection not take place, the flowers of the Datura, they believe, would appear over the body.

The robbed man remains within his room while the rain priest goes to his own home and notifies his wife and the other women of his family to prepare and carry a bowl containing yucca root to the house of his patient, where yucca suds (yucca is sometimes called soap plant because of the soapy nature of the roots) are to be made and the patient's head washed. During the hair washing ceremony the man kneels on a blanket and the rain priest sits back of him with a hand on each of his shoulders.

The rain priest now presents the robbed man with four ears of corn tied together, which are to be planted, apart from the other corn, during the coming season. In return the patient presents the rain priest with a few yards of calico, or perhaps a shirt and trousers, after which the priest's family brings food that has been cooking during the night and prepares a meal. After the repast the patient visits the person whom he saw while under the influence of the Datura, and tells him that he saw him in his dreams and knows that he stole his property. According to the Zuni "the accused always returns the property for he is ashamed of having been discovered."

Among some of the Indian tribes of the southwest the use of the Datura never attained the position of high importance that it did among the Zuni. The Mohaves gathered the leaves and roots and after bruising them, mixed them with water. This mixture they permitted to stand for several hours, after which a highly narcotic liquid was drawn off. This drink produced a stupefying effect which it is said was not easy to remove. Among the Paiutes the plant was called Main-oph-weep. They prepared a drink of the watery infusion of the bruised seeds which they fermented in the sun and drank for the pure purpose of producing intoxication.

From the foregoing it is evident that for many years the Datura has been extensively employed among the Indians, and especially among the Zuni. The remedial properties of the plant were undoubtedly discovered by chance and later came to be associated with the gods. They learned the value of the Datura as a narcotic perhaps centuries before the birth of Baron Stoeberk of Vienna, who first brought Datura stramonium to the attention of the medical profession in 1762. Since its first introduction the Datura has played its part in the world of drugs. It contains atropine and hyoscyne which are today obtained from the Datura stramonium and used as nerve sedatives and antispasmodics.

## ALONG NATURE'S HIGHWAY

Many an individual takes the opportunity of visiting the live reptile exhibit at Zion Museum. Most unusual among the recent visitors was one who came, not as one interested in education or amusement, but as a hungry individual in search of food. This unusual visitor, a Road-runner (Geococcyx californianus) when first observed was trying very industriously to get at a desert horned toad (Phrynosoma platyrhinos) which is on exhibit in one of the cages.

Previous reports confined this bird to the lower portions of the park; the south entrance, and Coalpits Wash. This is the first time the road-runner has been observed as far up the canyon as the museum. - H. Grantham.

Without making a daily observation it would be impossible to determine the number of buds and flowers produced from one large Datura plant during one summer. They bloom at night and the flowers fade and die in just a few hours when the sun strikes them the following morning. The following numbers of buds and flowers counted on one plant along the Canyon Road on August 29, 1935, will give some idea of the great amount of energy required by the plant in the process of reproduction. The plant examined was about ten feet in diameter. It had eight major stems from the same root. One hundred and five flowers were in full bloom at 8:00 A.M. The buds from one inch or more in length to those that would open the following night numbered between four and five hundred. This plant had nearly six hundred buds and flowers at the time of observation. The same plant had been blooming since about June 15, 1935. - K. E. Weight.

An unusually late nesting date for White-throated Swifts was recorded at Bryce on September 8, 1935, when adult birds were seen carrying food into a crevice above the Navajo Trail, in the canyon known as Wall Street. The young must have been nearly ready to leave the nest, judging by the clamor with which they greeted each offering of food. - C. C. Presnall.



At the parking space at the east end of the Mt. Carmel Tunnel, on September 27, 1935, I observed an Inyo Chipmunk (E. quadrivittatus inyoensis) apparently eating sand. With 8-power binoculars I could plainly see it pick up chunks of sand the size of a pea and chew on them. At other times it placed its mouth to the ground and chewed or dug at the sand. Examination of the spot showed that a number of small tin sausage cans had been discarded there by tourists. Perhaps a small amount of liquid had been spilled and the chipmunks were eating the salt or grease; or perhaps they were getting moisture from the sand, recently wet by rain. The latter seems hardly likely, however. Several spots on the sandy area showed evidence of such work by the chipmunks. - W. S. Long.

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Fluctuations in density of animal populations are of particular interest to one who studies an area for several successive years. A few such fluctuations in the Southern Utah Parks region are here noted. At Bryce the Fremont Chickarees (Sciurus f. fremonti) or tree squirrels as they are locally known, are on the upswing of an apparently long cycle. Local residents said they were very numerous about 1923, but became almost extinct soon after. My first observations, in 1933, revealed but two in the park. In 1934 I found half a dozen, and this year they are numerous enough to attract the attention of the more observing visitors. They have by no means yet reached the maximum peak of their cycle.

In Zion National Park, Dr. Woodbury reported chipmunks very numerous when he first became ranger-naturalist in 1925, after which they declined in numbers so that when I first visited the park in 1933 the form dorsalis utahensis was very rare, and quadrivittatus inyoensis and minimus conso-brinus were scarce. This year utahensis is fairly common, being seen dashing across the roads quite often; the other two forms, on the plateaus, are also more numerous, especially inyoensis, which is abundant in some sections.

Such cycles of abundance and scarcity are very important, since they have a direct effect on numbers, movements, and food habits of larger predatory species, as weasels and bob-cats. Much of the animal kingdom depends upon an abundant supply of the smaller animals. - C. C. Prexnall.

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# Dye-making

## by Early Indians

.. By ..

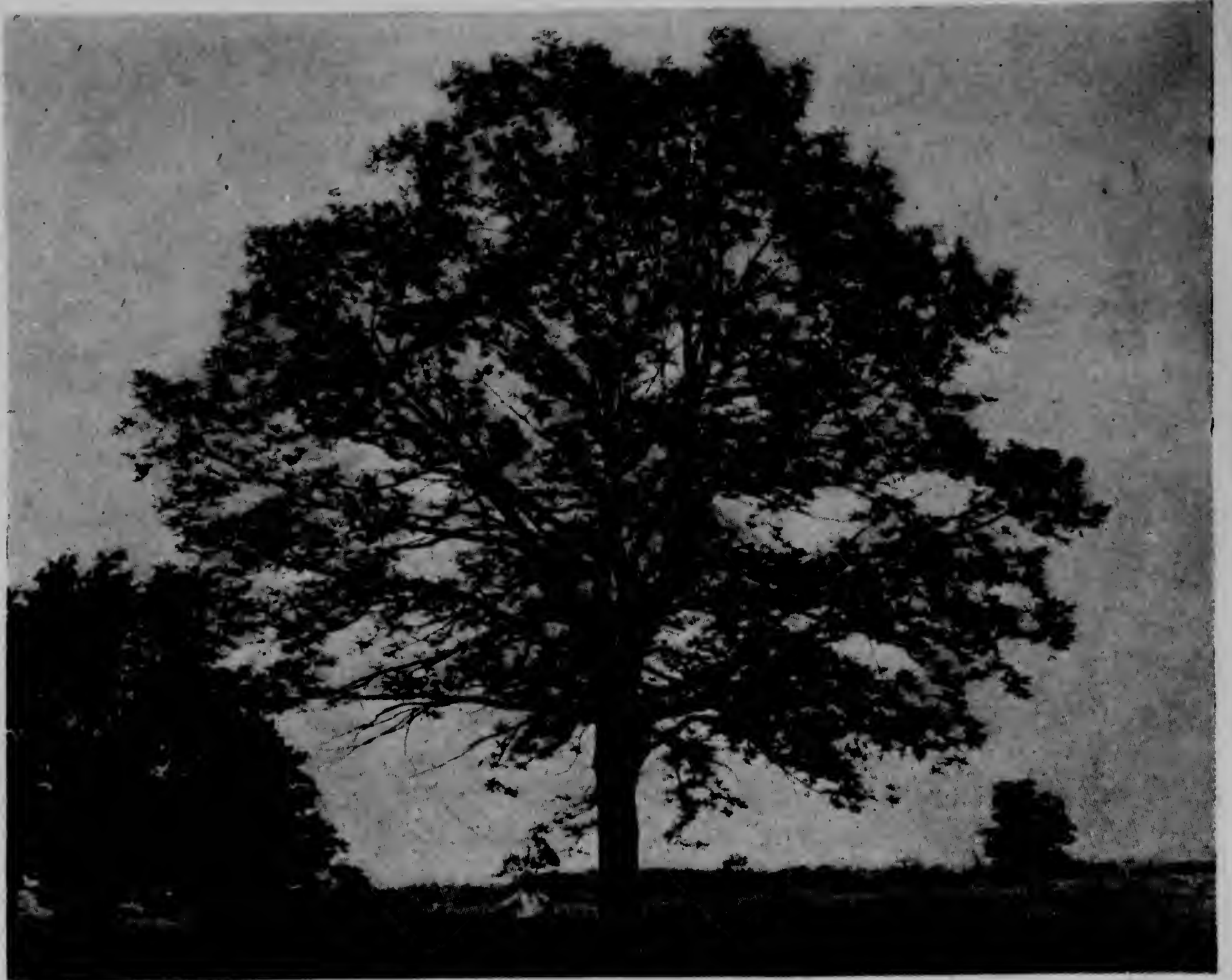
DOUGLAS LEECHMAN

(Illustrations courtesy Geological Survey)

**T**O THE Indian the forest was the source of all things. Here he found the food animals on which he lived; here was fuel; wood to build his home; bark to make his canoe; handles for his tools and weapons; materials for his baskets; fibre for his cord and lashings; herbs for his medicines.

Those natives of Canada who did not live in forested areas, such as the dwellers on the prairies and the Eskimos, visited the forest when opportunity permitted. Of the Eskimos, some tribes were never able to reach a district in which living trees were to be found, and they treasured highly the driftwood, often scarce, that they were able to pick up on their desolate shores, or were obliged to use such unsatisfactory substitutes as antler, ivory, horn and baleen.

It was to the forest, too, that the Indian came for materials which played an important part in the expression of his aesthetic impulses, namely dyes. Many of the paints used were of mineral origin, but all the dyes, with the exception of a brilliant yellow obtained from buffalo gall-stones, were the product of various trees,



The black walnut, whose roots and the green husks of the nut give brown and black

shrubs, herbs and lichens.

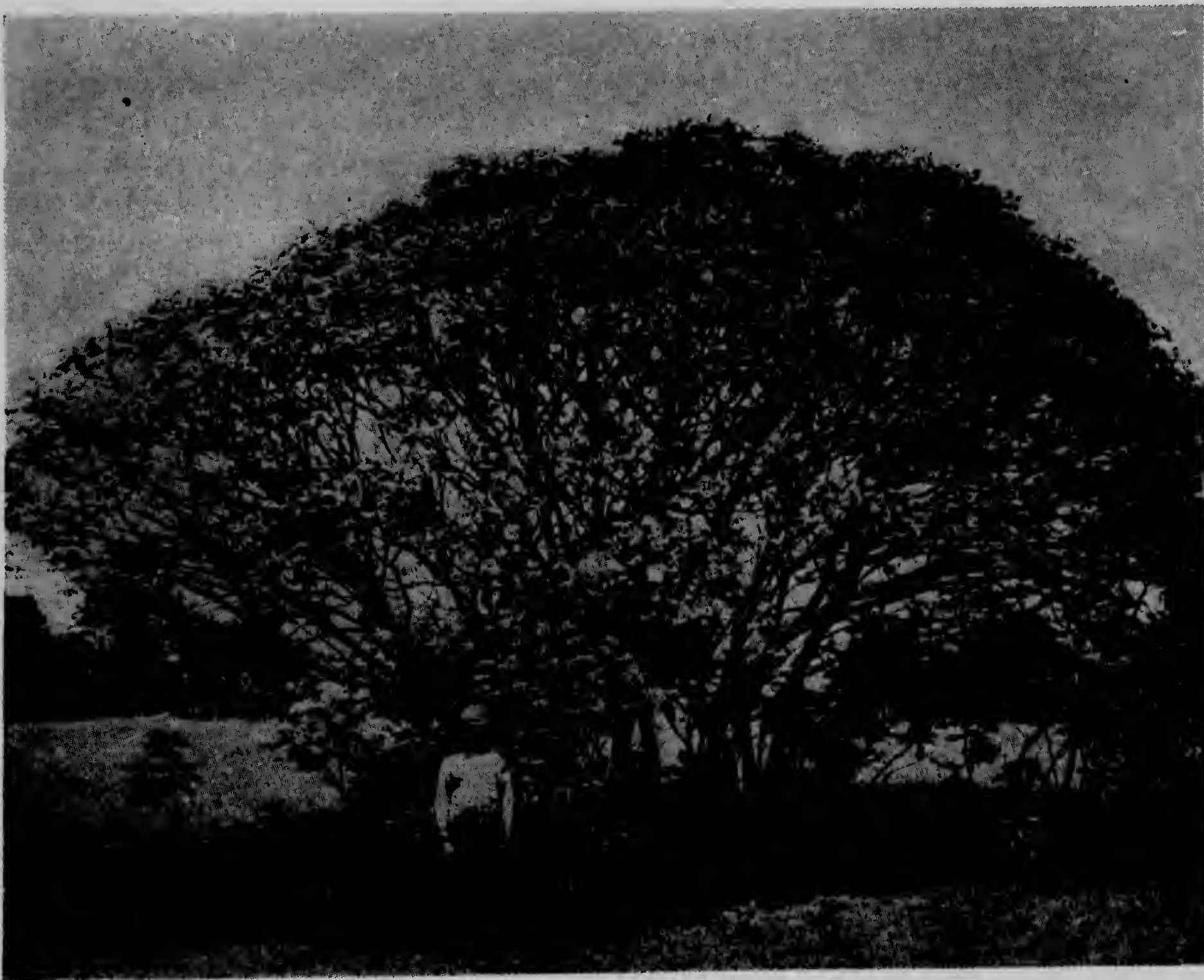
Some tribes made much more extensive use of dyes than did others, and it is perhaps among the Indians of the Eastern Woodlands that this craft reached its highest development. Here the population was more or less stable, agriculture was practised, the use of plants as medicines was well known and their properties better understood than among the inhabitants of other parts of Canada.

On the West Coast, though other arts had attained a very high level, dyeing was a matter much less considered than it was in the East. Dyes certainly were used, as in the making of the famous Chilkat blankets, but baskets, instead of being dyed, were usually decorated by the weaving in of materials of various colors, and paint was used a good deal more extensively than, say, in the interior of British Columbia.

Among the Eskimos dyes were used hardly at all, owing to the lack of plants from which to obtain them, and what few paints were used were of mineral origin, with the important exception of charcoal.

Many plants will yield a dye of sorts, but centuries of more or less conscious experiment have led the Indians to select those which give the best results, and it is interesting to note that when the European colonists arrived they were not slow in picking up many hints from the Indians, including, very probably, a knowledge of the local dye plants, for the Indian and the white man were often on a good deal better terms than our school books would lead us to believe.

The Indian dyes had one feature in common; they were all direct dyes, and did not require the use of any mordant to set the color. As a rule that part of the plant which yielded the dye was broken or scraped into fragments and boiled in water, to which the articles to be dyed



Red, yellow, orange and black dyes were obtained from the sumach



were added, whether porcupine quills, feathers, basket splints, or other material. Sometimes variations of this basic formula are found, but it is interesting to note that useless ingredients are never encountered. The Indian woman who was making a dye knew exactly what plant or combination of plants to use to obtain the desired color, in what quantity to use them and how long to boil them. This is in marked contrast to native medical formulae, in which inactive and useless materials are common, the idea of magical efficiency being more considered in medicine than in the humbler art of dyeing.

There were many women—for it was they who made the greatest use of dyes—who had recipes of their own, which they would impart to none but a selected few; not only were different plants used, but opinions as to when they should be gathered, and whether the plants should be dried or used while still fresh, differed markedly.

In Europe, especially in the northern countries, lichens are much used in dyeing, and it is to a lichen dye, known as Crottle, that the genuine Harris tweed owes its peculiar odour. Crottle, of which there are several kinds, is gathered off the rocks in the summer and dried thoroughly in the sun. It is then put into the dye-bath with a sufficient quantity of water, brought to a boil and allowed to cool. The wool is then added and the whole thing is boiled again until the desired shade is obtained. Several dyes of similar origin were used in aboriginal days in Canada, notably the Wolf-moss of the British Columbia interior, which gives a handsome yellowish-green. This lichen is used extensively in Norway and Sweden.

Peziza, the curious green stain which is seen in decaying birch, alder and other woods, yields a bluish-green dye and was well-known in the west. There is ample opportunity for a series of valuable and interesting experiments in the properties of lichen dyes; it is known, for instance, that the color obtained from a lichen will vary with the time of the year, the elevation above sea-level, the habitat of the lichen, whether wood or stone, and other conditions, but these variations have not been exhaustively investigated. The famous tripe-de-roche, so often mentioned in early narratives of exploration in Canada, gives a brown dye, while the bearded usnea gives an orange.

There has been a good deal of interest shown of late in these native dyes, and the recipes of our grandmothers, too, have been pored over once again. These recipes are often to be found in the old cook-books, especially those published prior to 1860, generally as appendices. Many dye-plants are to be found in Canada which were well known to Europeans but of which the Indians were ignorant, and in compiling the following list, which is

very incomplete, dyes used by the Indians as well as those preferred by Europeans have been included:

*Red*—Alder, bedstraw, birch (fresh inner bark), blood-root, cedar, dogwood, maple, pine (rotten wood), poke-weed, spruce, sumach, willow.

*Blue*—Elder (berries), grape (stems), kinnikinnik, larkspur, oak (bark, a light blue), sloe (fruit), sycamore, yellow iris (roots).

*Yellow*—Alder, ash (fresh inner bark), birch (leaves), bracken (roots and also young tops), cottonwood, crab-apple (fresh inner bark), goldenrod, goldthread, Oregon grape (inner bark of roots), pear (leaves), plum (leaves), poplar (leaves), sumach, sunflower, willow (leaves).

*Green*—Ash, elder (leaves, with alum), larch (leaves, with alum), lily of the valley (leaves), nettle, peziza, smartweed, wolf-moss.

*Brown*—Alder (bark), birch (bark), butternut, onion (skins), oak (bark), red currants (with alum), tripe-de-roche, walnut (root and green husks of nut), water lily (root), various lichens.

*Purple*—Dandelion (roots), deadly nightshade, elder (berries, with alum, violet; with alum and salt, lilac).

*Black*—Cottonwood, hemlock, meadowsweet, oak (bark and acorns), poison ivy, walnut, yew.

*Orange*—Alder, bitter-sweet, sumach, usnea, willow.

It will be seen that several plants are listed as being able to yield more than one color. This depends on the part of the plant used and on the length of time that the goods are boiled in the dye-bath. Thus sumach will yield a yellow dye from the bark, an orange and a red from the roots and a black from the seed clusters. Then again, while many of these plants will make good dyes without the use of a mordant, they will give other colors when mordants are used, as in the case of elder, which gives a violet when mordanted with alum, and a lilac if salt is added to the alum.

It should be borne in mind, if one intends to make use of these dyes, that cotton and silk or woollen goods take dyes very differently, as vegetable and animal fibres differ in construction. Test strips should always be dyed and the effect noted before risking a good piece of cloth in a dye-bath.

Pokeweed, which yields a fine, permanent red dye, is of special interest, because young Indian girls in the eastern part of Canada used to make decoctions of it to use in the winter as rouge. Possibly enough this little secret was passed along to more than one young daughter of an early colonial family, as were many other scraps of housewifely information, forming a community of interest which made a tie quite strong enough to unite Indian and white women in a bond of sympathy.

## HOW TO KEEP DOWN THE WOLF MENACE

John Frantz, trapper for sixty years, tells how the wolf menace can be controlled.

"On reading an article on page 137 of the March number of FOREST AND OUTDOORS, on the wolf question. I think I can make a few suggestions that would help on that subject, for I am an old trapper. I have seen this fur trapping grow from poverty to wealth. This was in Wisconsin. I later trapped timber wolves in Northern Wisconsin and have trapped lynx and bob cats.

"We had in Wisconsin the same conditions that your article speaks of and they got control of his royal majesty, Mr. Wolf, in a few years' time. Your article speaks of poison. Never allow that, for every wolf you poison you will poison ten other valuable fur bearers. A wolf won't

eat any frozen meat. He will kill a deer and eat all he wants and never go back again to the deer. When Wisconsin put enough bounty on the wolf so it paid the trapper to trap in summer time, they soon reduced the wolf tribe.

"The cheapest way to get rid of the wolves is to put a \$25 bounty on each wolf—you won't be bothered with wolves in a few years. A good trapper can catch five wolves easier in summer time to one in winter time. A wolf changes his habits in winter, just the reverse to summer. I can catch a wolf in summer as easy as a rabbit, and find him the hardest animal to trap in winter that roams the woods."



family, viewed as a fiber-producing plant, is understood to be the *Asclepias incarnata*, or swamp milkweed. The one now known as the *Asclepias Ozonata*, characterized by Mr. Boyce as the silk-fiber plant, is one of several differing characters of these, growing best in wet soils.

"It required at least three seasons to obtain fiber from a selected plant, and at least five winters of night and day study to test out the use of chemical solutions which would clean, soften and refine the bast beneath the bark of the plants without injuring its natural strength. Finally a sample was secured which seemed to be ideal in its characteristics."

During a half century of experimental work at Saginaw, Michigan, in a laboratory at Chicago, and finally at Richmond Pike, Staten Island, Mr. Boyce has had but one object in view, namely that of developing what he calls a fine-art textile fiber,



Courtesy of "Chemical and Metallurgical Engineering" (New York)

#### NOT ICE, BUT A THREE-FOOT CRUST OF SODA

Composes the glittering white surface of this African lake, with an area of 34 square miles. In the foreground is the factory which turns out two hundred tons of soda ash per day.

one which will be cheaper than cotton or silk, but which will have the best qualities of both. The writer goes on:

"During this time Mr. Boyce has naturally come into contact with many textile organizations. In 1894 he rented the plant of the Columbia Silk Mills at Paterson, New Jersey, and experimented with the mixing of ozone fibers and an equal amount of silk waste. He boiled off this mixture in a solution of soap and bicarbonate of potash, and the resulting fiber was made into tapestry for the Lyons Silk & Tapestry Co. He also supplied fiber for the production of coarse fabrics by wool and knit goods manufacturers in Michigan. He was also commissioned to do important research work for a bagging company in St. Louis, a silk-mill in New York State, and other organizations. Mr. Boyce spent a year at the Cheney Bros. plant at South Manchester in special work for that company.

"During all his work he has been in close touch with the U. S. Department of Agriculture, and the fibers which he has developed have been shown at various expositions and have received awards and gold medals.

"An interesting point about ozone fiber, according to Mr. Boyce, is its similarity to real silk in chemical composition. Another matter which he emphasizes particularly is the electrochemical method which he has devised for the refinement of the original fiber.

"No matter what is eventually done with ozone fiber or to what extent it comes into practical use, Mr. Boyce, who is now ninety-four years of age, can look back upon a lifetime of earnest scientific work which has added materially to the existing knowledge of plants, their propagation and treatment."

**WHY CHILDREN DISOBEY**—One reason why children disobey their parents is because they love the excitement of disobedience, according to a bulletin on juvenile behavior just issued by the National Committee for Mental Hygiene. Says Science Service's *Daily Science News Bulletin* (Washington):

"If making a child mind is made interesting by excitement, many children will want to be obedient, just as some men fight for the love of it." Parents are blamed for most of the disobedience of their children. Wrong methods are used to secure obedience, the report states. Commands are given when the children are inattentive, or there is too much indecision and insincerity, which the child quickly takes advantage of, or fear of punishment or hope of reward are too frequently employed. Obedience to the right rather than mere submission to orders is held out as the ideal. While some parents obey their children

and so give them the false idea that they are always going to get whatever they want, other children are taught submission so well that they are not allowed even to think for themselves, and so grow up into helpless men and women who always need someone to tell them what to do. Securing the child's faith that what he is told to do is best for him is advocated as the first step, which should be followed by a method of training which will train them in knowledge of what is right, and in self-discipline."

## AN AFRICAN SODA LAKE

**S**ODA-ASH AT THE RATE of two hundred tons a day now comes from a newly exploited lake in East Africa. The Samuels family, titled English Jews, are said to control the operating company. The writer of a descriptive article in

*Chemical and Metallurgical Engineering* (New York), remarks that Africa is the last place that we would look to instinctively for heavy chemicals. And yet this new source of soda possesses great potential strength as a factor in world commerce. Already Japan consumes large quantities of material from it, while Sweden, Norway, Belgium and England have all received shipments. We read:

"W. L. Jenkins, United States consul at Nairobi, has sent an

interesting report on the lake to the Department of Commerce. It is situated 100 miles southwest of Magadi Junction, a station on the Uganda Railway, British East Africa. It has a surface of about thirty-four square miles and over the entire surface of the lake is a crust of bicarbonate and carbonate of soda. This crust is very dense, and so hard that automobiles can be driven over it. The thickness varies at different points on the surface, but nowhere is less than three feet.

"Looking out over it, the lake has the appearance of frozen snow and gives the characteristic crunch of hard frozen snow when it is stepped on. As a fitting background to this impressive spectacle steep, rugged hills rise on every side. It is a sight that stamps one's memory.

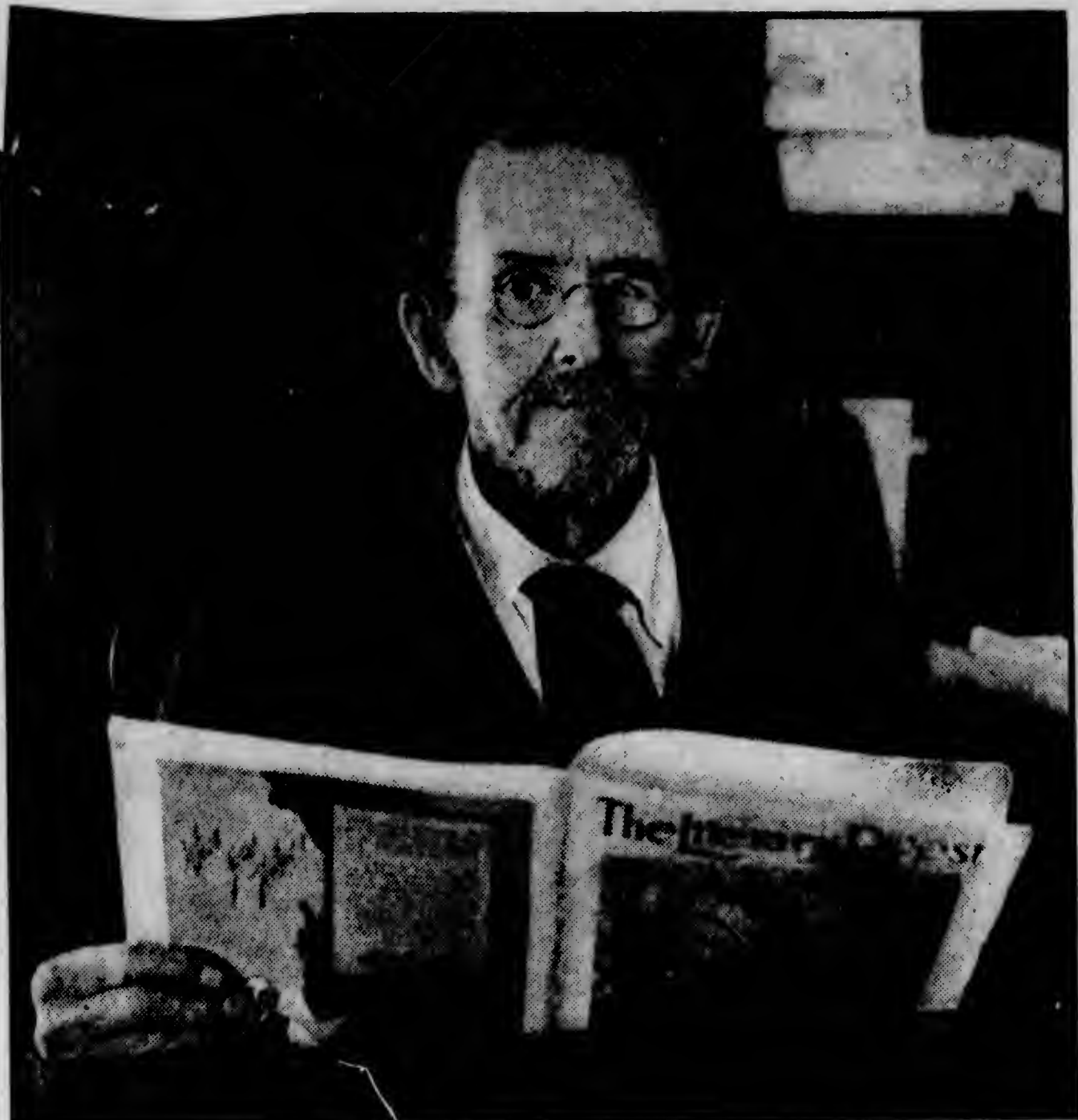
"Until recently the soda was cut by hand and transported in wheelbarrows to the factory, but a modern harvester in the shape of a gold-dredger was put into operation about June, 1923. This dredger has buckets with manganese steel edges that cut the soda easily. This material is pumped with a mixture of lake water to the factory at a rate which has been eight tons per hour, but which has been greatly increased by the recent installation of a new pump. At present the pipe from dredge to factory is nearly a mile long.

"The mixture of material is almost black and is pumped into conical vats, from the top of which the water flows back to the lake, the soda settling to the bottom. The crystals are washed with water on special trays and are then spread out on the floor of the factory to dry. The final drying is carried out in a calciner fired with fuel oil, from which it emerges as soda ash and is ready for the mechanical bagging machine. The plant capacity is in the neighborhood of 200 tons of soda ash per day, with prospects for an immediate increase to nearly double that amount. Finally, the material is moved economically to the coast by rail and loaded on steamers for export at Mombasa.

"Several items of news have significant economic and financial importance. The first is that the Magadi Soda Co. controls the Sun Soda Co., Ltd., in Japan, which acts as distributor. Shipment is usually made in 100-ton lots that are sold in transit. The fuel oil for calcination is obtained from the Shell Transport Co., in which Sir Marcus Samuels (Lord Bearsted) and Samuel Samuels have large interests. The latter has the controlling interest in the Magadi Soda Co. The offices of the latter company are also situated at Shell House, London.

"No prediction of the possible scope and market for this soda is desirable or sensible, for there are many indeterminate variables. It is a development that should be watched with considerable interest, however, for the capital behind it is intelligent and substantial."





Photographs copyrighted by Paul Thompson

EVIDENCES THAT THE INVENTOR OF MILKWEED SILK IS RIGHT UP TO THE MINUTE AT NINETY-FOUR

Mr. Boyce can look back upon a lifetime of earnest scientific work, which has added materially to the existing knowledge of plants.

**SILKY COTTON FROM MILKWEED**

**D**OUBTLESS THOUSANDS OF PERSONS who have seen the glossy "silk" of the common milkweed have wondered lazily whether it could not be utilized in some way. At least one man has done something more than wonder. In the so-called "ozone fiber," developed from a plant of the milkweed family through a lifetime of cultivation and experiment, Sydney Boyce, now ninety-four years old, believes that he has given to the world a fiber possessing some of the best virtues of both silk and cotton. These fibers have been used more or less in textile work, and altho the market may be searched for them in vain, the fact that *The Textile World* (New York) prints a descriptive article about them shows that they are not unappreciated by the trade. The writer in the textile paper believes that the romance of several centuries' search for Captain Kidd's treasure pales into insignificance when compared with Boyce's search for a new textile fiber. He says:

"This field of endeavor has led its devotees into strange paths. The curve of activity has fluctuated with the changing conditions of plenty and scarcity in the established textile fibers. The most recent illustration of the impetus resulting from the economic situation was the wild scramble for textile substitutes in Germany during the war. Unfortunately, many of the announced discoveries have been discredited, not only by the worthlessness of the substitute itself but particularly by the financial methods used in promotion.

"One investigator has devoted a lifetime of effort to this work, without any financial reward. Sydney Smith Boyce, originator of the so-called ozone fiber, stands out as an honest and sincere scientist who for more than half a century has studied the propagation and utilization of some of the comparatively little-known plants. Thus far, his ozone fiber has not come into

practical use. It is not the present writer's province to express himself as to its possibilities in the future, but merely to record a life work which has added much to our knowledge of an interesting series of plants.

"Born at Templeton, Massachusetts, in 1830, Mr. Boyce's early business experience was as a machinist in the installation of flax and cotton spinning machinery. In this work he was often confronted with the great difficulty of adjusting the machinery to the irregularities of the fibrous materials available. During the installation of the equipment of the Webster (Mass.) Crash Mills in 1845, a chance remark by Captain Stevens regarding the need of a flexible and pliable raw material made a lasting impression upon Mr. Boyce.

"It was not until 1873, however, that his real search for such a fiber commenced. Standing near a tract of partly drained marshlands in central Illinois, Mr. Boyce saw some silken fibrilla waving in the morning breeze. Asking John Heaney, a well-known hemp culturist, what those were, Mr. Boyce received the following reply: 'That is, so far as you and I can determine, what the American textile industry most deplorably needs—a new fine-art textile fiber.'

"With this hint as a basis, Mr. Boyce prepared a small tract of idle marsh at the back of his garden and set out some perennial roots for the purpose of producing what has become known as ozone fiber. For the following twenty-five years, Mr. Boyce worked early and late in the cultivation of these marsh acres and the propagation of various species of wild *Asclepias*, or milkweed.

"The problem of selection from the large family was a most difficult one. The tallest plants and the ones best adapted to producing a long, fine fiber were chosen. The marsh soils of Minnesota and Michigan were found to have unusual advantages over the other States and furnished much finer wild plants. The greater part of Mr. Boyce's experimental work was done in the swamps near Saginaw, Michigan.

"The plants which in time showed greatest promise were five members of the milkweed family and three of the rose marshmallow family. The most important species of the milkweed



A NEW SOURCE OF "SILK"

FIG. 1. The ozone fiber plant. FIG. 2. Section of the stalk showing fiber bast.



same species, or closely related forms of not over-good standing.

*Equisetum arcticum* Heer, *Fl. Foss. Arct.*, Bd. 1, p. 156, pl. 29, figs. 8, 9e, f, 1868. Bd. 2, p. 31, pl. 1, figs. 1-15; pl. 2, figs. 1-4, 1870. (?) Bd. 5, Abt. 1, p. 19, pl. 1, fig. 1a, 1878.

Penhallow, *Trans. Roy. Soc. Canada*, 2nd ser., vol. 8, sec. 4, p. 49, 1902. *Rept. Tert. Plants Brit. Col.*, p. 53, 1908.

*Physagenia Parlatorii* Dawson (not Heer), *Rept. Geol. & Res. 49th Parallel*, App. A, p. 329, pl. 16, figs. 3, 4, 1875.

*Equisetum* root, Dawson, *Trans. Roy. Soc. Canada*, vol. 4, sec. 4, p. 22, pl. 1, fig. 2, 1887.

*Equisetum Parlatorii* Penhallow (not Schimper) *Rept. Tert. Plants Brit. Col.*, p. 54, 1908.

*Equisetum Haydenii* Lesquereux, *Ann. Rept. U.S. Geol. & Geogr. Surv. Terr.*, p. 284, 1871 (1872). *Tertiary Flora*, p. 67, pl. 6, figs. 2-4, 1878.

*Equisetum lævigatum* Lesquereux (not Al. Braun) *U.S. Geol. & Geogr. Surv. Terr., Ann. Rept. for 1873*, p. 395, 1874. *Tertiary Flora*, p. 68, pl. 6, figs. 6, 7, 1878.

*Equisetum perlævigatum* Cockerell, *West. Ann. Sci.*, vol. 6, p. 154, 1889.

## NOTES ON THE SPHINGIDÆ OF SAULT STE. MARIE, ONTARIO

By W. H. A. PREECE

**F**OR MUCH of the information utilised in the preparation of the following notes I am indebted to Mr. Arch. Nicholls, who has collected in this vicinity for the last eight years. My own records cover 1923 only.

The total number of species so far recorded here is only sixteen and comparatively few of these can be regarded as common. Two species not previously recorded were taken here this year (1923), namely, *Darapsa pholus*, and *Proserpinus flavofasciata*. *Celerio lineata* and *Celerio intermedia*, the latter usually one of the most abundant species, were the only previously recorded species not taken in 1923.

*Ceratonia undulosa* Wlk. Quite the commonest species here. All specimens were taken at light, with one exception, which was found resting on a tree during the day. First taken, June 12th; last, July 6th.

*Sphinx kalmia* A. & S.—Five records 1923, only one previous record. All taken at light, first June 13th; last June 24th.

*Sphinx gordius* Cram.—Four records 1923; a few are recorded yearly. All taken at light, first June 25th; last, July 6th.

*Sphinx drupiferarium* A. & S.—One record; taken at light, June 24th; two previous records.

*Smerinthus cerisyi* Kirby.—Common, all specimens taken at light, first taken June 12th; last, June 28th.

*Smerinthus jamaicensis* Dru.—Fairly common, all specimens taken at light, first taken June 10th; last July 17.

*Paonias excaetata* A. & S.—Not common, all specimens taken at light, first June 18, last July 4.

*Paonias myops* A. & S.—Three records 1923, June 15 and 24, and July 1. Twice recorded in previous years.

*Pachysphinx modesta* Harris—Fairly common, all specimens taken at light, first taken June 12, last July 13. The local form is very fine and appears to be considerably darker than the typical one.

*Hæmorrhagia thysbe* Fabr. (Form *cimbiciformis* Steph.)—Quite common, first taken June 10, last July 1. Appears to favour choke-cherry blossoms.

*Hæmorrhagia diffinis* Boisd., var. *æthra* Stkr.—Common, first taken June 9, a number were seen up until the early part of July but, owing to their battered condition, none were taken after June 12. A newly emerged specimen, however, was taken on August 12, which tends to show that this species is partially double-brooded here. Most specimens were taken at the blossoms of blueberry and pin-cherry, a few at wild strawberry.

*Darapsa pholus* Cram.—One taken at light, July 4. No previous record.

*Amphion nessus* Cram.—Two specimens taken, one on the wing, late in the afternoon of June 10, the other inside a shop window in the morning of June 19. One previous record.

*Proserpinus flavofasciata* Wlk.—Two specimens taken, one in a sphagnum swamp, May 27, the other inside a freight-shed, June 9. No previous record.

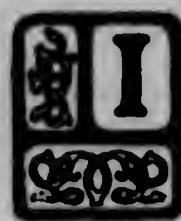
*Celerio lineata* Fabr.—Not recorded 1923. So far as is known, only one specimen has been taken here, which is in Mr. Nicholls' collection.

*Celerio intermedia* Kirby.—Not recorded 1923; usually one of the most abundant species.



## THE FOOD VALUE OF AN EQUISETUM FROM THE LANCE FORMATION OF SASKATCHEWAN\*

By PROFESSOR EDWARD W. BERRY  
of The Johns Hopkins Institute



IT MAY well be doubted if it is ordinarily possible, in the absence of anatomical characters, to distinguish between most fossil species of *Equisetum*, and the literature of systematic paleobotany contains a very large number of so-called species based on fragments of stems or rhizomes. Where these have a stratigraphic value they are doubtless justified, on the well known principle that analysis should precede synthesis. Where, however, a variety of so-called fossil species have been described from a similar or identical geological horizon, it may be an advantage, at least from the botanical standpoint, to consider many such illy-characterized fragments that have been described as representing a single botanical species. The justification for this is the well known extensive geographical range of most of the existing species of *Equisetum*.

The late Oswald Heer described *Equisetum arcticum* from the Tertiary of Spitzbergen in 1868 and subsequently identified somewhat doubtful remains from Grinnell Land as the same species, which has also been recorded by Penhallow from Red Deer River, and possibly also from Porcupine Creek and Great Valley in Canada. A pronounced feature of the Spitzbergen material was the numerous and large tubers on the rhizomes. These are well shown in Heer's second contribution to the fossil flora of Spitzbergen.†

During the summer of 1921, C. M. Sternberg, working for the Geological Survey, collected what appears to be this same species of *Equisetum* from an exposure on Rocky Creek, Saskatchewan (Sec. 15, Township 1, Range 5, West of 3). These have the largest tubers that I have ever seen on an equisetum—they are bigger than good-sized lima beans, and as large as some of the tubers which, in the uplands of Bolivia and Peru, are considered sufficiently good potatoes to warrant their cultivation and marketing.

The tubers of *Equisetum arcticum* are borne in clusters at the nodes of the rhizomes or underground stems, and one specimen from Rocky Creek shows a verticil of three of these at a single node. Heer figures four somewhat smaller tubers at a single node in one specimen from Spitzbergen. The sandy clays of the Lance formation are packed

with these tubers at the outcrop on Rocky Creek. They are flask-shaped and run up to 4 centimeters in length by nearly 2 centimeters in maximum diameter in the somewhat flattened condition in which they are preserved.

The most interesting feature in connection with their occurrence in Saskatchewan is their association in a series of "somber" clays and sandstones, which Sternberg calls the Lance formation, with dinosaurian remains. The collector mentions only the genus *Triceratops* as in actual association with fossil plants, but speaks of Dinosaurian remains as very common throughout these beds in this section, and as the other herbivorous forms were probably not far away when *Triceratops* was around, it occurred to me at once that here we have a promising article of diet on the Dinosaurian bill of fare.

It has always been a subject for speculation as to what the herbivorous dinosaurs fed on, and although some seem to have been well fitted by nature for browsing, others, like *Trachodon* and its allies, would seemingly have found it difficult or impossible to have availed themselves of hard or coarse food such as leaves or grasses. Other students have indulged in speculation regarding the few calories in such types of food and have compared this with the great bulk of a large number of the dinosaurs, and have sought to calculate the prodigious amounts of such low-grade food that an individual would consume.

*Equisetums* are gregarious plants which would probably have been present on the Lance river flats in great abundance, their rhizomes would ramify near the surface of the mud or sand, and if they formed tubers as abundantly as the fossils appear to indicate, they would seem to offer a highly concentrated food. These tubers contained a percentage of starch as high as, or even higher than, that contained by the modern potato, and although all animals do not thrive on a starch diet, some, such as hogs, can live almost wholly on a starch diet and transform it into fats, and there is no legitimate basis for thinking that dinosaurs might not do the same.

I am reproducing an illustration of a specimen of the Saskatchewan *Equisetum*, natural size, to show the size of its tubers, and there follows the synonymy of *Equisetum arcticum*, in which I have included a number of supposedly different, named forms from the Laramie, Hanna, and Fort Union formations, that appear to me to represent the

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†Heer, O., *Kgl. Svenska Vetens-Akad. Handl.*, Bd. 8, No. 7, pl. 1, 1870.



Stephen Powers, Tribes of California  
1877

## CHAPTER XXXVIII.

### ABORIGINAL BOTANY.

As employed in this chapter, the word "botany" is somewhat loosely comprehensive, and is used for lack of a better. Under it are included all the forms of the vegetable world which the aborigines use for medicine, food, clothing, etc. Of course, savages have no systematic classification of botanical knowledge; there are no genera, no species. Every oak, pine, or grass has its separate name. The Indians never group individuals together, except occasionally by adding one of the words *cha*, *du*, *po'-po*, *kom*, *wai*, *bak* (tree, bush, grass, seed, root, leaf), or something of that sort. But it is not to be supposed that the Indian is a superficial observer; he takes careful note of the forms and qualities of everything that grows on the face of the earth. True, he ascribes marvellous and impossible qualities to some plants, generally those which do not grow in his neighborhood, but this does not blind him to their real properties.

And as his perception of individual differences is nice and minute, so his nomenclature is remarkably full. I assert without hesitation that an average intelligent Indian, even if not a shaman, (or medicine-man,) has at command a much greater catalogue of names than nine-tenths of Americans. Nothing escapes him; he has a name for everything, though he never cultivates any plants. And, indeed, his extensive knowledge is not especially to be wondered at, being taught him with severity. In times of great scarcity they are driven by the sore pangs of hunger to test everything that the soil produces, if perchance they may find something that will appease the gnawings of appetite. They therefore know the qualities of all herbs, shrubs, roots, leaves; whether they are poisonous or nutritive, whether purgative, astringent, sedative, or what not, or without any active principle. And they have often found out these things by bitter experience in their own



persons. It is surprising what a number of roots, leaves, berries, and nuts, the squaw will discover. She will go out in the spring with nothing but a fire-hardened stick, and in an hour she will pick a breakfast of green stuff, into which there may enter fifteen or twenty ingredients. Her eye will be arrested by a minute plant that will yield her only a bulbous root as large as a large pea, but which the American would have passed unnoticed. The women are generally best acquainted with the edible matters, while the men are the authority as to the medicines.

There are seventy-three vegetable substances mentioned in this chapter. I am indebted to the kindness of Prof. H. N. Bolander, who identified for me many plants that I was unable to determine. There are a few specimens which are so scarce nowadays, owing to the ravages of stock, or so difficult to find in flower, that it was impossible to give their scientific names.

I will take this occasion to say that there are many substances popularly called "Indian medicines" which are humbugs, and which have been fathered upon the Indians by patent-medicine men. Whatever is set down in this chapter has been learned from the aborigines themselves.

In regard to medicinal herbs and plants, their usages are peculiar and sometimes amusing. As the practice of medicine among them is a source of great profit and prestige, it is sought to be invested with mystery. The shamans are always crafty men, keen observers, reticent. An old doctor always clothes his art with a great deal of superstition, secrecy, and pompous solemnity. In answer to impertinent young questioners, he says his simples do not grow anywhere in that neighborhood; he is obliged to purchase them from tribes living at a great distance. I knew an old doctor and his wife, both as full of guile and subtlety as an egg is of meat, who always arose at the dead of night, crept stealthily out of camp and gathered their potent herbs, roots, etc., then returned before any one was stirring and concealed them.

The Indians referred to in this chapter are the Nishinam, of Bear River, and the flora is that of the extreme lower foot-hills of Placer County. Their general name for medicine is *wen'-neh*, which denotes "good", but they frequently use the word "medicine", even among themselves.

To begin with the oaks, the species which produces their favorite acorns



Figure 42.—Woman pounding acorns.



is the *Quercus Gambelii*; Indian name, *Cha'-kau*. They generally select those trees which have a free, coarse bark and large acorns. About the middle of October the harvest begins, when the Indian, armed with a long, slender pole, ascends the tree and beats off the nuts. A tree which has been well whipped looks as if it had been scourged in a mighty hail-storm. The old men generally assist in carrying them home in their deep, conical baskets, and there the squaws' duties commence. Holding an acorn on a stone, she gives it a slight tap with a stone pestle, called *su'-neh*, to crack the shell, which she strips off rapidly. They are then dried and beaten to powder in small hollows on top of some great rock. The flour is soaked a few hours in a large hollow scooped in the sand, the water draining off and carrying away the bitterness; after which it is cooked into a kind of mush in baskets by means of hot stones, or baked as bread in an underground oven. The acorn which stands second in favor is that of the burr-oak (*Q. lobata*; Indian, *lauh*). In Placer County this oak seems to be more properly *Q. Douglassii*, as its branchlets are erect and rigid. There is an oak which they call *shu'-heh*, which seems to be something like a cross between the white and burr oak, having very white and coarsely rimose bark, and glabrous, shining, deeply sinuate leaves. Professor Bolander pronounces this also *Q. Gambelii*. The live-oak is *ha'-ha*; *Q. Wislizenia*, *ham'-mut*; the black oak, (*Q. Sonomensis*) *ham'-chu*. The acorns of these last three are eaten only when they can procure no others. There is one other very small species called *chi'-pis*, growing in the mountains; but I cannot determine from their descriptions whether it is the chinquapin or the whortleberry oak.

The nut-pine or silver-pine (*Pinus edulis*) is *toan*, *toan'-em cha*. It is a great favorite with them, the most useful tree they have, and they always regret to see an American cutting one down. The nuts are a choice article of food; and, burned and beaten to powder, or crushed up raw and spread on in a plaster, they form their specific for a burn or a scald. The pitch and the mistletoe (*Arceuthobium*) which grows on this pine are very valuable, in their estimation, for coughs, colds, and rheumatism. They set them afire, making a dense smudge, and then the patient, wrapped in a blanket, squats over it or stands on all-fours over it, and works and shuffles his blanket,



so as to make the smoke circulate all through it, and come in contact with every portion of his body. When an Indian has an arrow-wound, or wound or sore of any kind, he smears it with the pitch of this tree, and renews it when it wears off. In the spring, if food is scarce, they eat the buds on the ends of the limbs, the inner bark, and the core of the cone (*ta'-eh*), which is something like a cabbage-stalk when green. The cone-core and bunch-grass are boiled together for a hair-dye. They are as proud of their black hair as the Chinese; and when an old chief who is somewhat vain of his personal appearance, or one of the dandies of the tribe, finds his hair growing gray, he has his squaw boil up a decoction of this kind, and he sops his bleaching locks in it. The tar (*shin'-dak*), which is worn by widows in mourning, is made of hot pitch and burned acorns, powdered; it is removed by means of soap-root (*Chlorogalum pomeridianum*) and hot water.

*Chip'-pa* is the willow, the long twigs of which are used both for arrows and basket-making. In making an arrow the hunter employs a rude kind of turning-lathe, a couple of sticks held in the hand, between which the twig intended for the arrow is tightly clamped and twisted around, which rubs off the bark and the alburnum, and makes it round. The long straight shoots of the buckeye (*po'-loh, po'-lem du*) are used for the same purpose. For the woof in basket-making they employ the wood of the redbud (*Cercis occidentalis—pad'-dit*), which is split up with flints or the finger-nails into fine strings, used substantially as thread. The willow twig is passed round and round the basket, the butt of one lapping the tip of the other, while the redbud strings are sewn over the upper and under the lower.

*Ko'-toh* is the manzanita. Its berries are a favorite article of food, and are eaten raw, or pounded into flour in a basket, the seeds separated out, and the flour made into mush, or sacked and laid away for winter. They also make quite an agreeable article of cider from them, by soaking the flour in water several hours, and then draining it off.

Alder is *shu'-tum*; poison-oak is *chi'-tok*. They are less easily poisoned by the latter than Americans; their children handle it a great deal while little. They eat the leaves both as a preventive and as a cure for its effects, though it sometimes poisons them internally. The women use the leaves freely in cooking; they lay them over a pile of roots or a batch of acorn-

bread, then lay on hot stones and earth. The bright-red berries of the California holly (*Photinea arbutifolia—yo'-lus*) are eaten with relish; also the berries of the elder, *nok*, and wild grapes, *pi'-men*. They call a grape-vine a bush, *pi'-men-en du*.

Soap-root, *hauh*, is used for poisoning fish. They pound up the root fine, and mix it into pools where the fish and minnows have no way of escape, and at the same time stir up the bottom until the water becomes muddy. The minnows thrust their heads out of the water stupefied, and are easily scooped up. Buckeyes are used in the same manner. Soap-root is also used to heal and cleanse old sores, being heated and laid on hot. Both soap-root and buckeyes are eaten in times of great scarcity; they are roasted underground thirty-six hours or more to extract the poison.

For toothache the remedy is the root of the California buckthorn (*Frangula Californica—lu'-hum du*). It is heated as hot as can be borne, placed in the mouth against the offending member, and tightly gripped between the teeth. Several sorts of mints, *hi'-suh*, are used in a tea or decoction for colds or coughs. Ague is believed to be cured by a decoction of the little mullen (*Eremocarpus setigerus—ba'-dah*), which grows on black adobe land in autumn. Colic is treated with a tea made from a greenish-gray lichen (*Parmelia saxicola—wa'-hat-tak*), found growing on stones. For rheumatism they take the leaves and stems of a parasite vine (*Galium—shesh-em*) which grows up in the middle of the chaparral bush, heat or burn them, and clap them hot on the place.

Yellow dock, *hit'*, is a valuable specific in their pharmacopœia. In case of acute pain of any description the root is heated hot and pressed upon the spot. In the spring the leaf is eaten boiled for greens, together with clover and many other things.

Bunch-grass, *bu'-puh*, is the subject of superstition. They believe that the long, slender stalks of it, discharged as arrows from a little bow against a pregnant woman, will produce a miscarriage; also, that they will hasten the time of maturity in a maiden. There is another thing which they call *wo-ko'-mah*, probably wild parsnip, which they believe to be a deadly poison. It will produce nose-bleed, and the people who keep it in their houses will surely die. I will here state that I cannot discover that the



Indians ever used poisons to any considerable extent to rid themselves of enemies; if they did, it was the old shamans, and they keep the matter a secret. The Indians profess to stand in great and perpetual dread of being poisoned by one another; and no one will taste anything handed to him by one who is not a member of his family, unless the other tastes it first; but they imagine a hundred cases of poisoning where one actually occurs.

Of grasses, they eat the seed of the wild oat, (*tu'-tu-tem kom*), but very sparingly. Wild clover, *chi'-wi*; alfilerilla, *bat'-tis*; and a kind of grass growing in wet places (*Melica—holl*) are all eaten raw when young and tender, or boiled for greens.

There are two kinds of mushrooms which they consider edible. The one of which they are fondest is called *pūl'-kut*, and is a little round ball, from the size of a marble to that of a black walnut, found underground in chaparral and pine thickets. They eat it raw with great relish, or roast it in the ashes. Another kind is the *wa'-chuh*, which grows in the ordinary form, brown on the upper side, chocolate-colored and deeply ribbed underneath, and easily peeled. It is eaten boiled.

Higher up in the mountains they find a root looking somewhat like cork, a piece of which they sometimes wear suspended to their clothing as a charm. It is called *chūk'* or *cham'-pu*. Indians of other tribes in the State invest different species of *Angelica* with talismanic attributes.

Under the popular name of grass-nut there is included a large number of plants with a small, round, bulbous root, all of which, with one exception, the Indians eat with much satisfaction. They are generally pried out of the ground with a sharp stick and eaten raw on the spot; but sometimes the women collect a quantity in a basket and make a roast in the ashes, or boil them. Most of them are by no means disagreeable to the civilized taste. There is the beaver-tail grass-nut (*Cyclobothra—wal'-lik*), the turkey-pea (*Sanicula tuberosa—tu'-en*), the purple-flowered grass-nut (*Brodiaea congesta—o'-kau*); the tule grass-nut (*ko'-ah*), a small bulb, with a single, wiry, cylindrical stalk, growing in wet places, which I could not identify; the climbing grass-nut (*Brodiaea volubilis—oam'-pūm wai*), sometimes planted by Americans for ornaments; the little soap-root (*Chlorogalum divaricatum—poy'-um*); the

wild garlic (*Allium—ku'-ih*); the eight-leafed garlic (*shal*), the five-leafed garlic (*in'-shal*), and the three-leafed garlic (*wuk'-wi*); the yellow-blossom grass-nut (*Calliproa lutea—us'-tuh*); the long-leafed grass-nut (*Brodiaea congesta*, although the Indians have a different name for it from that mentioned just above, namely, *yoang wai*); the white-flowered grass-nut (*Hesperoscordium lacteum—yo'-wak wai*); and the wild onion (*Allium cepa—chan*). There is one other grass-nut, with a black bulb (*Anticlea—hak'-kul*), which the Indians consider poison, although it probably contains no more poison than other members of the liliaceous family.

The list of greens which they eat in the spring is also quite extensive. Besides the grasses and the yellow dock above mentioned, there is the mask-flower (*Mimulus luteus—pu'-shum*); two species of the *Angelica* (*hen* and *oam'-shu*), which are difficult to determine; the California poppy (*Escholtzia Californica—ta'-pu*), either boiled or roasted with hot stones, and then laid in water; the rock-lettuce (*Echeveris lanceolata—pit'-ti-tak*), eaten raw; the wild lettuce (*Claytonia perfoliata—yau*), and a species of *Sanicula* (*man'-ku*), the root of which, long and slightly tuberose, is also eaten. Of the wild lettuce a curious fact is to be noted. The Indians living in the mountains, about at the elevation of Auburn, gather it and lay it in quantities near the nests of certain large red ants, which have the habit of building conical heaps over their holes. After the ants have circulated all through it, they take it up, shake them off, and eat it with relish. They say the ants, in running over it, impart a sour taste to it, and make it as good as if it had vinegar on it. I never witnessed this done, but I have been told of it, at different times, by different Indians whom I have never known to deceive me.

Of seeds, they eat the following: A kind of coarse, wild grass (*Bromus virens—do'-doh*); a species of yellow-blooming, tarry-smelling weed (*Madaria—koam'-duk*), the seeds of which are as rich as butter; the yellow-blossom or crow-foot (*Ranunculus Californicus—tiss*), of which the seed is gathered by sweeping through it a long-handled basket or a gourd; a little weed which grows thick in ravines (*Blennosperma Californicum—poll*), gathered the same way; also a weed (*shi'-u*) with little white blossoms distributed all along the stalks, which are thickly covered with minute prickles—I know not



what it is. All these seeds are generally parched a little, and then beaten to flour, and eaten without further cooking, or made into bread or mush. The dry, parched flour of the crow-foot seed has that peculiar, rich taste of parched corn.

There is an umbelliferous plant (*sho'-kum*), the root of which the Indians esteem very highly for food; more highly than any other, it being their nearest equivalent to potatoes. I know not if it is the true cammas; I think it is at least a species of it. It grows on rocky hill-sides, blossoms in June and July, has an extremely delicate, fringe-like leaf, and a root about an inch long and a quarter as thick, sweetish-pungent and agreeable to the taste. In Penn Valley, Nevada County, they gather large quantities of it.

They are acquainted with the *Yerba santa*, but attach no particular value to it.

There is a plant (*pūm*) growing on north hill-sides, with a broad leaf, and a long white root as thick as one's little finger, which is highly esteemed as a medicine for internal pain of any kind, while the top affords edible greens. The Indians could not find a specimen of it.

Around old camps and corrals there is found a wild tobacco (*pan*), which Prof. Asa Gray pronounces *Nicotiana quadrivalvis* and Professor Bolander *N. plumbaginifolia*. It is smoked alone or mixed with dried manzanita leaves (*Arctostaphylos glauca*), and has a pungent, peppery taste in the pipe which is not disagreeable. Mr. A. W. Chase, in a letter to the author, states the Klamaths cultivate it—the only instance of aboriginal cultivation known in California. I think the Indians never cultivated it more than this, that they scattered the seeds about camp and then took care not to injure the growing plants. I have even seen them growing finely on their earth-covered lodges. The pipe, *pan'-em-ku-lah*, is generally made of serpentine (or of wood nowadays), shaped like a cigar-holder, from four to six inches long, round, and with a bowl nearly an inch in diameter.

There are two plants used for textile purposes. One is a kind of tule-grass or small bulrush (*Juncus—dok'-kun*), which they hatched with flints or with their finger-nails, bleached, and wove into breechcloths. For strings, cords, and nets they used the inner bark of the lowland milkweed



Figure 43.—Tobacco pipes and Case.



(*Asclepias—pu*). When it is dry the Indian takes both ends of a stalk in his hand and crushes it in his teeth, or else passes it over a stone while he gently taps it with another; then strips off the bark and twists it into strands, then into cords. The rock milkweed (*oam'-pu*) has a medicinal value; they use the root for the toothache the same way the root of the buckthorn is used.

It is necessary to state that most of the medicines above mentioned are of the class which the women are allowed to become somewhat acquainted with and to employ. There are several other substances which are more rare and valuable, or at least they deem them more valuable, and which the medicine-men alone know anything about. They are found far up in the mountains or in other localities, and may be called the medicines of commerce, having a tolerably well-settled value in shell-money. I regret that I was generally unable to secure sufficiently complete specimens to determine them. For instance, there is a root (*li'-no*) which I should call seneca snakeroot, but of which I could secure only a little piece. A root as large as a pipestem and about four inches long is worth \$1. A decoction of it is used for diarrhea, that scourge of aboriginal life, also for venereal diseases. There is a bush (*cha'-pum*) found in the mountains, with a very pale, tea-green bark and minute golden specks on the small limbs, which is probably California sassafras, and which is very highly esteemed for coughs and colds, a tea of the bark being given. Another root (*pal'-lik*)—spignet from its appearance—is made into a tea and drunk for diarrhea. This also is very valuable. There is still another root (*lit'-we*) found on the Truckee which is good for the dropsy.

Although it is not strictly germane to the topic, I may be permitted to state that the Indians have names for all the internal organs of the human body; and their ideas of their functions and of the operations of medicine are at least as respectable as those of the Chinese.

## YOKUTS BOTANY.

I will subjoin here some brief notes on plants and flowers brought in by the Indians of Tule River Reservation for inspection by the surgeon of the reservation and myself:



Che'-lis, shepherd's purse; the seed highly esteemed for pinole, a very nutritious, farinaceous beverage which the Indians learned from the Mexicans to make.

Ke'-yet-sah (*Cruciferae*), with reversed siliques. Seed used in making panada or mush.

Ta-kor'-nes (*Trifolium*), hairy clover; eaten raw.

Port'-râ (*Trifolium*), another species; eaten raw.

Wa-tra'-ko (*Escholtzia Californica*); not eaten here.

Lâ'-chun (*Compositae*); seed used for pinole; highly esteemed.

Po-tal'-lu Kai'-u-in (*Castilleja*), painted cup. This is called by the Indians "the coyote's rectum", which is the translation of the above name.

Poh'-ke-ûts, alfilleria; not eaten here.

Kit-nü'-sil (*Yerba Santa*, Span.); a decoction used for fever and for bad blood.

Trai'-yu; early, onion-like flower; small bulb used for food.

Nat'-tin Te'-eh; lupine from the mountains; not used. Indian name means "rattlesnake teeth".

Lun'-kūh' (*Allium*), wild onion; eaten green.

Men-e'-ling-hüt (*Phacelia*), two kinds.

Wal'-laikh, a willow-like shrub; used for medicine for rheumatism or other pain; beaten up and spread in the couch to be slept on.

So'-gōn (*Nicotiana*), wild tobacco; dried and beaten up very fine, then wet and compressed together into large solid lumps. Also used as a medicine for a cut.

Tan'-naikh (*Datura meteloides*), jimson weed; the root pounded up is "good for anything" as medicine; good for a cut, a gunshot wound, a bruise, etc. A decoction of the root acts like opium. Their priests sometimes drink it for two days in succession in order to get fully under its influence and become prophetic. Sometimes they are killed by it, which the Indians consider as a proof that their bowels were in bad condition.

Li'-pits (*Yerba mansa*, Span.); root pounded up and soaked in water; the water drunk for a bad stomach.

Kin'-min (*Quercus lobata*); acorns a great food staple; but rather inferior to—

E'-sin (*Q. gambelii*); the white oak growing up in the mountains, whose acorns are the favorite.

Tsi'-tikh (*Quercus*); a small species, grows on rocky points near the plains; acorns little esteemed.

Tau'-a-chit (*Quercus*); round, small leaves, perhaps another species of white oak. The acorns are used.

Ail'-loh (*Scirpus validus?*); tule pollen used for food. This is beaten off on a cloth in large quantities and is made into pinole or mush. The bulbous root is also eaten.

Hau'-pun (*Fresno*, Span.); a root highly esteemed as a purgative in certain internal diseases.

Tro'-kot (*Chlorogalum pomeridianum*), soap-root; fibre used for household brushes; root for washing; also as a healing and cleansing medicine.

Tsuk'-kus (*Sporobolus*); a kind of coarse grass, of which the stalks are used in making baskets.

Ta-ka'-tu (*Cercis?*); bark used in making baskets.

A kind of fern (*Pellea Brewerii*) used as a beverage, like tea. Indian name forgotten.

Al'-lit, a kind of salt, principally alum in a crude state, collected by these Indians as a seasoning for greens. They go in the morning, when the dew is on, to a low, alkaline piece of ground, and either pull up the grass and dissolve the salt off from it in water, or collect it by sweeping a stick through the grass and washing off the adhering salt.

Tin'-nikh, matting made from tule, used for beds and to sit on in gambling.

#### MISCELLANEOUS.

Che'-hin kin'-ku (*Angelica*); used by the Hūchnom for a cough-medicine.

Kin'-ku-halkh, a little root used by the same tribe as a blood-purifier.

Huh'-wal (acorn), kokh (manzanita), kin-kil-leh' (bunch-grass), lēp (tar-weed), ēsh (sunflower); all these are used by the Hūchnom to make bread (hu-teh').

Mu-hach'-a-ko-len (*Angelica*); a panacea and charm among the Hupâ.



An oak mistletoe (*Phoradendron*); smoked by the Chimariko as a substitute for tobacco. Indian name unknown.

## ANIMAL FOODS.

The following articles are either eaten or used for medicine by the Nishinam of Placer County.

Nauh (*Helix Vancouverensis*), snail; used for food.

Nauh (*H. Columbiana*), snail; used for food.

Shek (*Saturnia Cæanothi*), caterpillar; used for food.

Shek (*Arctia*, two species), caterpillar; used for food.

Shil'-lah (*Hyborynchus Perspicuus*), a small minnow. Sometimes the Indian shaman, after sucking a patient for a long time, pretends to vomit up one of these minnows (which, of course, he had previously concealed in his mouth), pretending that it had somehow been introduced into the system and had been the source of all the trouble.

Hol'-lih, crickets; used for food, roasted. Formerly they were often roasted in large numbers by firing the woods.

Pan'-nak, grubs found in decayed oak-trees; used for food.

Laih (*Engystoma*), a small frog; used for food.

Sho'-lah, slugs; eaten for food.

Ok'-o-pe-peh (*Phrynosoma*), a horned toad; given internally for medicine in certain stomachic affections.

Pit'-chak (*Sceloporus bi-seriatus*), another toad; used as the above.

Shol'-lo-koi-koi (*Gerhonotus multi-carinatus*), a lizard; used for medicine.

Shol'-lo-koi-koi, another lizard; used as the above.

Kūt (*Sphinx Ludoviciana*), a horned black worm; used for food. The Indian name denotes "a buck", so called on account of the horn.

Tai'-a-mun (*Coronella balteata*), a ring-snake; used by the Nishinam for medicine; eaten by the Washo of Nevada.

Earth-worms (*Lumbricus*), Indian name unknown to me; eaten in soup. The Nakum of Big Meadows dance and stamp violently, chanting all the while, to bring these worms to the surface.

Koy-o'-ta (*Onodonta*), a clam found in Owen's River, and in many other parts of California; eaten boiled.

No'-ko (*Mytilus edulis*), a clam; eaten by the Gallinero of Russian River Valley.

A clam (*Saxidomus Nuttallii*); eaten by the Indians of Eel River Valley.

Sal-i'-ki (*Acmea mitra*); a shell used by the Pit River and other tribes in the ornamentation of women's dresses.

Hau-min'-kēt, dried whalebone, found on the coast; used by the Hūchnom as an antidote for dyspepsia.

Cham'-bau (*Ortyx Californicus*). After eating the flesh of this bird, roasted, the Nishinam dry the skins, and preserve them as a dainty for use in case of sickness.

En'-neh, grasshoppers; eaten by the Konkau. They catch them with nets, or by driving them into pits; then roast them and reduce them to powder for preservation.

The skunk (*Mephitis*) is eaten by the Nishinam, when properly caught and dressed.



Ethnology, Miscellaneous



# SCIENCE AND INVENTION

## Perishing Indian Dialects

**A** LARGE NUMBER of American Indian languages, are now at the vanishing-point.

They are being studied under the auspices of the Committee of Research in Native American Languages of the American Council of Learned Societies, of which Prof. Franz Boas of Columbia University is chairman.

Three of the Indians assisting in this work are seen in the photographs sent to us by Dr. Alexander Lesser. They are:

Kai Kai, a Kitsai Indian woman, through whom the Kitsai language was recorded phonetically.

Henry Chapman, a Pawnee Indian, with his baby, who was interpreter for all the work done on the language and ethnology of the Pawnee by Dr. Gene Weltfish and Dr. Lesser.

Mark Evarts, a Pawnee Indian, with whom a great deal of work on the Pawnee language was done by Dr. Gene Weltfish.

Preservation of one dialect depends entirely upon the life of a lone old woman, the sole living person who still speaks the language, we are told in a press bulletin issued by the University. We read:

"The dialect, the southern Caddoan, is being recorded by Dr. Alexander Lesser, under the Committee's auspices. It was the language of a group of Indian tribes who lived in southern Oklahoma, in Arkansas, and near the Red River in Louisiana.

"From the speech of the old woman, an Oklahoman, who belongs to the Kitsai tribe, Dr. Lesser has outlined the foundations of the language. By the middle of this summer, it is declared, he hopes to have completed the grammar and the editing of Caddoan text. Dr. Lesser has carried on his research under Professor Boas, world authority in anthropology, with the aid of the Columbia Council on Research in the Social Sciences.

"Future record of many other American Indian dialects, it is reported, depends on circumstances almost as precarious. One of the very few Indians who still speak the Mohegan, or Mohican, language, the dialect of the Eastern Algonquin tribe made famous in the novels of James Fenimore Cooper, was found in a hospital in Milwaukee. A committee investigator, Olive Eggen, graduate student at the University of Chicago, is attempting to obtain from him the form and the accents of the nearly vanished speech of *Uncas*.

"In the case of the Tillamook Indians of northwest Oregon, another investigator reported that if research had been postponed a few more years, there would have been no language to record. The native tongue, she said, is practically extinct, only a very few individuals who still speak it being discoverable.

"The Tillamook language is the most southern and strongly divergent Salish dialect, and, according to the Committee, is particularly important for an understanding of the history of American language because of its relations to other dialects.

Kai Kai



Henry Chapman



Mark Evarts

"A near 'resurrection' of one of the many Indian tongues long believed completely extinct was achieved by another Committee research worker, when he discovered that the language of the Cayuse of Oregon, reported vanished by ethnologists in 1883, is still being spoken by a few families."

CONSIDERABLE difficulty, we are told, was encountered in visiting these families. Prof. Melville Jacobs, of the University of Washington, reported that investigation had been blocked, temporarily at least, by the extreme reluctance of the Indians to give information. Little definite fact has been obtained so far, except for proof that the language is related to Molala, but Dr. Jacobs said he was hopeful that in the course of time the reluctance of the little Cayuse group may be broken down. The writer goes on:

"Work on the language of the Pawnee, based largely on old manuscripts written thirty-five years ago by Mr. Murie, a native Pawnee, who worked at one time for the Field Museum of Natural History, for the Museum of Natural History, and for the Bureau of American Ethnology, is being carried on by Dr. Gene Weltfish.

"The manuscripts have never been digested, and can be interpreted only in the light of further field study.

"The Natchez tongue, known to a handful of survivors, is being studied by another Committee scholar, Vic Riste, graduate student at the University of Chicago. The Patwin language of California, previously entirely unknown, is being studied by Dr. Paul Radin, under the supervision of Prof. Alfred L. Kroeber of the University of California.

"Prof. Robert H. Lowie, the anthropologist, visited the Crow Indians, collecting new texts, and studying the grammar of the language, having previously made a thorough study of the ethnology of the tribe.

"Other Indian dialects studied under the Committee's sponsorship during the past year, according to Dr. Boas, are the Tonkawa, the Nitinat, the Wishram, which is an eastern Chinook dialect; the Washo, a language whose relation to the California speech is said to be most important; the interior Salish dialects of the State of Washington; the Nez Perce, in which valuable texts were gathered; the Dakota, the Pomo, the Yuki, the Yokuts, the Yaudanchi, and the Cora.

"A total of about \$14,000 was expended by the Council on the year's work of the Committee.

"On the executive board of the Committee, besides Professor Boas, are Prof. Leonard Bloomfield of the University of Chicago, and Prof. Edward Sapir of Yale. On the advisory section are Manuel J. Andrade, University of Chicago; Jaime De Angulo, University of California; Roland B. Dixon, Harvard University; Rev. Berard Haile, Gallup, New Mexico; John P. Harrington, Smithsonian Institution; Melville Jacobs, University of Washington; and D. Jenness, National Museum of Canada.

"Also, Alfred V. Kidder, Carnegie Institution of Washington; Alfred L. Kroeber, University of California; Truman Michelson, Smithsonian Institution; Frank M. Olbrechts, Kessel-Loo, Belgium; Gladys A. Reichard, Barnard College; Frank G. Speck, University of Pennsylvania; and John R. Swanton, Smithsonian Institution."



been carried on by the writer now for three years. The object of these investigations is twofold. In the first place they are expected to show what, if any, bodily and functional changes have taken place in the descendants of early whites under prolonged action of American environment; and, in the second place, they are to give us a series of much-needed standards, for use in anthropological comparisons.

The study is limited to healthy adults between 24 and 60 years of age, and no selection whatever is made beyond this requirement; in fact the work is purposely confined to the District of Columbia, where the old American population is derived from all vocations and from all parts of the country. The number of individuals of each sex to be examined was set at from 150 to 200, and the lower limit has now been nearly reached with both males and females.

The results of the research are most interesting. In general, it may be said that no homogeneous American type exists, even in the very oldest families; ancestral traits often persist in a remarkable manner; yet on the whole there are unquestionable evidences of a tendency towards the formation of a purely American subtype. In other words, there are evident, on the one hand, the power and persistence of heredity, while, on the other hand, we can also trace the effects of local American acquisitions. Yet there is little probability that a national type will develop in this country within the next few centuries; the old families are dying out or mixing with newcomers, and immigration will keep on pouring in fresh foreign strains. Even should immigration stop, there is little probability that a single American type would ever develop, but we should expect rather several subtypes, due to the basic regional differences in the components of the population, jointly with differences in environment.

*The Genesis of the American Indian:* ALEŠ HRDLIČKA.

The author of this paper considers the question of the unity or plurality of the American race. In answering this question he decides in favor of the original unity of the Indian race in America. He bases his conclusion upon the similarities of language, culture, mentality and physique. The author next takes up the question of the antiquity of the race on this continent. He does not think that the Indian was autochthonous on this continent. He bases this belief upon the absence of

the inferior primates of the anthropoid type on this continent, also upon the subject of the unity of the human species and upon the circumstances that the primitive types of humanity living in Europe during the quaternary or glacial epoch could not have come from America. According to the author no human remains of geological antiquity have been demonstrated to exist on this continent.

The third question considered is the source of the elements that occupy America and the epoch of the occupation.

With respect to the first point the author passes in review the means of transportation of prehistoric man. The geographical situation of America with respect to the other continents; the anthropological characteristics of the American Indian, which compare with the primitive characteristics of the great ethnic groups of other parts of the world. The author concludes from these considerations that the American aborigines could have come only from Asia.

With respect to the epoch, the author thinks that no direct proof exists upon which to base an opinion. Considerations or proofs of an indirect character tend toward the idea that emigration to America could not have been effected before the European Neolithic period.

The manner or manners of the arrival of man to the new world and his subsequent dissemination and reproduction there constitutes the last point of analysis by the author. His opinion is that there was not one but many successive immigrations.

*Variations in the Lambda of the Crania of the Ancient Peruvians:* CARLOS MORALES MACEDO.

In the limited zone between the two occipitoparietal sutures and in the lambda itself, there are observed certain morphological variations, which present in the crania of the ancient races of Peru a frequency not surpassed in the crania of other peoples. The author is of the opinion that in the lambdoid region the Peruvian crania show an anatomical peculiarity.

The interparietal, the epactal and the lambdoids are treated separately. The study is based on the observation of 924 authenticated Peruvian crania, of which 551 belong to the National Museum of Peru, 102 to the Raimondi Museum (School of Medicine), Lima. The remaining 271 were collected by the author in the ruins of Pachacamac and the huacas of Ancon.

The author's conclusions are:



in accordance with the number of individuals in each race. In the latter case a constantly increasing amount of white blood will be found, because the fertility of the negro male is materially reduced while that of the white male is considerably increased. For this reason the result of the mixture consists in the development of a population in which white blood will more and more preponderate.

The problems in regions of pure white population are still different. The claim that the amount of mixture of European types that occurs in America is infinitely greater than in corresponding mixture that has occurred in previous times in Europe can not be maintained. Mixture of distinct types owing to migration and intermarriage has been the rule in earlier periods in Europe, and events in America are a repetition on a larger scale of earlier phenomena in the development in European populations. The stability of European social units is largely a phenomenon belonging to the stable agricultural conditions which prevailed until the beginning of the nineteenth century. With the industrial development this stability has been broken. Since conditions in America are quite analogous to those that have prevailed in Europe for several thousand years, there is no reason to assume any detrimental influence owing to the contact of different types in our country.

*Heredity of Stature:* C. B. DAVENPORT.

The study of the heredity of stature by Galton laid the foundation of biometry and has always been a favorite one for the biometrician who has believed it incapable of Mendelian analysis. Such analysis has, however, been attempted, and, although additional investigations have still to be made on the subject, it is even now clear that stature is not determined merely by general growth factors, but that there are five principal elements that are separately inheritable and form combinations of which the diverse statures of a hybrid family can be in major part explained.

*United States Census of Immigrant Stocks:* DANIEL FOLKMAR.

In 1910 were presented for the first time in the census figures directly relating to the ethnic composition of the white population of the United States, in so far as that is indicated by the native languages of the foreign born and their children in the United States. A great numerical preponderance is still held by the mother tongues of

northwestern Europe. The German is larger than the English or any other single foreign stock in the United States, as thus defined. It contributes more than one fourth of the entire last two generations of immigration. The English-Irish-Scotch-Welsh mother-tongue group numbers 10,037,420, and combined is only about 1,200,000 greater than the German mother-tongue stock.

The "new" immigration from southern and eastern Europe is still a small factor numerically. Taking as 100 per cent. the total white population of the United States in 1910, numbering 81,731,957, the so-called native stock constitutes 60.5 per cent. and the three great linguistic families of foreign stock from northwestern Europe constitute 27.1 per cent., making a total of 87.6 per cent. The elements from southern and eastern Europe constitute, therefore, less than 13 per cent. of the total. Of this, the two principal Latin mother tongues of the United States, the French and the Italian, contribute less than 5 per cent.

Of the total foreign white stock of the United States, 32,243,382, there are 8,817,271 persons who are of German stock. Of the foreign-born white element of the United States, 25.2 per cent. are reported as English, Irish, Scotch, Welsh and Manx in mother tongue and 21.8 per cent. are reported for the Germanic languages. Russian immigration is shown to be far more Hebrew (52.3 per cent.) than Russian (2.5 per cent.) or even Slavic.

The Spanish mother tongue contributes a much larger proportion of the total foreign-born white element than does the corresponding country of birth, Spain. The excess comes mainly from Mexico and other countries south of the United States. South America shows a decrease in the number reporting Spanish its principal mother tongue as represented in the United States. The contingent from Cuba is over 95 per cent. Latin—that is, mainly Spanish—while the representation in the United States from the other West Indies is, on the contrary, over 70 per cent. English, less than 10 per cent. being Latin.

*Anthropological Study of Old Americans:* ALEŠ HRDLIČKA.

Old Americans, for the purpose of this study, are those whose parents and all four of whose grandparents were born within the territory of the United States and have no colored admixture.

Physical and to some extent also physiological investigations on this now very numerous, and at the same time rapidly diminishing, stock have



## BLOOD GROUP DISTRIBUTION OF THE AMERICAN INDIANS

### "Islands" of Atypical Tribes Suggest Repeated Mutations

MUCH work has been done on the racial distribution of the three allelomorphic genes whose interactions result in the four main blood types: *O*, *A*, *B*, and *AB*. These observations have been put forth as having a considerable, though as yet undetermined, diagnostic value as evidences of racial relationship. A discussion of the evidence this technique gives regarding the origin and migration of the American Indians concludes a recent report on the blood group distribution of three hundred individuals from ten tribes of Indians living along the coast of British Columbia.\* Of this group 260 were *O*'s, 38 *A*'s, and two *B*'s. In several of the tribes it was known that those showing the *A* blood type were related and one five generation pedigree is given showing typical dominant inheritance. Gates also gives summaries of other reports on Indian blood groups from North and South America. These give a significant picture of preponderant *A*'s, a smattering of *B*'s, and a trace of *AB*'s, (except in a small sample from Tierra del Fuego which shows three *O*'s and thirty *B*'s). This is in agreement with previous reports on the blood group distribution of the American Indian summarized by Snyder† as 91.3% *O*, 7.7% *A*, 1% *B* and 0% *AB*.

It has been held that the high percentage of the *O* blood-group among American Indians is an indication that the progenitors of the Indians had separated from a parent racial stock somewhere in Asia before the *A* mutation and the *B* mutation had occurred,—both *A* and *B* being dominant to *O*. Conclusions based on such reasoning are rendered distinctly hazardous by reason of the deplorable and widely

noted tendency for a given gene to repeat the same mutation from time to time. Direct comparison of percentage distribution of the blood group genes may for this reason be of little value, and an "island" of one type in a preponderating region of another type might be taken to be due to race crossing or to a new mutation.

Two possible examples of such independent mutations have recently appeared in the literature. Matson and Schrader (*Journal of Immunology*, August, 1933) report that in two tribes of Plains Indians the distribution of the four groups notably departs from the usual picture of preponderant *O*'s. Among 115 in one tribe, pure Blackfeet, only two blood groups were found: 23.5% *O* and 76.5% *A*. Among 24 pure Blood Indians the percentages were approximately the same, 16.7% *O* and 83.3% *A*. In neither group were any *B*'s or *AB*'s found. In both these tribes a certain number of Indian-white hybrids were also tested, and distributions intermediate between these and that characteristic of the white race were observed.

Still another situation is found in the Caraja Indians of Brazil. Golden (*Lancet*, 1930) found in 61 members of this tribe the following distribution: 39.0% *O*, 5.0% *A*, 51.0% *B*, and 5.0% *AB*. This is in close correspondence with the Fuegian series reported by Gates and additional data from this region might define the boundaries of a rather large "island" showing a preponderance of *B*'s. In this sample a higher percentage of *B* is encountered than in the European races, and consequently the presence of the *B* gene could hardly be accounted for on the

\*GATES, R. R., Blood Group and Physiognomy of British Columbia Coastal Indians. *Journal of the Royal Anthropological Institute*, 64: 23-44, 1934.

†SNYDER, L. H., *Blood Grouping in Relation to Clinical and Legal Medicine*. Williams and Wilkins, Baltimore, 1929.



basis of crossing with Europeans, were it alleged in explanation that the Indians tested were not of pure blood.

As an example of parallel mutations in man the two woolly-haired Nordic mutations reported in the JOURNAL in recent months may be cited. It would appear that the unusual blood group distributions discussed above might reasonably be accounted for by such an occurrence. Other blood group "islands" owing their origin to such independent mutations may well be discovered as more information becomes available. If this happens with the blood groups it is an excellent explanation of the situation noted above. The chances of survival of such mutations would seem to depend primarily on the size of the group in which they occur because none of the blood groups seems to confer any selective advantage in increased vigor or immunity to disease.

That such mutations may occur is also suggested by the fact that in any large series of parent-offspring blood group tests a certain small proportion of cases is found which do not conform to the rules of mendelian heredity. These are accounted for as being due either to illegitimacy or to errors in technique. Doubtless most of these cases can be correctly ascribed to one or the other of these sources of error, but it is also conceivable that a certain small proportion of these inconformities might be due to mutation. This possibility would render such inconformable cases of especial interest. Those due to faulty technique could, of course, be eliminated by retesting the subjects. The elimination of cases due to illegitimacy would obviously be much more difficult. The application of a polysymptomatic test applying as many independently inherited mendelian characteristics as possible, ought to indicate in a good many cases, that the alleged parents could not be the actual parents of the child, and these cases could then definitely be ascribed to other causes than mutation. This would leave a small number of cases which might still be due to il-

legitimacy but which also might be due to mutation, and the intensive study of these cases would be both a challenge to the experimental ingenuity of the investigator and his diplomatic finesse in arriving at conclusions of scientific value without landing either in a hospital or in a court of law. If any venturesome soul attempts to explore this obviously complicated territory he may have much reason to be thankful that an understanding of the laws of mendelian inheritance (and of their possible implications) is still as lamentably restricted as is actually the case.

Gates suggests that the gradually increasing complexity of the blood group relations may add to their value in racial diagnosis. Thus the recent discovery in Scandinavia of two distinct *A* types ( $A_1$  and  $A_2$ ) may make it possible to differentiate the *A*'s in various parts of the globe. Gates notes also that the Australian aborigines have an agglutinin which is not found among Europeans. Nothing is known about its distribution in other parts of the world, but it may well prove useful in differentiating certain racial groups. The recently discovered *M* and *N* agglutinogens have already been found to be distributed unevenly in the various divisions of the human race. Thus by taking account of the distribution of all these different types and subtypes a very illuminating classification of the various races of mankind may be possible. Much still remains to be learned about the distribution of the four primary blood groups and practically nothing is known about the distribution of the newly discovered *M-N* differences in blood reaction. If the races of man were in a state of static equilibrium, there might be more hope of learning enough about these immunological peculiarities to make them useful in deciding which races are which, but with modern transportation the hope of obtaining information regarding even the rather doubtfully pure races that now exist becomes less each year.

R. C.



## SCIENTIFIC BOOKS.

*Publications of the Jesup North Pacific Expedition.* (Memoir of the American Museum of Natural History, New York.) Leiden, E. J. Brill, Ltd.; New York, G. E. Stechert & Co.

The continuation of the publications of the Jesup North Pacific Expedition appears, after an interval of several years, published by E. J. Brill, Leiden. The following notice of the publications issued during the year 1905 is written by the editor of the series, and for this reason contains only a brief statement of the contents of the volumes.

Vol. III., Part III., *Kwakiutl Texts.* By FRANZ BOAS and GEORGE HUNT.

This number closes the volume containing the Kwakiutl texts recorded by George Hunt, and revised and edited by Franz Boas. The material in this volume has been arranged according to tribes of the Kwakiutl, beginning with the extreme south, and proceeding northward. The first text in the series is given in interlinear translation; while all the others are given in parallel columns, Indian and English. At the end of the volume is given a brief abstract of the traditions, which are intended to enable the reader to inform himself regarding the contents of the volume without reading the full texts. The abstracts are provided with page references, which facilitate the finding of any particular passage. An appendix to the volume contains lists of stem words and suffixes, by means of which the philological use of the text is facilitated.

The present volume contains almost entirely traditions relating to the ceremonies and families of the Kwakiutl Indians, and illustrates the exuberance of legends of this character that have developed among this tribe. In character and contents, these traditions are remarkably uniform. They resemble the traditions of the northern parts of the North Pacific coast, and account for the privileges of the different families and tribes of the Kwakiutl.

The language is probably, on the whole, accurate. Mr. Hunt, the recorder, speaks Kwakiutl as his own mother tongue, and has

been trained in writing the language by long practise, and under the guidance of the editor. All the texts have been phonetically revised with the assistance of other Indians. Notwithstanding the care that has been taken, there remain many uncertainties and obscure points; but the material seems sufficient to elucidate all the main points of the Kwakiutl language.

In the eighteenth chapter texts of speeches and war accounts are given, translations of which were published in Franz Boas's account of the 'Secret Societies and Social Organization of the Kwakiutl Indians,' published in the Report of the U. S. National Museum for 1895.

The style of most of the texts is diffuse, but it was thought well to retain the full accounts, because the stories contain a great many data relating to the every-day customs and beliefs of the tribe.

A second volume of texts of this tribe is in press. It contains the mythological traditions relating to the origin of the world, and supplements in this respect the material contained in the first volume.

Vol. V., Part I., *Contribution to the Ethnology of the Haida.* By JOHN R. SWANTON.

This volume contains parts of the results of an expedition undertaken by Dr. John R. Swanton to the Queen Charlotte Islands. His expedition was undertaken in cooperation with the Bureau of American Ethnology, the understanding being that the linguistic results (that is, the grammar and dictionary of the Haida language) were to be published by the Bureau of Ethnology, while the ethnological results and traditions were to be published by the Jesup North Pacific Expedition.

The present volume contains, primarily, data relating to the social organization of the Haida. In the first chapter of the book, interesting information is given on shamanism, witchcraft, medicine, customs, taboos and games of the tribe. In the beginning of the book the cosmic notions of the Haida are described, which are of great importance for a clear understanding of their social organization. It is interesting to note that the

supernatural beings of the Haida are divided into two groups, in the same way as the tribes themselves—the Raven group and the Eagle group.

Perhaps the most important part of the author's discussion is the description of the division of the two sides of the Haida into families. The two sides, or clans, are exogamic, while the families are primarily local subdivisions of the clans. The detailed explanation of this grouping is given in a chapter entitled 'Haida History,' in which the author endeavors to present the history of the present families of the Haida as conceived by the Haida themselves. He begins with the mythological period, when the islands, the home of the Haida, arose from the ocean, and continues with the origin of the ancestors of the Raven clan and of the Eagle clan, through more or less mythical events, down to the historical events of the last few centuries, describing the gradual splitting-up and recombination of various families. Based on this discussion, he has reached the interesting conclusion, that, according to the idea of the Haida, the Raven clan is indigenous, while the Eagle clan may possibly represent descendants of immigrants from the mainland. There is, however, some evidence of a tendency to make the traditions of the two clans uniform.

The families settled in the various villages have certain prerogatives, the most important of which are the crests. A discussion of these shows that the principal crests of the Raven clan are the killer-whale and grizzly bear, while the principal ones of the Eagle clan are the eagle and beaver. Besides these, there are a great many scattering crests, many of which were obtained by purchase or gift, and which can not be in any way considered as totems.

A rather full discussion of the representation of the crest and of the myth in art contains detailed descriptions of a considerable series of totem-poles, showing that most of these are crest figures of a house-owner and of his wife, while others represent incidents in myths. Similar representations are found on grave-posts and on canoes, and on boxes, spoons and other utensils used by the people.



Several plates of tattooings representing crests are also discussed in this chapter, which is the most extensive explanation given, up to this time, of carvings and paintings from any one tribe of the North Pacific coast.

The description of the secret societies and potlatches of the Haida is not as complete as we should like to see it; but it is impossible at the present time to obtain full information on this point, because the old customs have become obsolete, and, owing to the great reduction in numbers of the tribe, the information which can be obtained now is fragmentary and contradictory. It is interesting, however, to note that the secret societies are also owned by various families, and that the conclusion previously reached of the introduction of the more important societies from the south is corroborated by information furnished by the Haida.

The last chapter of the book contains abstracts of Haida traditions. These consist of two series, one collected in Skidegate, another in Masset, and written in these two dialects of the Haida language. The Masset texts will be published in another volume of the publications of the Jesup Expedition. The Skidegate texts were written out by the author for publication by the Smithsonian Institution. A few texts and the translations of other traditions have just been issued as a Bulletin of the Bureau of American Ethnology. We may perhaps express the wish that a way may be found for publishing the full texts, which are required for a thorough study of the ethnology of the tribe. The abstracts of the traditions are accompanied by notes, giving parallel traditions from the North Pacific coast.

The volume closes with lists of the families, villages and houses of the Haida. This part of the book is accompanied by a number of interesting maps, compiled by Dr. Charles F. Newcombe, on which the native names of places and the locations of towns are recorded. These maps also contain many improvements on the last issue of the British Admiralty Maps.

Vol. VI., Part I., *The Koryak*. By WALDEMAR JOCHELSON.

Mr. Jochelson's description of the Koryak is based on his studies carried on in 1900-1 for the Jesup North Pacific Expedition. The subjects treated are the religion and the mythology of the tribe. The reason why the author began the publication of his studies with this subject was the necessity of coordinating his publication with that of Mr. Bogoras, who was at the same time publishing his studies of the material culture of the Chukchee. We obtain here for the first time an insight into the peculiar beliefs of the tribes of the Okhotsk Sea and of Kamchatka, which were first described by Steller.

The first chapter is taken up with historical remarks relating to previous information on the subject. In the second chapter a detailed description of supernatural beings is given. The principal of these is Big-Raven. He is looked upon by the Koryak as the founder of the world. He is also called Creator. In this respect, the Koryak belief differs from that of the Chukchee, who consider the Creator and Big-Raven as separate beings. Although Raven is the trickster of Koryak mythology, he is at the same time the great transformer, who has given the world its present shape. He is the first man, father and protector of the Koryak. Prayers are addressed to him, and he is appealed to in incantations. Sacrifices are also made to him. Almost all the Koryak myths, with very few exceptions, deal with the life, travels, adventures, and tricks of Big-Raven and his family.

Besides Big-Raven, the Koryak believe in a supreme being, the conception of whom, however, is vague. He sent Big-Raven down to our earth to establish order, and he seems to be the personification of the vital principle in nature taken in its entirety. He is described as an old man, living in a village in heaven, and having wife and children. Offerings are made to him to secure future prosperity, or as an atonement for the transgression of taboos. It is their belief, that, so long as the supreme being looks down upon earth, there is abundance and health, while, as soon as he turns away, disorder reigns. The supreme being does not seem to interfere in detail with the affairs of man.

A very important place in the system of religious ideas of the Koryak is taken by the kalau, or spirits, who appear as invisible beings. Sometimes they appear as common cannibals. These malevolent spirits are very numerous, and cause sickness and death. Some of them represent special diseases. The Koryak also believe in supernatural beings, that appear as rulers of various parts of the country, such as the 'master of the sea.'

As a protection against disease and misfortune sent by supernatural agencies, guardians and charms are used. The most important among these are the sacred implements for fire-making, which are considered the guardians of the reindeer herd, and to which are often attached rude carvings, representing the guardians' assistants. Among the Maritime Koryak, the fire-board is essentially the protector of the house. Carved wooden figures representing human beings are also used as guardians. Many of these are ornamented with sedge-grass. While many are small, there are also carved trees which stand near the house, and which are guardians of the house or of the village. Much valuable information relating to the significance of charms is given in this chapter.

The Koryak also used divining-stones, which are employed to divine the future by their movements when suspended from a thong. These are similar to the divining-stones of the Eskimo.

Mr. Jochelson discusses the method of shamanism from two aspects. There are professional shamans among the Koryak, who wear certain ornaments that distinguish them from other people, and who free the sick from disease inflicted by the evil spirits. The drums used by these shamans are similar in type to those used by other Siberian tribes. They differ from those of the Eskimo. Each family has also its own shamans, who protect the family. The peculiar ideas in relation to the change of sex of shamans which are found among the Eskimo, are also found among the Koryak.

Of especial interest is the description of the festivals and sacrifices of the tribe. The most important festival of the Maritime Koryak

refers to whale-hunting, and consists principally of the welcoming of the captured whale, and of the ceremony accompanying its supposed return to the sea. In this festival masks made of wood and of grass are worn. The wooden masks resemble in type the simple masks of the northern Alaska Eskimo. The ceremonials of the Reindeer Koryak refer principally to the herd, and are intended to promote its welfare. A number of minor festivals relate to hunting.

The Koryak offer sacrifices to the supernatural beings. Both bloody and bloodless sacrifices occur. Among the former, the sacrifices of reindeer and of dogs are the most important. Mr. Jochelson describes in detail the peculiar custom of sacrificing dogs, and of attaching their bodies to poles or to the trees which represent the village guardians.

In the description of customs relating to burials, deaths and funerals, the complex burial customs deserve particular mention. The Koryak cremate the dead, who for this purpose are dressed in very elaborate costumes, which the people carry about during life, although they are finished only after death has occurred.

The whole second part of the book is taken up with the mythology of the Koryak, the material being arranged in geographical order. The whole mythology is remarkably uniform, dealing essentially with the marriages of the children of Big-Raven, and of his struggles with supernatural beings. Attention may be called, in this connection, to the brief characterization of Koryak tales given on p. 352 and the following pages. In the final chapter of his book, Mr. Jochelson gives a detailed comparison of the incidents found in Koryak mythology, with incidents of other mythologies of Siberia, of that of the Eskimo and of the North American Indians. It would seem that some of the elements contained in this comparison are so general, that perhaps their occurrence in these several mythologies may be without significance, so far as evidence of historical transference is concerned; but the results of Mr. Jochelson's statistical comparison are of considerable interest. He finds that among 122 episodes that belong to Kor-



yak mythology, 102 are also found in Indian myths, 30 in those of the Eskimo, and 25 in those of the Old World. He further finds that 8 are common to the Koryak, Indian, Eskimo and the Old World; 10 to Koryak, Indian and Eskimo; but none to the Koryak, Eskimo and Old World. From this the author draws the conclusion that the interchange of mythological elements between the Indians and the Koryak must be older than that between the Koryak and the Eskimo.

Vol. VII., Part I., *The Chukchee*. By WAL-  
DEMAR BOGORAS.

The long-continued studies of Mr. Bogoras carried on in the Kolyma district from 1889 to 1898, and his later studies for the Jesup North Pacific Expedition at Anadyr and on the coast of the Chukchee Peninsula, enable him better than anyone else to describe the ethnology of the Chukchee. His book is full of remarks which show the intimate acquaintance of the writer with the people he is describing. In the present volume, the habitat, the general characteristics and the trade of the people are described; but the principal contents of the volume relate to their material culture. The discussion of the methods of reindeer-breeding of the Chukchee leads to the conclusion that the domestication of the reindeer among them is probably recent; that in previous times the Chukchee were a littoral people, like the Eskimo, and that they lived principally by hunting sea-mammals. The method of treatment of the reindeer differs from that used by the Tungus and other western Siberian tribes. The domestication of the reindeer is less complete; it is not used for riding, but mainly for hauling sledges, and the method of harnessing is peculiar to the Chukchee. Mr. Bogoras also shows that the present method of dog-harnessing, which is the same as that used by other Siberian tribes, is probably a new one, and that formerly the dogs were harnessed in the same way as those of the Eskimo, *i. e.*, all attached at one point, not in pairs, as is customary at the present time. The various kinds of sledges used for the reindeer and the dog are also described in detail.

The method of hunting sea mammals is

essentially identical with that used by the Alaskan Eskimo. In traveling on sea, the Chukchee use a skin boat, similar to the Eskimo boat. The kayak, with double-bladed paddle, is also used. Its distribution is rather peculiar. It exists on the Arctic Ocean, it is not found on the coast of the Pacific, but it appears again on the waters of the Middle Anadyr River. Then it disappears again for a long stretch, to appear finally on the Okhotsk Sea among the Maritime Koryak.

The traps are similar to those of the Eskimo, but a considerable amount of West Siberian influence may be noticed. Automatic bows and spring-traps, such as are found also among the Alaskan Eskimo, are clearly derived from Asiatic patterns. The throwing-board of the Eskimo occurs also among all the eastern Chukchee.

A detailed description of the sinew-backed bows and of the composite bow is given. The composite bows are similar in type to those found in more southern regions of Siberia. The throwing-whip (p. 158), which is used for propelling darts, is worth mentioning. Mr. Bogoras also describes the iron-work, which is used particularly for knives and lances. These are clearly influenced by the iron-work of the Yakut and of the Amur River tribes. Of especial interest is a description of armor, which was also formerly used by the Chukchee. This is made of small pieces of iron linked together and arranged in horizontal rows. The head was protected by a helmet of similar character, while around the neck there was a large wooden protector incased in hide, with movable wings. It seems probable that the ivory armor found in Alaska was an imitation of this iron armor, which, in its turn, may be related to the peculiar types of armor current in more southern parts of eastern Asia.

The detailed description of the Chukchee tent brings out the fact that the large and heavy tent of the tribe is not well adapted to the nomadic mode of life necessitated by the care of reindeer-herds. It seems plausible that the movable tent must be considered as a direct adaptation of the old permanent winter-house of the Maritime tribe to the

necessities of the present nomadic life of the tribe.

The clay lamps and kettles and other household utensils are similar to those of the Eskimo of the Yukon River.

The food of the Maritime Chukchee is to a very great extent derived from the sea, consisting largely of sea-mammals, while the Reindeer Chukchee live on reindeer taken from their herds. In connection with this subject, the author describes a number of taboos. Vegetable food is used rather as a substitute, in case of scarcity of meat, than as a side-dish.

In smoking, pipes evidently related to those of Chinese type are used.

One chapter of the book is devoted to a description of the manufactures, among which those relating to the preparation and utilization of skins occupy a prominent part.

The clothing is made of skins, that of the men consisting of skin boots and stockings, trousers and a double shirt, while the women wear combination-suits. It is peculiar to note that the fur jackets of the women are cut very low. In cold weather separate hoods are worn.

The women, particularly those of the Maritime Chukchee, are tattooed, and the tattooing is believed to have a magical significance. Many of the ornaments described by the author are also at the same time charms.

The book closes with a description of the games and sports of the people, among which tossing on blankets, wrestling and races play a prominent part. A number of ball games, and some cat's-cradles are described. The book is accompanied by many illustrations and by a detailed map, giving exact information as to the present location of the native tribes of northeastern Asia. It appears from this map that the Eskimo are confined to the region north of Anadyr Bay, and that the coast regions southwest of this district are occupied by the Kerek, a branch of the Koryak. Another map (p. 17) gives the approximate ancient distribution of the tribes before the invasion of the Yakut and of the Russians.



- p. 588, on the map, read "soundings" instead of "scale."  
p. 606, black, *palkuarrR*,<sup>2</sup> read *-kwarrR*<sup>1</sup>.  
p. 606, footnote 2 belongs to the word captain on p. 607.  
p. 607, blue, *arxRuarrh*, read *-kwarrR*.  
p. 607, to cut, *ajeRahR*, read *ajekarR*.  
p. 607, to fall, *kuRxkal*, read *kurxkal*.  
p. 608, harpoon nr 4, *irš'Rč'il*, read *irš'kč'il*.  
p. 609, footnote 4 corresponds to "rainbow," not to "quiver."  
p. 609, skin, *Rauš'*, read *kauš'*.  
p. 610, firewood, *ʼaʼa:*, read *ʼaʼa:s*.  
p. 610, three, read *tauklk* in both words.  
p. 611, footnote 1 corresponds to *Myrteola*, 2 to *Maytenus*.  
p. 612, 1.6 from top, *löpiš'*, read *löfiš'*.  
p. 612, 1.15 from top, *áčR'inish*, read *äck'inish*.

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#### THE NEW STOCK NAMES ANNOUNCED FOR CALIFORNIA

The announcement was made in the *American Anthropologist* for 1912, p. 691, of the discovery that certain languages and language groups heretofore considered independent are variously related. Later, a preliminary presentation was made of these new groups for which new family names were proposed.<sup>1</sup>

By means of word lists illustrations were given showing the scope and character of the relationship believed to exist. These examples, however, were by no means sufficient proof of the alleged relationships. It has been generally understood that a more adequate presentation of the matter would soon be made.

Recently, one of the two discoverers of these new groupings made use of the proposed family names, assuming apparently that they had been accepted and were entitled to a place in anthropological literature. This is certainly not the case. The mere announcement of the discoveries has aroused considerable interest and the eminent position in anthropology held by the co-authors warrants the expectation that sufficient evidence for this new grouping exists. Until its presentation and examination, however, judgment must be suspended and the new names ought to be barred from the literature. ||

P. E. G.

<sup>1</sup> *American Anthropologist*, N. S., vol. 15, pp. 647-655.



to exaggerate the importance of insect transmission, and to overlook, even in cases where insects may occasionally be concerned, the greater importance of other modes of infection. This is indicated by Sambon's theory of transmission of pellagra by *Simulium*—a theory which was advanced with enthusiasm on the ground that it fitted into the known facts in the epidemiology of the disease. It took two years of hard work on the part of members of the force of the Bureau of Entomology, working in collaboration with the Thompson-McFadden Pellagra Commission, to upset this theory in a thoroughly scientific manner. As has been pointed out several times of late, there is always considerable danger in conclusions based on epidemiological findings. Transmission experiments are necessary.

One conclusion must be drawn which can hardly be disputed: There is an enormous field for the entomologist in the careful study of all of the aspects of the biology of not only those insects which have already been shown to be disease carriers but of those which are likely to be implicated. It is to the trained economic entomologist that we must look for the methods of destruction of these insect carriers, and the prevention of this class of diseases lies at his door rather than at that of the physician. Either that, or sanitarians must be trained in what is now known as medical entomology.

ETHNOLOGY.—*Remarks on American Indian languages, a study in method.*<sup>1</sup> TRUMAN MICHELSON, Bureau of American Ethnology.

At the very beginning of this subject it should be stated that there is no single type of speech which holds good for all American Indian languages. The statement that all American Indian languages are both polysynthetic and incorporative, so confidently affirmed by the older writers, is false. The number of American Indian languages that are either polysynthetic or incorporative, is extremely limited indeed. I do not know of a single feature that may be said to be characteristic of all American Indian languages. Even so, a combination of certain features is quite sufficient to determine whether any given language is an American Indian language or not. It is this which enables us to say without any hesitation that Chuckchee, Koryak, and Yukaghir (which are spoken in northeastern Asia) are American-oid languages. If they were spoken in America we would call them American Indian languages. They do not belong geneti-

<sup>1</sup> Printed with the permission of the Secretary of the Smithsonian Institution.



its destructive appearance in many places during the present great war. It was shown that at first the information put out by the medical departments of the different armies was insufficient and in many cases illy based. Especial mention was made of the publications issued in England, France, and Germany, the extraordinarily detailed observations by Haase, made in Germany in the camps of Russian prisoners, receiving special consideration. He showed that more recently an intense investigation has been carried on in many places of all of the aspects of the biology of the body-louse. He showed that in the current number of the *Bulletin of the Pasteur Institute of Paris* (December 15, 1916) reviews had been found of seventeen papers, under the heading *La Lutte Contre les Pucés*. One of these was written by a Japanese, four by Englishmen, seven by Germans, one by a Swiss two by Frenchmen, one by a Russian, and one by an Italian. He pointed out especially the very perfect proof adduced in one of these articles of the transportation by wind of the body-louse, a very important point to be considered in sanitary measures.

In concluding, the speaker referred to a manuscript table drawn up by Mr. W. D. Pierce from the recent literature, which indicates that discoveries have been recorded of 226 different disease organisms as carried by insects to man or animals; that 87 organisms are known to be parasitic in insects but not known to be transmitted, and that 282 species of insects are recorded as causers or carriers of diseases of man or animals.

The concluding paragraphs of the address are quoted:

But now we must stop. There are many subjects in the field which we have not touched. Tick paralysis, for example, is a most interesting and novel subject. This disease occurs in Australia, Africa, and North America. In Oregon thirteen cases have been found in the practice of a single physician. The attachment of a tick brings about progressive paralysis involving motor but not sensory nerves. It seems a unique malady. Hadwen and Nuttall, showing that it is not infectious and that there is apparently an incubating period in the tick, suggest a specific causative organism, but others hold to the theory of nerve shock.

Attention should also be called to the fact that, in spite of the host of discoveries already well established, there is a dangerous tendency

cally (as far as is known) to any American linguistic stocks, but nevertheless the totality of their features compels us to classify them with American Indian languages. To account for these facts we must assume either that these tribes are the descendants of the forefathers of American Indians who did not follow their brethren in the migration from Asia to America (for such a migration is firmly established by the facts of physical anthropology), or that there has been in comparatively recent times a migration backward from this continent to Asia. In as much as the bulk of American Indian languages are spoken on this continent, from a purely linguistic point of view the latter hypothesis is the most probable. But the essential fact in any case will remain unchallenged, namely, that we have American-oid languages spoken in northeastern Asia.

Let us now turn to the almost unparalleled number of linguistic stocks on this continent. We have an apparent anomaly as compared with most parts of the world. The point at issue is whether such a multiplicity of stocks is original or not. In the first place, in the study of American Indian languages we are at a decided disadvantage as compared with the study, say, of Indo-European languages. Suppose that modern English and modern Russian were the sole survivors of the entire stock. It would be impossible to prove absolutely that they were both genetically descended from a common ancestor, no matter what we might surmise. It is only because we have continuous written records of both covering several centuries, and have the aid of other related languages which have even earlier records, that we can absolutely prove this. For this reason it is clear that there always will be American Indian languages whose genetic connection we may suspect, but which we can not prove. It may be urged that we can actually see what has taken place in the development and differentiation of languages which have been historically transmitted, such as Indo-European languages, and that we should apply the principles derived from such a study to American Indian languages in determining the stocks. The methodical error in such a procedure lies in this, namely, that there are less than a half a dozen, different stocks in



the entire world of which we have records going back continuously for more than a thousand years. The percentage of the total stocks so transmitted is altogether too small to afford a firm and sure foundation for such a mode of action. If we could establish from a minute study of the dialects of some dozens of stocks that the kind of differentiation, etc., was on the whole of a similar nature in these stocks, we would be entirely justified in applying the principles derived from such a study to the determination of the limits of stocks in American Indian languages and other stocks as well. Unfortunately such a study has not been made, nor is there any prospect of it being done in the immediate future.

We have a similar difficulty in the reconstruction of parent-languages of American Indian linguistic stocks. In the case of Indo-European languages we again can take advantage of principles derived from a study of the historical development of the separate members of the stock, and apply the results to the prehistoric period. We can not do this in the case of American Indian languages. The nearest approach to this would be a very minute study of the dialects of known stocks. In some cases there is no doubt that this would even largely counter-balance the difficulty spoken of. For example, most of the dialects of the Algonquian stock are so closely related that it can readily be ascertained in at least many cases what is archaic and what is secondary. Thus it is certain that the Fox *e* and *i* vowels are more primitive than the Ojibwa *i* vowel, and that the terminal vowels preserved in Fox, Sauk, Kickapoo, Shawnee, and Peoria, but not appearing in Ojibwa, Ottawa, Potawatomi, etc., are archaic.<sup>2</sup> Hence these features are to be ascribed to the Algonquian parent language. However, we can not know that precise quality of the prehistoric *e* and *i* vowels. Similarly the combination of a sibilant followed by a surd stop in Cree is more archaic than the correspondents in many of the related languages, and so is to be likewise ascribed to the parent language. (The actual proof that the Cree combination is more

<sup>2</sup> Amer. Anthropol. N. S., 15: 470. 1913; this JOURNAL, 4: 403. 1914; Ann. Rep. Bur. Amer. Ethnol., 28: 247. 1912.

archaic is too complicated to be given here, as it would of necessity be altogether disproportionate to the length of this paper.) Naturally, in some instances, absolute proof would be wanting. Thus in certain cases Ojibwa *nd* corresponds to Cree and Menominee *t*, Fox *t*. It can be easily shown that the Fox *t* in this case is in all probability unoriginal; and most philologists will assume that Ojibwa *nd* is more archaic than Cree and Menominee *t*. But probability and assumption are not the same as proof.

A further obstacle to the reconstruction of the parent languages of American Indian stocks is our frequent inability to formulate phonetic laws in a manner such as is demanded by all modern Indo-European philologists. These contend that phonetic laws in themselves admit of no exceptions; and that wherever we find apparent exceptions, there is some extraneous reason, or reasons. The historical study of the individual Indo-European languages shows that analogy and the like have been potent factors in transforming them, and are fully as important as the actions of phonetic laws. For example late Latin *potēbam* is not a phonetic transformation of Latin *poteram*, but is due to the influence of other imperfects in *bam* preceded by a long vowel. For this reason we are justified in extending the principles derived in this manner to the prehistoric period, to harmonize discrepancies among the historical languages which cannot be accounted for by phonetic laws. Thus the Italic languages have an ablative singular of *ā* stems in *ād* (retained in Oscan and early Latin; final *d* lost in classical Latin by phonetic law). The collective study of Indo-European languages shows conclusively that the ablative singular of *ā* stems was the same in form as the genitive. Since the same study demonstrates that *o* stems in the Indo-European parent language had an ablative singular in *ōd* (preserved in early Latin; *d* lost phonetically in classical Latin), and that no other stems in the Indo-European parent language had a special case form for the ablative singular; and since we know that in historical Indo-European languages analogy has been a potent transforming factor, we have an entirely legitimate right to assume that the Italic languages developed an *ād* abla-



tive singular for *ā* stems by the influence of the *ōd* ablative singular of *o* stems. In one sense the proof is not absolute, but it is as absolute as it is possible to give when dealing with prehistoric phenomena. It must be admitted that at times even Indo-European philology is at sea, and that purely subjective speculation may come into play. Happily these instances are rare. These remarks are inserted because although the facts are well-known to Indo-Europeanists, they are largely unknown to Americanists.

The bearing the above has on the problems of American linguistics is this: since American Indian languages have not been transmitted to us in the manner that Indo-European languages have, we do not know what has disturbed phonetic laws in many given cases, and for the methodical reasons outlined above, we are not justified in assuming that the same influences have been at work in American Indian languages as in Indo-European languages. Herein lies our difficulty in formulating phonetic laws that are entirely satisfactory to the Indo-Europeanist. For example, *n* becomes *c* in Fox before *i* which is a new morphological element; it remains if the *i* is not such an element. There are some specific grammatical categories in which the law does not work. A study of several related dialects shows that this change also takes place in them, and hence must be very old. At the same time the apparent exceptions have not been explained. Whether they ever will be, is questionable. Yet an Americanist does not object to the formulation of the law as it works in practice. The Indo-Europeanist will object vigorously to such a formulation as it is contrary to his accepted canons. If the canons of Indo-European philologists be accepted, it is quite evident Americanists can not reconstruct the parent languages of American Indian stocks in an entirely satisfactory manner. However, most Americanists are far more interested in observing actual phonetic correspondences and the like between the different dialects of linguistic stocks as they actually occur, than in speculations which from the nature of the case must rest upon rather slim foundations. It may also be noted in this connection that Indo-Europeanists have begun to interest

themselves more with the linguistic problems of historical languages, and less with the remote Indo-European parent language.

Let us return again to the question of the multiplicity of American stocks. As stated above, this is today almost without parallel. However it does not follow that this has always been the case. In Europe we know definitely that Etruscan has been wiped out; but we do not know how many distinct stocks were obliterated by the spread of Indo-European languages. It is entirely possible that many have been so obliterated. If they have, we have then a case quite analogous to the situation in America. But this is merely speculation. The problem may be approached from a different point of view. There is no reason to suppose that the migration from Asia was all from a single stock, in other words, that the differentiation has all been on American soil. Were that the case, in spite of the enormous lapse of time, surely we would be able to find at least one striking morphological trait common to all American Indian languages, for the morphology of a language is its most permanent feature.

Though, as intimated above, we have an apparent multiplicity of stocks which can not be reduced, nevertheless a number have resemblances to each other. An example is Siouan and Muskegean. The question resolves itself to this: Are these resemblances indicative of a common origin so remote that it is no longer possible absolutely to prove it, or are such similarities due to borrowings? To settle the question we must know what may be borrowed. That sounds may be borrowed across extremely divergent linguistic stocks is abundantly proved by the languages of the Northwest coast where we have the condition that languages whose morphology and vocabulary are distinct have practically the same phonetic elements. That vocabulary may be borrowed across linguistic stocks is too well-known to require illustration. That syntax may be borrowed across linguistic stocks is shown by the languages of Mexico where Spanish syntax has patently influenced that of American Indian languages. At this point we may ask a question, namely, can morphological features be borrowed? This is one of the most pressing problems of linguistic science awaiting solution. Unfortunately we have



little material at hand definitely to prove or disprove it. Such as we have tends strongly to establish it. For example it is patent that the post-positions of Wishram (Chinookan stock) are due to the influence of Sahaptian, a distinct though contiguous stock. Similarly, classifiers are common to the Salishan, Wakashan, Chimmesyan, Kuluschan, and Skittagetan stocks which are at the same time contiguous. One may suspect, indeed, that the first pair, and similarly the last pair, have differentiated from a common ancestor. Yet at the very best we would have a single striking morphological trait spread throughout three stocks which otherwise have nothing in common in either morphology or vocabulary, but only have resemblances in sounds. It is too great a strain on the imagination to believe that this is wholly the result of chance. If the accepted definition of stock is to remain, namely, a stock consist of one or more languages all of whose sounds, morphology, syntax, and vocabulary genetically have descended from a single ancestor, we must admit at once that this trait which is held in common, is due to borrowing. For the differences in vocabulary and morphology are so enormous that it is inconceivable that the present differences are solely due to later differentiation. The vocabulary and morphology which cannot be explained at present are just as important as the extremely small percentage that can. There are a few other cases in which morphological borrowings between stocks is plausible, but they are entirely too few in number to warrant us at present in applying the principle broadcast. So we have to content ourselves in the meanwhile in pointing out structural resemblances between stocks, such as between Esquimoan and Algonquian, which resemble each other strikingly in their pronominal systems, and to a much less extent in the building up of verbal stems, in the hope that a careful and minute study of all the dialects of such stocks may enable us definitely to affirm whether such traits are due to early differentiation from a common remote ancestor or to comparatively recent borrowings.

It must be admitted that recently there has been a decided tendency among Americanists to consolidate such stocks as

show only a moderate amount of common lexical and morphological resemblances. In some cases, such as Uto-Aztecan, it must be conceded that the burden of proof is now definitely on those who maintain that the two "stocks" are true distinct stocks, and not differentiations from a common ancestor. It is on the other hand equally certain that the genetic connection has not been established with absolute nicety. In the same manner Athapascan, Kuluschan, and Skittagetan are almost certainly genetically related. Their morphological resemblances are so numerous and so special that it is incredible that they are due solely to borrowings, and not to genetic relationship. However, the amount of lexical material the three have in common is an exceedingly small percentage of their total vocabulary. The extremely large percentage of the unexplained lexical material forces us to admit that this has been derived from outside sources, and with our present definition of "stock," a purely genetic relationship between the three breaks down. After all, our difficulties all hinge on our definition of "stock," and the proofs necessary to show that one or more languages constitute such a "stock." Though the definition of "stock" given above, may be rigorously correct, the actual application of it would practically obliterate the total number of "stocks" in the world, and we should be worse off than ever. For in that sense, there are few, if any, languages which constitute a stock. In the writer's opinion philologists have taken over biologists' concepts without inquiring whether they are suitable to their own science. "Stock" must be redefined in a way that has some real meaning, and some term or terms invented to cover those larger groups which apparently are only remotely related, which may be related in sounds, morphology, syntax, and vocabulary, but not all combined as a unit. It goes without saying that the nature of the proofs then demanded will be in accordance with our definitions.

To revert to a point brought out above. If the morphology of languages can not be borrowed, with scrupulous nicety we must assume an enormous number of distinct stocks at the very dawn of man, which certainly is not plausible. If on the other



hand, sounds, morphology, syntax, and vocabulary have no innate connection (vide supra) then we would have a series of various borrowings instead of "stock" in its present sense. It may be well however, to state that no matter how "stock" is defined at present, it certainly is not used in that sense alone, but in a more loose way, almost according to the whim of the author.

The most decisive proof that two or more languages belong to the same stock, used in a somewhat free sense, is numerous and detailed resemblances in their structures. A large percentage of vocabulary held in common is a welcome additional proof. The most decisive proof that a single language constitutes a special stock is numerous unique morphological features. No amount of purely lexical resemblances between languages, no matter how far apart geographically, would prove that they belonged to a single stock. For, experience has shown us that vocabulary is very often borrowed in large amounts, and hence is not a good criterion. If the tribes were far apart geographically, that would not preclude the possibility that in prehistoric times they had been in contact, and at that time extensive borrowing had taken place. Another reason why vocabulary is not a good criterion is that the number of words in even distinct stocks that superficially resemble each other is really considerable. An example is Sanskrit (Indo-European stock) *ásan-*, Fox (Algonquian stock) *aseni*, both meaning "stone." Comparisons of vocabulary are only valuable when we know that the morphology of the languages compared are the same, or at least very similar. Otherwise we should not know whether we were dealing with comparable elements, even if the words in their totality resembled each other. For example, the comparison of the pronoun Avestan *čiš*, Greek *tis*, Latin *quis*, Oscan *pis*, all meaning "who," is entirely justifiable, because the structure of all four languages is fundamentally the same; and, which is also important, it has been shown that though these words apparently resemble each other only slightly, yet as a matter of fact the correspondence of the various sounds forming these words is precisely what we should expect from our knowledge

of comparative Indo-European phonology. Another example of a case where words of two different stocks superficially resemble each other is Śanskrit *naṣṭa-* "dead," Fox *ne'tōw* "he kills." It will be recalled that the combination of a sibilant followed by *t* appears as 't in Fox. As soon as we note that Sanskrit *naṣṭa-* is composed of the elements *naṣ+ṭa-* and Fox *ne'tōw* of the elements *ne+'tō+w<sup>a</sup>*, the comparison ceases to interest us. [The Fox word can, as I think, be reduced still further in analysis, but this only still further emphasizes the point at issue.] We should exercise the same prudence in comparing morphological elements. For example the verbal termination of Latin in the third person singular is *t* which superficially resembles Tsimshian *t*, to say nothing of similar terminations in various Algonquian dialects. Again Greek *μεν*, the verbal termination of the first person plural, has an entirely fortuitous resemblance to Ojibwa *min* in *ni-min*, *ki-min* of the independent mode.

Turning now to the classification of the languages belonging to single stocks,—it must be said that very little work has been done on this important topic in American linguistics. The three stocks of which we have the best knowledge in this respect are Salishan, Siouan, and Algonquian. To a certain extent the classification is arbitrary. We select a number of salient features and base our classification on it. In most cases we have overlappings which are indicative of more than one association. For example, Peoria fundamentally belongs with the Ojibwa division of Central Algonquian languages; at the same time there are certain traits which clearly prove that it has also had an association with the Sauk, Fox, Kickapoo group, also one with Cree; and there are some indications of contact with Delaware-Munsee. Nevertheless in spite of such short comings, we can make classifications which are entirely satisfactory even to the Indo-European philologist. The object of our classifications is to determine the prehistory of the tribes of any given stock. For example, the Abnaki dialects exhibit so many special traits in common with Shawnee, as well as Sauk, Fox, Kickapoo, that it is absolutely certain that in prehistoric times the tribes



speaking these dialects have been in long and intimate contact. In the same way the Central Algonquian dialects are all so closely related, that it is evident that the place of diffusion must have been of limited area. The present geographical distribution of the tribes is insignificant in comparison with the evidence obtained by linguistic procedure. Nevertheless it has its value. It can not be accident that the most divergent Algonquian languages are spoken at the extreme western boundary of the stock.

This last brings us to the question of whether the differentiation of a stock into various dialects is due to evolution without external influence or whether it is due to linguistic shock. To this we reply that every case must be judged on its own merits. Peoria, though spoken today by only a handful of people, has been and is, exposed to far greater linguistic shock than Ojibwa which is spoken by several thousand persons; and, notwithstanding, is in many essential points a far more archaic language than Ojibwa. At the same time its diverse affinities indicate a series of shocks. Similarly, it can hardly be doubted that the divergent character of Aleutian (Esquimauan stock) is due to such shock. It should be candidly admitted that our studies in American linguistics have not yet reached a point where these problems can be answered in a thoroughly satisfactory manner.

It will be remembered that we are not in the position of the Indo-European philologist who can observe what has happened in the differentiation of dialects in a space of several centuries, and thereby draw legitimate inferences as to what happened in the prehistoric period. We also lack good time-measures; so we can not tell how long it has taken such and such a dialect to differentiate itself from its kindred. In this connection it should be stated that the Indian words cited by early travellers and missionaries are so badly recorded, that if the language from which the word is cited, is still extant, ordinarily we can do far better with the words spoken today. The methodical error of using the analogy of Indo-European languages in solving the points at issue, has been shown above. Our guesses from such inferences might be very happy, but they would remain guesses, not proved

facts. Our whole endeavor should be to place American linguistics on a rigid scientific basis, not upon a foundation of guesses. If I have spoken strongly on this point it is because some of the most eminent Americanists apparently desire to do the latter. They wish, without sufficient reserve, to consolidate stocks that apparently resemble each other, and are content to leave it to the next man to prove or disprove their cases. I do not deny that very likely they have made some extremely happy guesses, but I do deny that the *evidence thus far produced*, has been of such a nature as to compel acquiescence in all the results they claim to have obtained.

The opponents of the views here expressed will reply that the proofs demanded are more suitable to the so-called exact sciences than they are to philology; that if such a program be adhered to, we can not possibly hope to accomplish our task, as the languages are rapidly disappearing; that they are interested only in great facts, not minutiae; and that Indo-European philologists concern themselves largely with the latter simply because the great facts of Indo-European philology are known, and hence there is nothing else left for them to busy themselves with. To all of which the following rejoinder may be made: The proofs demanded may possibly be more rigid than those the Indo-Europeanists ordinarily demand, but it should be noted that every year the proofs demanded by the latter are becoming more and more rigorous, so that the disparity is after all being rapidly reduced, and in time doubtless the proofs demanded by philology will be fully comparable to those demanded by the exact sciences; that there is no advantage in erecting a magnificent edifice on such a weak foundation that it may topple over any minute; it is better to do even a little, and that portion well; and lastly, though it may be granted that Indo-Europeanists today are primarily concerned with minutiae, the discoveries of Grimm, Grassmann, Verner, Brugmann, Collitz, Schmidt, Ascoli, de Saussure—all of which were due to more rigorous methods—are of capital importance; and lastly it should be observed that centuries of quasi-scientific study of languages preceded the discovery of the genetic relationship of Indo-European languages,



which of course will be counted as the great fact of Indo-European philology.

To change to a different topic. The study of American Indian languages will show that there is no such thing as superiority in language. They all possess the necessary machinery to express the most complicated ideas. The point is simply that what is grammar in one language may be vocabulary in another, and vice versa. For example there are no prepositions in Algonquian languages, but what we call prepositions are expressed by grammatical processes or special features in vocabulary. Thus "on" will be expressed by the locative case. "To come in" in Fox is *pīti*, "to go out" is *nōwi*. Nor is the language of primitive peoples indicative of low mentality. Thus Fox has but two fractions, one-half and one-quarter. It does not follow at all that the Fox Indians can not conceive of other fractions. As a matter of fact they can. The point is that ordinarily their life is such that there is no necessity for expressing them. I have tested this again and again by asking interpreters how to say, "Give me a third of that pie," and the like. In every case they were able without the slightest hesitation to render the idea, though not the precise words. I mention this simply because Gobineau apparently still has a goodly number of followers and admirers.

In conclusion, the study of American Indian languages is an extremely attractive field for students of general linguistics; and one that as yet is almost virgin soil. By their study the Indo-European specialist will find his scope vastly broadened, especially in the so-called philosophical bearings of his science. The American ethnologist who neglects their study, places himself wholly at the mercy of interpreters; or at the best must rely on the ipse dixit of his wiser colleagues. For these reasons their scientific study should be fostered in every possible way.



Reprinted from SCIENCE, August 24, 1934, Vol. 80, No. 2069, pages 186-187.

#### A HYPOTHETICAL "SANCTUARY" FOR OCEAN-DWELLING SEALS

A RECENT leaflet, signed by C. W. Hobley, secretary of the Society for the Preservation of the Fauna of the Empire, states that the Newfoundland sealing industry "is steadily declining" and that "this spring (1934) about eight ships went out and some 248,000 seals were killed."

He urges that an expedition "should be dispatched with qualified scientific observers, to study the bionomics of the two species involved (*viz.*, Hood and Harp seals) and further as an outcome of their observations to make recommendations regarding a sanctuary, and possibly some protection for immature animals."

The two kinds of seals mentioned—*Harps* and *Hoods*—are pelagic animals. They live in the open sea, and in early spring (usually March) resort to the Arctic ice floes—mainly those in the North Atlantic between Labrador and Greenland—to give birth to their young.

These great ice packs are steadily moving southward, steadily melting and soon disappear, and the seals, old and young, take to the open ocean—and as a rule are not again seen until the following year. They do not normally visit land but spend their

entire lives in the sea, except for the brief period in early spring "when a still small voice within" invites them to visit the ice fields for purposes of procreation.

These being the facts, why should an expedition "be dispatched with qualified scientific observers to study the bionomics of the two species involved . . . and to make recommendations regarding a Sanctuary and possibly some protection for immature animals"?

Where, except on the Arctic ice fields where they whelp their young, could an expedition go to find either Harps or Hoods? And where could a sanctuary be established except on floating ice—ice that is melting and soon disappears in the wide ocean?

Had the author looked into the natural history of the American seals or the literature of the seal fishery, he would not have said: "It appears probable that the coast of Labrador is the breeding region and that the herds thence migrate south and southeast to the western and northern coasts of Newfoundland"—for he would have learned that these seals (*Harps* and *Hoods*) breed on the ice floes and—unless wounded by terrestrial or aquatic sharks—rarely visit the land at any time.

C. HART MERRIAM

LAGUNITAS, CALIF.



February 16, 1921

Dr. C. Hart Merriam regrets exceedingly that after his belated return from California and before he was able to examine the bear skulls that arrived during his absence, he was obliged to go to the hospital for surgical treatment. He is doing well and expects to be able to get up in about ten days.

As soon as practical he will go to the Museum and write you about the skulls you have been good enough to send.



# Source of the Name Shasta

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C. HART MERRIAM

*Washington, D. C.*

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ETHNOGRAPHY.—*Source of the name Shasta.*<sup>1</sup> C. HART MERRIAM,  
Washington, D. C.

The source of the name Shasta seems to have been long overlooked. Stephen Powers failed to learn anything about it, and was equally unsuccessful in his attempt to ascertain the name by which the Shaste Indians designate their own tribe.<sup>2</sup>

Roland Dixon, in his valuable work on the "Shasta" (1907) says of the name, that its origin and meaning "are both obscure," and even suggests that it may have been derived from the name of an old man "whose personal name was Shastika (Süsti'ka)." At the same time Dixon was aware that the name was "in use by both *Achomā'wi* and *Atsugē'wi*," but for some unknown reason concluded that "it is not a term for the Indians of this stock [Shastan] in the languages of the surrounding stocks."<sup>3</sup> Nevertheless Gatschet, in his Klamath Dictionary, published in 1890, specifically states that the Klamath name for the Shaste is *Shasti* (alternate *Sasti*), and adds that "the usual form *Shasta* is a corruption of *Shasti*."<sup>4</sup> And, as well known, the Klamath tribe (*Lutuame*) adjoins the Shaste tribe on the east.

<sup>1</sup> Received September 15, 1926.

<sup>2</sup> POWERS, *Tribes of California*, p. 243, 1877.

<sup>3</sup> DIXON, ROLAND B. The Huntington California Expedition, *The Shasta*. Bull. Amer. Mus. Nat. Hist. 17: (Pt. 5) 384, July, 1907.

<sup>4</sup> GATSCHE, A. S. *Dictionary of the Klamath Language*, p. 290, 1890. Gatschet gives the forms *Sasti* and *Shasti* as interchangeable, adding that the Klamath Lake people call the members of the Shasti tribe *Sástiam maklaks*.

The name given me for the Shaste by the Pit River Achomawe is *Sas-te'-che* (alternate *Shas-te'-che*).

But Dixon's paper was published three years before the publication of Peter Skene Ogden's "Snake Expedition Journal" of 1826-1827 in which the matter is settled once for all. Peter Ogden, one of the most indomitable and determined of the remarkable series of leaders of the Hudson Bay Fur Company's explorers and trappers, spent a couple of months in the pursuit of beaver in the Klamath Lakes country, after which he moved westerly or northwesterly to the upper waters of Rogue River, where, under date of Feb. 10, 1827, his Journal contains the following entry: "Here we are among the Sastise. Course this day west. The stream we are on [Rogue River] has no connection with the Clammitte River [Klamath]; it flows south then west to a large river. These Indians know nothing of the ocean."<sup>5</sup>

Four days later he writes: "I have named this river Sastise River. There is a mountain equal in height to Mount Hood or Vancouver, I have named Mt. Sastise [Mt. Pitt, west of the main Klamath Lake]. I have given these names from the tribes of Indians."<sup>6</sup>

Under date of March 9 he spells the name *Sasty*, saying: "At early hour with aid of 2 small canoes crossed over Sasty River, all safe over by 4 P.M." And again, on the 13th: "We left the Sasty Forks in our rear."<sup>7</sup>

The earliest appearance of the name in print, so far as known, as in Arrowsmith's "Map of British North America" published in 1832 (2d ed. 1834, in J. Arrowsmith's London Atlas). This map shows "*Shasty River*" well north of the "*Clamet*" [Klamath], occupying the course of the turbulent stream now known as Rogue River. Charles Wilkes in his "Map of the Oregon Territory," 1841, follows Arrowsmith in adopting Ogden's name *Sasty* (but spelling it *Shaste*) for Rogue River. The same is true of Gallatin's "Ethnographical Map of Oregon" [1848]<sup>8</sup> from Hale's "Ethnology of the American [Wilkes] Exploring Expedition."

T. C. Elliott, in an editorial footnote on page 213 of Ogden's Journals, mistakes the Shasty River of Ogden and Wilkes (which is in Oregon) for Pit River (incorrectly spelled Pitt) which is in California.

That the upper part of Rogue River is the *Sastise* (or *Sasty*) River of Ogden is obvious not only from Ogden's own account of his move-

<sup>5</sup> OGDEN, PETER SKENE. *Snake Expedition Journal*, 1826-1827. (As copied by Miss Agnes C. Laut in 1905 from original in Hudson's Bay Co. House, London, England.) Quarterly, Oregon Historical Soc., 11: (No. 2) 213, June, 1910.

<sup>6</sup> Ibid., p. 214.

<sup>7</sup> Ibid., p. 216.

<sup>8</sup> Trans. Amer. Ethnological Soc., New York, vol. 2, 1848.



ments but also from the maps of Arrowsmith (1832 and 1834), Wilkes (1841), and Gallatin (1848), this part of which is avowedly based on information from Ogden.

In 1835, Michel L. Framboise, a French-Canadian trapper and interpreter, gave Dr. Gairdner, then stationed at Fort Vancouver, a list of Indian tribes which includes both "*Clamet*" and "*Sasty*." Of the location of the latter tribe he says, "On a river of the same name to the west of No. 30. [No. 30 is the "*Clamet*."]"<sup>9</sup> La Framboise, in common with other Hudson Bay trappers of the time, was of course familiar with Ogden's names.

Prior to 1851 much confusion existed in relation to the courses of the rivers of southwestern Oregon and northern California. Bonneville's Map of 1837, entitled "The Territory West of the Rocky Mountains," puts the name "*Claymouth*" on Rogue River for its entire course—ten years after it had been named *Sasty* or *Sastise* by Peter Ogden.

Several maps issued in the forties and early fifties show the upper reaches of Klamath River in approximately the correct position, but follow Bonneville, Hale, and others in deflecting the middle course to the northwest, making it a tributary of Rogue River. But B. F. Butler's "Map of the State of California" showing the Gold Region, published in San Francisco in 1851, reverses the usual practice by showing the upper part of Klamath River as rising from the western slopes of Mt. Pitt in Oregon, thus confusing it with the *Sasty* River of Ogden [Rogue River], which is made to flow southwesterly [across the Siskiyou Mountains!] to reach the proper lower course of Klamath River in northern California; while the actual upper part of Klamath River is labeled *Shaste River!*

The earliest map I have examined in which the name Shasta River appears on the stream now known by that name—a tributary to Klamath River from the south—is a manuscript "Sketch Map of the Northwest part of California," drawn by George Gibbs in 1851 (photostat in my possession from original in Indian Office).

It has been shown that the word *Saste* is the Klamath (Lutuami) name for the tribe which since the publication of Hale's "Ethnography" 80 years ago has been commonly known as *Saste* (*Shaste*, or *Shasta*). It is known also that Peter Skene Ogden after spending two months among the Klamath Indians in the winter of 1826-1827,

<sup>9</sup> *Notes on the Geography of the Columbia River* by the late Dr. GAIRDNER. *Journ. Royal Geogr. Soc. London*, 11: 256, 1841.

and consequently familiar with their name for the adjoining tribe on the west, entered the territory of that tribe and deliberately gave its name to the river on which he found them [now known as Rogue River], and to the great mountain at its head [now known as Mt. Pitt]. It is one of the tragedies of geographic nomenclature that these names, by reason of a break in the continuity of local knowledge of the region, have been transferred to features remote from those upon which they were originally bestowed. Still, it is something to be thankful for—from the standpoint of anthropology—that both the great mountain and the river to which the name was transferred are still within or bordering on the territory of the Shaste tribe.

While the name of the tribe is now firmly established as *Shaste* (or *Shasta*), it should be kept in mind that this is *not* the name by which members of the tribe call themselves. Their name for themselves is *Ge'-kahts* or *Ke'-katch* (once given me as *Gik'-kahtch*). Roland Dixon got it in the form *Kikatsik*.



## A NEST OF THE CALIFORNIA GRAY SQUIRREL (*SCIURUS GRISEUS*)

BY C. HART MERRIAM

[Plate 25]

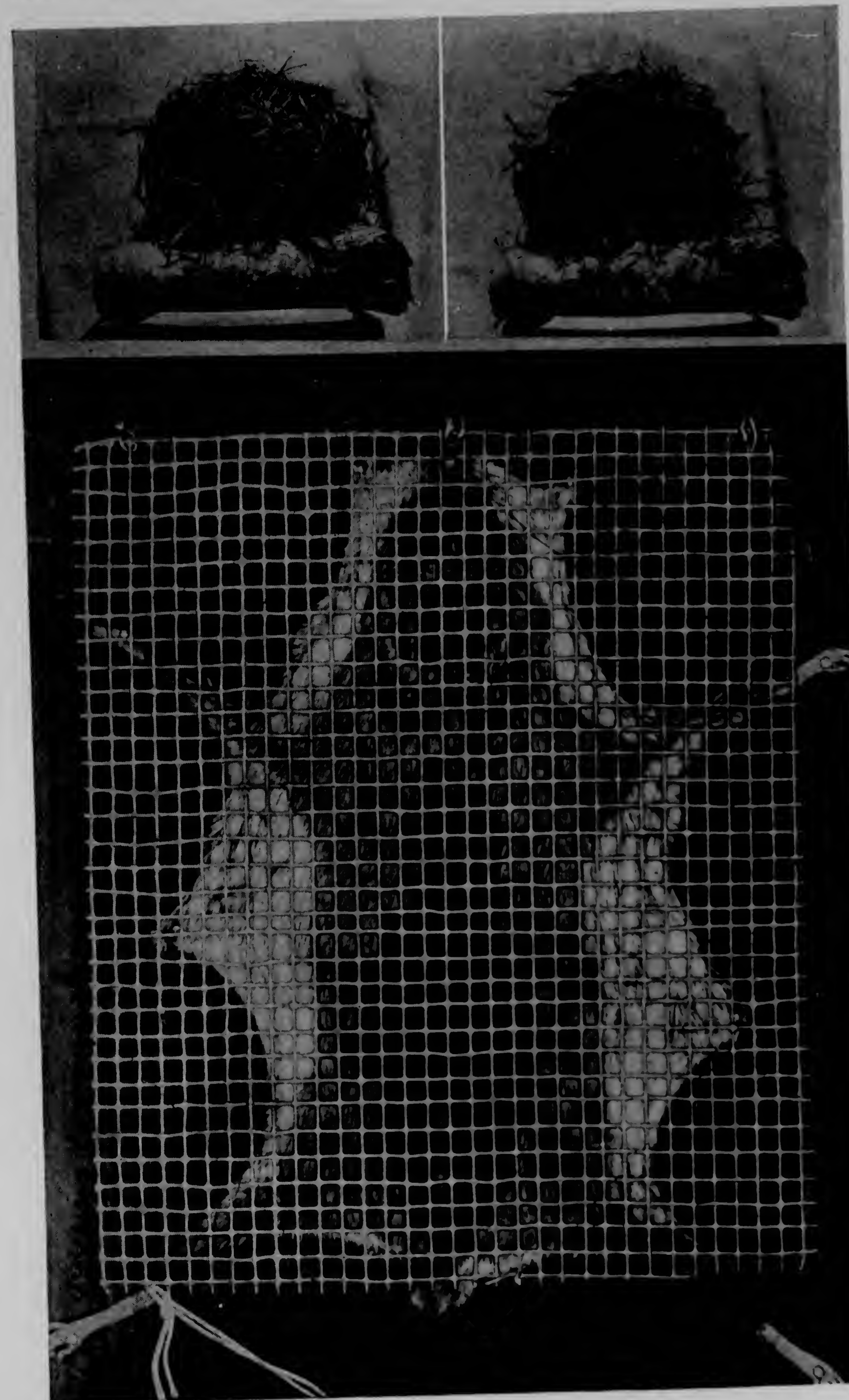
The big bushy-tailed Gray Squirrel of the Coast Belt of middle and northern California is a common resident of the mixed forests of redwood, Douglas spruce, tan-oak, the colorful madrone, and the tree of spicy fragrance variously called laurel, bay, or pepperwood (genus *Umbellularia*). In the forests of Marin, Sonoma, and Mendocino Counties their large leafy nests are common in oaks and less plentiful in Douglas spruce and other trees.

A nest collected by me on my place at Lagunitas in Marin County on June 23, 1925, was among the topmost branches of a living tan-oak (*Quercus densiflora*) about 45 feet from the ground. With its outer covering of leaf-bearing twigs of the tan-oak, neatly bitten off and rather loosely attached, it formed an irregular mass about two feet in diameter and three in height. Inside of this protecting mass of twigs and leaves was the nest, a roughly subglobular structure eleven by fourteen inches in diameter, consisting wholly of bark of the redwood tree (*Sequoia sempervirens*). The outer and coarser part, torn from the branches and often bearing patches of tree lichen, consisted of thin strips a foot or two in length, varying from a quarter of an inch to a full inch in width at the broad end but soon torn into slender thin streamers, many of which were again subdivided.

Within this outer covering was the living chamber, a cavity little more than five inches in diameter, consisting of and lined with finely shredded inner bark of the redwood, the shreds as fine as the finest grass and intermixed with a soft compact felting of the same material. The lower part of this felting forms a base or platform approximately 9 by 11 inches in diameter and an inch in thickness, supporting the inner chamber and forming a substantial vestibule on which the mother and young may rest.

Thus the nest may be described as consisting of four parts:

1. A rough outer covering of oak leaves and twigs (not shown in the photographs).
2. The nest proper, of long strips of redwood bark (fig. 1).
3. The inner chamber of finely divided inner redwood bark (fig. 2; entrance enlarged to show nest chamber).
4. The felted base extending as a vestibule, also of finely divided and compacted redwood bark.



UPPER—NEST OF THE CALIFORNIA GRAY SQUIRREL  
LOWER—HAIR SELECTION RACK



**WHY NOT MORE CARE IN IDENTIFYING  
ANIMAL REMAINS?**

**BY**

**C. HART MERRIAM**

Reprinted from **AMERICAN ANTHROPOLOGIST**, Vol. 30, No. 4,  
October-December, 1928



WHY NOT MORE CARE IN IDENTIFYING ANIMAL REMAINS?

The April-June number of the AMERICAN ANTHROPOLOGIST for the current year (1928) contains an illustrated article by Wm. S. Webb, entitled "A Prehistoric Village Site in Greenup County, Kentucky." Mention is made of "what appeared to be a headdress of cut animal jaws." These jaws, twelve in number, are shown in whole or in part on plates 6 and 7. They were identified by the Department of Zoology, University of Kentucky, as jaws of the big wolf, *Canis occidentalis* (p. 276).

A glimpse at the figures shows that there is not a wolf among them; they are jaws of the common wildcat, commonly known as bobcat, an animal belonging to the genus *Lynx*. Three of the figures on plate 6 and one of the jaws on plate 7 show the distinctive bicuspidate lower carnassial of the cats.

Five years ago it became my unpleasant duty to call attention to some equally glaring false identifications of copper effigies from the Mound City Group in Ohio—though these happened to be of birds instead of mammals (AMERICAN ANTHROPOLOGIST, n.s., 25: 424-425, 1923).

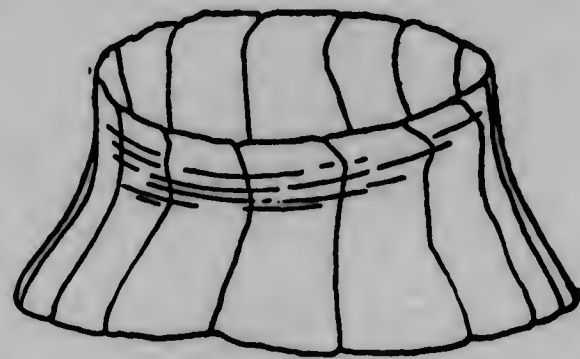
Is it not a dreadful thing to put such erroneous identifications on record?

C. HART MERRIAM



TRANSMIGRATION IN CALIFORNIA. — Among the Indians of California, belief in transmigration is widespread. Most of the tribes say that the mythological beings whom they call "The First People" became animals or other natural objects before real people were created. The belief that existing people, after death, enter, or are transformed into animals, is less common. At the same time most of the Sierra tribes and some of those in Southern California hold that a large owl (usually the Great Horned Owl) makes a practice of capturing ghosts of the departed. This belief I have encountered from the Noto'koiyo or Northeastern Maidu southward to the Tejon and even to the To'ngvā of San Gabriel.

I was once asked by a Northern Mewuk if I had ever seen the broad belt of bony plates which surrounds the eyeball of the Great Horned Owl (see accompanying figure). On replying that I had, I was assured that these closely imbricating plates are the "finger-nails all jammed tight together of the ghosts caught by the owl."



The Northern Mewuk believe that the ghosts of good Indians turn at once into the Great Horned Owl (Too-koo-le) and remain this bird forever after; but that bad Indians turn into the Barn Owl (Et-tā'-le), the Meadow-Lark (Yu'-kal-loo), the Coyote (O'-lā-choo), or the Gray Fox (Choo'-moo-yah). Whatever mammal or bird an Indian becomes after death he continues to be forever — there is no change after that.

The Pā'-we-nan or Southwestern Maidu say that when a person dies his spirit (*oos*) goes out and may go into any one of a number of animals or things. It may turn into an owl or a coyote, a snake or a lizard; it may become a whirlwind,<sup>1</sup> or it may go into the ground and become earth; sometimes, but rarely, it goes off to a good place.

Among the Southern Mewuk the old people say that if a person dies without a hole in the septum of the nose, he will turn into a fish. In this tribe it was formerly the practice of both men and women to perforate the nose for the insertion of a rod of white stone or shell called *kun-no'-wah*.

C. Hart Merriam.

<sup>1</sup> The Northern Mewuk also say that whirlwinds and dust whirls are ghosts dancing swiftly round and round, and warn people to keep out of their way.



SHALL THE NAME OF  
**MOUNT RAINIER**  
BE CHANGED ?

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STATEMENT BY  
**C. HART MERRIAM**  
BEFORE  
**THE UNITED STATES GEOGRAPHIC BOARD**

MAY 11, 1917



WASHINGTON  
GOVERNMENT PRINTING OFFICE  
1917



## SHALL THE NAME OF MOUNT RAINIER BE CHANGED?

By C. HART MERRIAM.

The United States Geographic Board is asked to remove the name Rainier from the lofty mountain which has borne it for 125 years, and to substitute therefor the name Tacoma.

The advocates of the name Tacoma claim that the proposed change is necessary in the interests of "justice to the mountain." The logic of this claim is hard to find; on the other hand, it may be truthfully said that the name Rainier should be retained in justice to its discoverer, in justice to the science of geography, and in justice to the principle of permanence in geographic names.

Mount Rainier was discovered and named by Capt. George Vancouver May 8, 1792—just 125 years ago; and in 1798, in his *Voyage of Discovery to the North Pacific Ocean* and accompanying charts, the name was published to the world. For more than 100 years it has been engraved on every important map of western North America, and for the same period has appeared in the geographies, atlases, histories, and other documents relating to the Pacific coast, no matter where published—whether in Canada, England, France, Germany, Italy, Russia, Holland, Spain, Arabia, or the United States.

No geographic feature in any part of the world can claim a name more firmly fixed by right of discovery, by priority, by international usage, and by the conspicuous place it holds on the official charts of the civilized nations of the earth. So far as I am aware, no attempt has ever been made by any people in any part of the world to change a name so firmly established.

The right of the discoverer to name geographic features has never been questioned and has been practiced by explorers from very early times. And when the discoverer, as in Vancouver's case, happens to be a geographer, surveyor, and constructor of maps, as well as an explorer of uncharted lands and waters, is it not his duty and a necessary part of his work to bestow names upon geographic features?

Vancouver's voyage was undertaken under instructions from the British Government to ascertain the existence of navigable com-



munication between the North Pacific and North Atlantic Oceans. He found that no such passage exists, but he did not stop there. In the words of the late veteran geographer, George Davidson, "He completed a survey of discovery and exploration that is unique in the published history of geography. \* \* \* Vancouver's names upon this western coast are part of the history of geographic discovery and exploration," and they have been accepted by the geographers of all nations.<sup>1</sup>

Is it not the plain duty of this board to safeguard long-established names? If not, if we are to be influenced by such inaccurate statements and admittedly sentimental arguments as have been made before us, what will be the future of geographic nomenclature? As has been well said by George Otis Smith, Director of the United States Geological Survey, there is no more reason for changing the name of Mount Rainier than for changing the names of other features in the same region, all mapped and named at the same time by the same man (Vancouver).

And it may be added without fear of contradiction that whatever argument has been made or may be made in favor of setting aside the name Mount Rainier for an Indian name applies with equal or greater force to Mounts McKinley, Wrangell, St. Elias, Logan, Fairweather, Crillon, Olympus, Baker, Adams, St. Helens, Hood, Jefferson, Three Sisters, Pitt, Lassen, Brewer, Whitney, San Bernardino, San Jacinto, and a host of others—each of which has an Indian name that with equal reason might be substituted for the one now on our maps.

The geographers of America from the time of Wilkes, Mitchell, Guyot, Fremont, and the Pacific railroad surveys to the more recent labors of the Hayden, Wheeler, and Powell surveys, supplemented by the present United States Geological Survey and the Coast and Geodetic Survey, and by the efforts of the Canadian and Mexican Boundary Commissions, have stood without exception for the perpetuation of established geographic names. The same spirit, I am happy to say, was shown by the unanimous action of this board in its refusal 27 years ago to change the name of Mount Rainier.

What is the source of this agitation for a change of name? As everyone knows, it originated in the city of Tacoma, where in the year 1883 it was proposed by the Northern Pacific Railroad, which had then selected Tacoma as its western terminus. But even the Northern Pacific Railroad Co., which had been responsible for the entire controversy, yielded to the decision of the Geographic Board and adopted the name Rainier on all its literature, and has continued to do so from 1890 to the present day. In an article in the *Seattle Post-Intelligencer*, March 13, 1916, the general passenger agent of

<sup>1</sup> George Davidson, in *Sierra Club Bull.*, Vol. VI, pp. 88-91, January, 1907.

the Northern Pacific was quoted as saying to a delegation of Tacoma people who had protested against the use of the name Rainier: "Gentlemen, we have carried this farce as far as we are going to for advertising purposes. The name has been officially declared to be Rainier, and that is what we shall call it. You can call it what you please."

After a reasonable search of the literature relating to the Northwest in general and the State of Washington in particular, including histories, guides, books on travel and exploration, scientific publications, and magazine articles, and of the standard dictionaries, encyclopedias, gazetteers, and atlases of the world, it appears that, apart from documents and folders treating of or emanating from the city of Tacoma, more than 90 percent use the name Mount Rainier exclusively.

In the bibliography of *Washington Geology and Geography*, published by the State of Washington in 1913, 47 publications on Mount Rainier are enumerated, 46 of which use the name Rainier, and 1, the name Tacoma.

In the publications of the western societies of mountain climbers—the Sierra Club of California, the Mazamas of Oregon, the Mountaineers of Washington—and in the official Government publications relating to Mount Rainier National Park, the name Mount Rainier is used exclusively.

Of 10 standard dictionaries, encyclopedias, and gazetteers consulted one gives preference to Tacoma; all others give Rainier either exclusively or followed by the word Tacoma in parenthesis.

Of 13 standard atlases of recent date, 9 use the name Mount Rainier exclusively, while 4 give Rainier followed by Tacoma in parenthesis. Not one gives preference to Tacoma.<sup>1</sup>

Of 17 foreign atlases consulted in the Library of Congress, all without exception use the name Mount Rainier.<sup>2</sup>

<sup>1</sup> Those using Mount Rainier exclusively are: Stanford's *London Atlas of Universal Geography*, 1904; Stieler's *Hand-Atlas*, Gotha, 1905; Andree's *Handatlas*, Leipzig, 1881 and 1907; Rand McNally *Commercial Atlas of America*, 1917; *Atlas of World Commerce*, Edinburgh Geog. Inst., 1907; Velhagen & Klasings *Kleiner Handatlas*, 1917; Debes, *Neuer Handatlas*, Leipzig, 1914; Schrader, *Atlas de Geographie Moderne*, 1915; Petri & Shokalsky *Russian Atlas*, 1913.

Those using Mount Rainier first, followed by Mount Tacoma in parenthesis are: *Century Atlas*, 1914; Cram's *Atlas of the World*, 1916; Hammond's *Standard Atlas of the World*, 1914 and 1917; Walker's *New International Atlas*, 1913.

<sup>2</sup> Fifteen of these are in foreign languages, as follows: *German*: Stieler's *Hand-atlas*, Gotha, 1905; Andree's *Handatlas*, Leipzig, 1881 and 1907; Debes, *Neuer Handatlas*, Leipzig, 1914; Velhagen & Klasings *Kleiner Handatlas*, Leipzig, 1917. *French*: Schrader, *Atlas de Geographie Moderne*, Paris, 1915; *Atlas Larousse, illustre*, Paris [1899]. *Italian*: Borghi, *B. Atlante general*, Firenze, 1819; Zerolo, *Elias, Atlas Geografico Universal*, Paris, 1904; Pennesi, *G. Atlante scolastico per la Geografia*, Roma, 1894. *Spanish*: *Portulano de la America Setentrional*, Madrid, 1869; *Atlas de las Cinco Partes del Mundo*, Madrid [19—]. *Dutch*: Kuyper, *J. Nieuwe atlas der wereld*, Amsterdam, 1864. *Belgian*: Vandermaelen, *Atlas Universal*, Bruxelles, 1827. *Russian*: Petri & Shokalsky [*Large general table atlas*], St. Petersburg, 1913. *Arabic* (transliterated): *Atlas al mejmua khartat resm al-arz*, Malta, 1835.



The claim has been made before this board that the word Tacoma is the native Indian name of Mount Rainier and that it is a specific name applied to this mountain and no other. The fallacy of this claim will now be pointed out. But first let it be understood that the tribes of the Puget Sound region—the Dwamish, Lummi, Nisqually, Puyallup, Skagit, Snohomish, Snokwalmu, Stilakwamish, Tulalip, and a few others—all belong to a common stock, the Salish, and that they all speak dialects of a common language. Among these tribes the word *Tah<sup>ch</sup>-hó-mah*<sup>1</sup> or *Tah<sup>ch</sup>-hó-bet*, irrespective of details of dialectic spelling and pronunciation, means a high snow mountain and was applied by the various tribes to the nearest snow mountain in their vicinity. Thus, according to the location of the Indian speaking, it was used alike for Mount Baker, Mount St. Helens, Mount Rainier, and Mount Adams. Among ethnologists the fact is well known that it is the custom of Indians to speak of their mountain as *the* mountain, their river as *the* river, their lake as *the* lake, their people as *the* people, and so on.

These are the simple facts, but since the statement has been made and reiterated before this board that Tacoma is a specific name applied by the Indians to Mount Rainier only, the following irrefutable evidence to the contrary is submitted:

Theodore Winthrop in his *Canoe and Saddle*, published in 1862, says of the mountain:

The Siwash call it Tacoma, a generic term also applied to all snow peaks.

The late David T. Denny in a letter to the *Seattle Post-Intelligencer* dated December 4, 1902, gives *Tacobed* as meaning snow mountain and "applied to any mountain perpetually covered by snow."

George Gibbs in his *Nisqually Dictionary*, prepared in 1854 and published by the Smithsonian Institution in 1877, gives *Ta-kōb* as the Nisqually name of Mount Rainier; *ʔkoma* as the *Winatsha* (*Wenatchee*) for snow peak; and *ts'kom* as the *Shiswapmukh* for mountain.

Judge James G. Swan, a noted ethnologist of the Sound region, whose investigations also are published by the Smithsonian Institution, states that the word *Ta-ho-ma* "means snow mountain or white mountain."

Gov. Hazard Stevens, son of Gen. Isaac I. Stevens, first governor of Washington Territory, says:

*Takhoma* or *Tahoma* among the Yakimas, Klickitats, Puyallups, Nisquallys, and allied tribes of Indians, is the generic term for mountain, used precisely

<sup>1</sup> The following spellings have been found: Dacobed, Tach-hó-ma, Tachkoma, Tacob, Tacobah, Tacobed, Tacobet, Tacoma, Tacope, Ta-ghó-ma, Tah<sup>ch</sup>-hó-bet, Ta-ho-bet, Tah-hoh-mah, Tahoma, Tah-ko-bed, Ta-ke-man, Ta-kob, Ta-ko-bet, Ta-ko-bid, Ta-ko-man, Tak-ho-ma, Tak-ko-bud.

as we use the word mountain, as *Ta-ko-ma* Wynatchie or Mount Wynatchie. But they also designate Mount Rainier simply as *Tak-ho-ma* or *the* mountain, just as the mountain men used to call it Old He. (*Atlantic Monthly*, p. 513. Nov., 1876.)

Edwin Eels, United States Indian agent, in a letter dated Tacoma, December 8, 1886, says:

The Indian word is *Ta-ko-bet* or *Ta-ke-man* \* \* \*. It means a white mountain, and is a general name for any high, snow-covered, or white, treeless peak. It is applied to this mountain by the Indians of this vicinity, because it is the only or most prominent one of the kind in the vicinity. They use the word as we would speak of The White Mountain, there being but one near us. In the Skadgit language, the word is a little different, and is there called *Ko-ma* and is applied by these Indians to Mount Baker, it being the mountain in that vicinity of the kind. The word *Squa-tach* or *Squat-letsh* is a general name for a range of mountains, while *Ta-ko-bet* or *Ta-ko-man* or *Ko-ma* is the name of the snow-covered or white peaks in the range.

W. S. Phillips, in an article in *Outdoor Life* of February, 1910 (p. 174), tells us that the Indians of the Sound region called all the high snow peaks by the same name—*Tah-ko-bed*—the White One, and goes on to say:

It was a collective, generic name that conveyed the idea of a distinctive, high white peak. \* \* \* This I get first hand from more than one old wrinkled Indian here who knows the manners, customs, and language of those who went before of his own people, and I talked their own tongue, therefore I know there can be no misunderstanding. \* \* \* The old Indians, talking in their own tongue, tell me they called Rainier *Tah-ko-bed*, and that they called Mount Baker, Mount Adams, Glacier Peak, Mount St. Helens, Mount Hood, and all the others *Tah-ko-bed* also.

But perhaps the most interesting testimony is that furnished by the Director of the Geological Survey, George Otis Smith, who in a letter to Benjamin L. Harvey, of Tacoma, dated February 28, 1908, states that in 1901, when in charge of the investigation of the north-western boundary of the United States between Osoyoos Lake and Puget Sound, he made use of the old unpublished boundary map of which photographs were obtained from the Department of State. On that old map, antedating most of the settlement of the region, the prominent geographic features were given both their English names and the old Indian names. Continuing, Dr. Smith says:

Now the interesting fact is that Mount Baker was given not only this English name but the old Indian name as well of *Ta-ho-ma*. In other words, the Indians applied this name, which, as you know, signifies The Great Mountain, not only to the mountain which so beautifully looms up above your own city, but also to the mountain somewhat similar in general appearance, in the northern part of your State, and very likely to others of the volcanic cones in Washington.

Having thus disposed of the fallacy that Tacoma is a specific name used only for Mount Rainier, it may not be amiss to mention the



circumstance that among the tribes of the region at least three names were applied exclusively to this mountain. These were *Stiquak* (written also *Tiswauk*), *Tu-ah-ku*, and *Puskehouse*. They were obtained from the natives and published before—in one case 50 years before—the attempt to change the name had been made. Has any citizen of Tacoma ever suggested the adoption of any one of them?

If the people of Tacoma are so eager to call places by their Indian names, why have they not adopted the unquestioned aboriginal name *Shuh-bah'-lup*, instead of Tacoma, for their own city?

Lest I be accused of hostility to aboriginal nomenclature, I beg permission to refer to my personal record in the archives of this board. Is it not well known to every member of the board that in cases of competitive names of essentially equal claim—one aboriginal, the other modern—the Indian name, unless too long or too hard to pronounce, has invariably received my support?

We are now asked, without the submission of any additional evidence or reason, to reverse the decision rendered by this board in 1890—a decision arrived at after due deliberation by such eminent and fair-minded geographers as Henry Gannett, then chief geographer of the Geological Survey; Marcus Baker, of the Geological and Coast Surveys; Thomas Mendenhall, then head of the Coast and Geodetic Survey; and Richardson Clover, now admiral, then chief hydrographic officer of the Navy.

In view of the public record of these men on the question of the name Mount Rainier, supported by publications on the same subject by the Pacific coast geographer, George Davidson; by the Director of the United States Geological Survey, Dr. George Otis Smith; by the historians of the State of Washington, Clinton A. Snowden and Edmond S. Meany, and other scholars and men of science; is it not a little difficult to understand the statement made publicly before this board by one of the Tacoma delegates, that "no American man of science or letters has been known to stand for the name Rainier"?

Many misstatements additional to those already given were made before the board at its recent hearing, as, for instance, when it was said that Vancouver, after promising the early Spanish navigators whom he met on the coast to use the names they had applied to certain points, suppressed these, replacing them with English names. We were also told specifically that Vancouver, after having agreed that the name of the large island north of Puget Sound should be Quadra and Vancouver, omitted Quadra's name, using only his own. The reproduction of Vancouver's chart, published in 1798, proves the groundlessness of this charge, for the name Quadra and Vancouver is printed on the island in big letters, and it continued to be used on maps for half a century.

Among other Spanish names adopted by Vancouver and published on his chart of the coasts of British Columbia and Washington are: Islands of Galiano and Valdes, Ya. [Id.] de Feveda, Canal de Arro, Canal de Nuestra Señora del Rosario, Pta. de Sn. Gonzalo, Pta. de los Angeles, and the "Supposed Strait of *Juan de Fuca*."

Other alleged reasons for changing the name Rainier, not brought forward at the public hearing, were mentioned by the Tacoma delegates to individual members of the board. One of these was that unless the name Tacoma were perpetuated by the name of the mountain, the "vanishing Indians" of the region would have no monument—nothing to remind us of their former possession of the country. In reply to this it is only necessary to call attention to the fact that a dozen counties in the western half of the State of Washington to-day bear Indian names (Chelan, Clallam, Cowlitz, Kitsap, Kittitas, Klickitat, Okanogan, Skagit, Skamania, Snohomish, Wahkiakum, and Yakima); that on Mount Rainier itself at least 20 geographic features—streams, glaciers, and peaks—are known on our maps by Indian Names,<sup>1</sup> while in western Washington as a whole nearly or quite 100 such names remain to perpetuate the memory and nomenclature of the aboriginal tribes.

But strangest of all, perhaps, were the remarks made by one delegate about Peter Rainier, for whom the mountain was named. It was said that he was an obscure person—merely a friend of Vancouver; that he believed in slavery; and that he was an enemy of our country.

The assertion that he was an obscure person hardly needs refutation, it being a matter of official record that in 1795 he was made rear admiral of the British Navy, in 1799 vice admiral, and in 1804 advanced to the highest rank—admiral of the blue. In 1807 he was elected to Parliament, and upon his death the following year left one-tenth of his property toward the extinguishment of the national debt. The charge that he believed in slavery is doubtless true, but does it not apply also to many of our ancestors of the same period? And is it not true also that George Washington was a slaveholder?

The accusation that Rainier was an enemy to America in the War of the Revolution was not only made to me personally, but, amazing as it may seem, was embodied in the original memorial of the Legislature of the State of Washington addressed to this board and passed by the House January 15, 1917 (H. Con. Res. No. 8), though afterwards killed in the Senate and omitted from the final memorial (Senate joint memorial No. 14, which passed the Senate Feb. 19 and the

<sup>1</sup> Among these are Cowlitz, Ipsut, Katsuk, Mowich, Nisqually, Ohanapecosh, Olallie, Owyhigh, Puyallup, Sluiskin (or Sluiskum), Sotolick, Spukwush, Tahoma, Tatoosh, Tenas, Tillicum, Tuntum, Tyee, Wapowety, Wauhaukaupauken, Yakima (park), and a few others.



House Feb. 27, 1917). The words referred to in the original memorial are: "Whereas \* \* \* said Rainier at the time of the American Revolution, when we were fighting for liberty, was actively engaged as an enemy against us and was effective in harassing and destroying our ships of commerce"—all of which appears to accord with the record. And is it not to his credit that as a patriotic British subject he fought for his country? Furthermore, the record shows that when engaged in battle with one of our privateers and wounded in the breast by a musket ball, he refused to be taken below until he had captured the enemy's vessel, proving himself a brave and valorous officer, worthy of the honors that have been bestowed upon him. In view of the present official relations of our Government with the Governments of England and France, does it seem to our board that the moment is opportune for casting a slur on the name of an English patriot whose grandfather was a French Huguenot?

The only other matter worthy of consideration by the board is the memorial of the Legislature of the State of Washington, passed by a vote of 89 to 35, asking that the name Rainier be changed. Were the question at issue a local one, and did the vote fairly represent the sentiment of the citizens of the State, the memorial would deserve more serious consideration. But the question is not a local one, and we have every reason to believe that the vote fails utterly to express the views of the great majority of the people of the State.

And, furthermore, is it not fair to ask—with apologies to the good citizens of Tacoma—why their city should insist on appropriating as a local asset the central figure and culminating glory of Mount Rainier National Park? And is it not fair to suggest, since the mountain is the property of the United States, that its name is a matter of concern to the people of the whole United States? And have the people of the United States, outside of Tacoma, shown any dissatisfaction with the name Rainier? And were this board to change the name, is there any probability that the people of the United States at large would accept the change, or that the nations of the world would remove the present name from their charts and maps? In view of all the facts is it not the obvious duty of the board to preserve the name bestowed by Vancouver 125 years ago—a name accepted and established by general adoption in the geographies, histories, atlases, dictionaries, gazetteers, and encyclopedias of the world, confirmed by official act of the Congress of the United States in creating the Mount Rainier National Park (act of Congress of Mar. 2, 1899) and unalterably fixed by the all but universal usage of the civilized nations?



**REPORT**  
OF  
**UNITED STATES GEOGRAPHIC BOARD**

ON

**S. J. Res. 64**

**A JOINT RESOLUTION TO CHANGE THE NAME OF  
"MOUNT RAINIER" TO "MOUNT TACOMA"  
AND FOR OTHER PURPOSES**



**WASHINGTON**  
**GOVERNMENT PRINTING OFFICE**  
1924



COMMITTEE ON THE PUBLIC LANDS

HOUSE OF REPRESENTATIVES

SIXTY-EIGHTH CONGRESS, FIRST SESSION

N. J. SINNOTT, Oregon, *Chairman*

ADDISON T. SMITH, Idaho.  
HAYS B. WHITE, Kansas.  
WILLIAM N. VAILE, Colorado.  
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VICTOR L. BERGER, Wisconsin.

JOHN E. RAKER, California.  
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ELMER THOMAS, Oklahoma.  
CHARLES L. RICHARDS, Nevada.  
JOHN MORROW, New Mexico.  
FRED M. VINSON, Kentucky.  
WILLIAM P. JARRETT, Delegate from Hawaii.

GEORGE A. HOSSICK, *Clerk*

II

[S. J. Res. 64, Sixty-eighth Congress, first session]

In the House of Representatives, April 22, 1924. Referred to the Committee on the Public Lands

**JOINT RESOLUTION TO CHANGE THE NAME OF "MOUNT RAINIER" TO "MOUNT TACOMA," AND FOR OTHER PURPOSES**

Whereas it is the universal practice, out of respect for the American Indian, to perpetuate, wherever possible, in the geographical nomenclature of the United States the names used by the American Indians; and

Whereas the man for whom Mount Rainier was named, as the commander of a British ship, engaged in depredations along the Atlantic seaboard in armed opposition to the Government of the United States; and

Whereas perpetuating the name "Rainier" is contrary to the wishes of the sovereign State of Washington, as expressed in a memorial passed by the legislature of said State in the session of 1917 and addressed to the members of the United States Geographic Board, petitioning the board to substitute for the name "Rainier" the most appropriate name that the board might, after a hearing, select: Therefore be it

*Resolved by the Senate and House of Representatives of the United States of America in Congress assembled,* That from and after the passage of this resolution the mountain heretofore known as "Mount Rainier," the national park heretofore known as "Mount Rainier National Park," and the national forest heretofore known as "Rainier National Forest," shall be known and designated on the public records as "Mount Tacoma," "Mount Tacoma National Park," and "Tacoma National Forest," respectively.

SEC. 2. That all records, surveys, maps, and public documents of the United States in which such mountain, park, or forest is mentioned or referred to under the name of "Mount Rainier," "Mount Rainier National Park," or "Rainier National Forest," respectively, shall be held to refer to such mountain, park, or forest under and by the name of "Mount Tacoma," "Mount Tacoma National Park," and "Tacoma National Forest," respectively.

Passed the Senate April 21, 1924.

Attest:

GEORGE A. SANDERSON, *Secretary.*

III







LETTER OF TRANSMITTAL

Very faint, mostly illegible text, likely bleed-through from the reverse side of the page.

REPORT OF UNITED STATES GEOGRAPHIC BOARD ON THE NAME OF MOUNT RAINIER

Mount Rainier was discovered March 8, 1792 by the eminent geographer and explorer, Capt. George Vancouver, and was named by him in honor of Rear Admiral Peter Rainier of the British Navy.<sup>1</sup> For a century and a quarter the name "Mount Rainier" has been on every important map of western America, regardless of where issued, and during the same period has appeared in all important geographies, atlases, histories, and encyclopaedias, and all official documents relating to the Pacific coast region, whether published in the United State, Canada, England, France, Germany, Italy, Spain, Holland, Russia, or Arabia.

In the words of the late Prof. George Davidson, foremost geographer of the Pacific coast region "Vancouver's names upon this western coast are part of the history of geographic discovery and exploration," and they have been accepted by the geographers of all nations. For, as stated before this board by Victor Farrar, a student of history: Vancouver's "right to name the mountain is well attested by the fact that since 1792 [the year of its discovery] no geographer of any nation has ever challenged the name."

No geographic feature in any part of the world can claim a name more firmly fixed—fixed by right of discovery, by right of priority, by right of international usage, and by the conspicuous place it holds in the literature, atlases, and official charts of the civilized nations of the earth.

To change it would be a blow to the stability of geographic and historical nomenclature, and a reflection upon the intelligence of the American people. The name has become the property of the world and is no more a local matter than the name of the Andes of South America or the Himalaya of India. Think of the chaos in geography, history, and science that would result if new names were given to the world's most prominent landmarks.

The records of science in the field of geology and in studies of glaciers, mammals, birds, reptiles, insects, forests, and humbler plants contain thousands of references to Mount Rainier, and our museums include thousands of specimens whose labels bear the name. And such records and specimens are by no means confined to our own country, for they are to be found also in the literature and the

<sup>1</sup> See "Voyage of Discovery to the North Pacific Ocean," by Capt. George Vancouver, vol. 1, pp. 253, 259, 268, 1st ed., London, 1798. Also French edition, vol. 1, p. 277, Paris, 1799. Name "Mount Rainier" in text and on charts in atlas of both English and French editions.



museums of most of the countries of Europe. Imagine the confusion a change in the name of the mountain would cause after the present controversy has been forgotten!

THE DEMAND FOR CHANGE OF NAME

Beginning with the year 1883 and continuing to the present day, a majority of the people of Tacoma have been striving to bring about a change in the name of the great mountain, wishing to replace the old-established name "Rainier" by that of their own city. At first the movement lacked impetus, but in the course of a few years it became general and an association was formed for the specific purpose of financing and directing an active, aggressive campaign. By means of personal appeal, newspaper and magazine articles, and public lectures all parts of the United States were reached, and many people were led to believe that the proposed change should be made. Furthermore, during the past 34 years the people of Tacoma have sent three delegations to Washington (in 1890, 1917, and again in 1921) in the hope of influencing the United States Geographic Board to make the change. Having failed, they are now appealing to Congress.

Advocates of the name "Tacoma" are continually calling attention to the number of patriotic and other organizations favoring the name "Tacoma." But no mention is made of the insidious way in which these organizations have been misled to believe that "Tacoma" is the aboriginal distinctive name of the mountain.<sup>2</sup>

ARGUMENTS IN FAVOR OF TACOMA

Examination of the evidence presented at the hearings in favor of the name "Tacoma," together with a careful reading of many published articles on the subject brings out the fact that only two arguments have been brought forward by supporters of the change. These are:

- (1) That "Tacoma" is the aboriginal Indian name of the Mountain;
- (2) That the man Peter Rainier for whom the mountain was named was an enemy to our country.

THE FACTS IN THE CASE

In reply to these statements the United States Geographic Board presents the following:

1. *The Name "Tacoma"*.—Names more or less similar to "Tacoma"—as "Takoha," "Tah-ho-ma," "Ta-gho-ma," "Takob," "Tahko-bed," "Tahch-ho-bet," "Dacobed," and others—were applied by the tribes of the region to all lofty snow-clad peaks from Mount

<sup>2</sup> Some of the appeals, while misleading are couched in dignified language; others contradict one another and abound in false information, and a few—notably a small pamphlet by S. H. McKown entitled "The Violence Done by Perpetuating the Name 'Mount Rainier,'" a second edition of which was issued in Tacoma early in the present year—are not only untruthful but scurrilous.

Baker on the British Columbia boundary south to Mount Hood in Oregon.<sup>3</sup>

Years ago Dr. George Otis Smith, Director of the United States Geological Survey, called attention to the fact that an old international boundary map on file in the Department of State shows the name "Ta-ho-ma" on Mount Baker close to the boundary between British Columbia and Washington. And the same name (or one of its variants) has been applied by the native Indians not only to Mounts Baker and Rainier, but also to Mount Adams, Mount St. Helens, Mount Hood, and other high peaks—each tribe calling the snow mountain in its neighborhood by the name which in its language means "the white mountain."

Senator Dill in his report to the Senate (Rept. No. 268, Calendar No. 283, 58th Cong., 1st sess.) repeated a published statement that the name "Tacoma" "means the mountain that was God." Nothing could be further from the truth, the name (in its several forms) meaning simply "white mountain."

2. *The man Rainier*.—Peter Rainier, whose grandfather was a French Huguenot, was born at Sandwich, England, and when a lad of about 15 years (in 1756) entered the British Navy. On May 26, 1768, he was promoted to the rank of lieutenant, and on May 3, 1777, was placed in command of the sloop *Ostrich*. On July 8 of the following year, during the Revolutionary War, after a severe struggle he captured an American privateer. He was severely wounded in the breast by a musket ball, but refused to be taken below until he had captured the enemy's vessel, thus proving himself a brave and valorous officer, deserving the honors that were bestowed upon him. In 1795 he was made rear admiral and in 1804 advanced to the highest rank—Admiral of the Blue. In 1807 he was elected to Parliament, and at his death left a tenth of his property toward the extinguishment of the national debt.<sup>4</sup> Is not this sufficient answer to the claim that he was "an obscure person"?

It is charged that Rainier believed in slavery, and that in the War of the Revolution he was an enemy of the United States. Both of these charges appear to be true. Is it not true also that many of our highest officers and other prominent men of the time were slave-

<sup>3</sup> The Indian names applied to the several lofty snow peaks of the Cascade Range from British Columbia south to Oregon may be arranged in two categories according to the dialectic differences in the languages of the tribes. Thus in one series the last syllable has the "mah" sound while in the other it has the sound of "bet" ("pet" or "bed"), as shown in the following lists:

Tacobah.	Dacobed.
Tahoba.	Tacobed.
T'choba.	Tacobet.
T'chakoba.	Ta-ho-bet.
Tach-ho-ma.	Tah-ho-bet.
Tah-ho-mah.	Tah-ko-bed.
Tachkoma.	Ta-ko-bid.
Ta-gho-ma.	Tah-koh-bud.
Tah-hoh-mah.	Tacob.
T'koma.	T'kope.
Tak-ho-ma.	

(The spellings here given are those of the various authors. There are one or two others—as "Ta-koman" or "Tak-ho-man" which are not well allocated.)

<sup>4</sup> E. S. Meany, "Vancouver's Discovery of Puget Sound," pp. 100-101. The Macmillan Co., London and New York, 1915.



holders? And is it a fair charge against Rainier that in the service of his country he proved a brave and patriotic officer?<sup>5</sup>

#### HISTORY OF THE USE OF THE WORD "TACOMA"

So far as known to us the earliest written use of the name "Tahoma," "Tah-ko-bed," or any related word, irrespective of spelling, was its appearance, already referred to, on an old unpublished map showing the location of the international boundary between British Columbia and the State of Washington. The date of this map has not been ascertained, but it antedates most of the settlement of the region. It was discovered in the State Department and photographs were furnished to Dr. George Otis Smith, Director of the United States Geological Survey, who in 1901 was in charge of the investigation of the northwestern boundary of the United States. In examining the map Doctor Smith was surprised to find the Indian name "Ta-ho-ma" on Mount Baker in addition to its English name.

The next written use of the name and the first in the form "Tacoma" was in 1863 in a book by Theodore Winthrop, entitled "Canoe and Saddle." Winthrop stated that it was a generic term applied to Mount Rainier and also "to all snow peaks."

In 1866, three years after its publication by Winthrop, the name was adopted as the title of a Good Templar lodge at Olympia, and two years later was given the embryo town since known as Tacoma, which had been entered on the original survey as "Commencement City."

In 1876 Gen. Hazard Stevens stated in an article in the Atlantic Monthly that "'Tak-homa' or 'Tahoma' among the Yakimas, Klickitats, Puyallups, Nisquallys, and allied tribes of Indians is the generic term for [snow] mountain."

The movement to change the name of Mount Rainier originated, as everybody knows, in the city of Tacoma, and in the year 1883. In that year the officials of the Northern Pacific Railroad announced that in their guide books and other publications the name "Mount Tacoma" would be used in place of "Mount Rainier." During the ensuing year the new name was generally adopted by the people of Tacoma. In fact, the enthusiasm over it was so marked that the people proposed its adoption in place of "Washington" as the name of their State, then about to be admitted into the Union.

In 1889 a Tacoma lawyer and historian, Ellwood Evans, in his "Hishtory of the Pacific Northwest," made the statement that "the railroad company renamed the mountain after the city." And in 1893 C. G. Brewerton, in his "History of Washington, the Evergreen State," explained that the name "Rainier" "was generally accepted by early settlers up to the time of the completion of the Northern Pacific to Tacoma; then, renaming the mountain after the city, the

<sup>5</sup> The maliciously false charge that he "ravaged our coasts, burnt our towns," and so on, is on a par with the accusation that the U. S. Geographic Board rendered its first decision for the perpetuation of the established name as a return for a carload of Rainier beer, the obvious fact being that the date of the decision (1890) was four years previous to the first appearance of the beverage in question. And it may not be amiss to add that among the eminent men against whom this slander is directed were Henry Gannett, then chief geographer of the Geological Survey; Marcus Baker, of the Geological and Coast Surveys; Thomas Mendenhall, then head of the Coast and Geodetic Survey; and Richardson Clover, then Chief Hydrographer of the Navy, later admiral. All are now dead.

company called it Mount Tacoma." But later, even the Northern Pacific Railroad abandoned its claim, announcing frankly: "We have carried this farce as far as we are going to for advertising purposes. The name has been officially declared to be 'Rainier,' and that is what we shall call it."

When Senator Dill presented his report from the Committee on Public Lands, recommending the passage of the joint resolution to change the name of the mountain, he was asked if such change was desired by the people of the State of Washington. In reply he said that the Legislature of Washington had requested that the name be changed.

The action of the legislature referred to was a resolution adopted in the early spring of 1917, concerning which a few words of explanation seem proper. William Bishop, for 10 years a member of the Washington State Legislature, and serving at the time of the passage of the resolution, stated plainly: "The real sentiment of both houses was opposed to the passage of the memorial asking for the change of name \* \* \* its passage was secured through the powerful influence of the speaker of the house, who was from Tacoma, and the president of the senate, who was from Tacoma. Their influence, through the chairmen of the various committees whom they had appointed, absolutely controlled." And it may be added that the then governor of the State was likewise a resident of Tacoma and had been for many years.

In addition to the fact that both the president of the senate and the speaker of the house and also the governor were from Tacoma, a Tacoma lobbyist (S. W. Wall) after visiting many of the members of the legislature at their homes, went to the capitol and remained during a considerable part of the session, working for the resolution, which after being once defeated was finally passed.

One of the leading newspapers of the West, the Seattle Post-Intelligencer, under date of April 21, 1917, said in a leading editorial: "It is of course possible to decree that henceforth the name of the mountain shall be 'Mount Tacoma,' or 'Mount Somethingelse.' But no decree can make people use the name. It will still be 'Mount Rainier' in speech and in the written word." The same is true to-day.

#### THE SPECIFIC NAME OF MOUNT RAINIER

Each of the several tribes of Indians living in the adjacent region has a definite specific name for the great mountain. This, according to the dialect of the tribe speaking, is "P'sk-houks" (usually written "Puskehouse"), "Tu-ah-ku," or "Tiswauk" (otherwise written "Chis-wauk," "Stiquak," and "Twahwauk"). These are distinctive names, applied to Rainier and no other mountain. And still the people of Tacoma ask for "the restoration of the original and rightful name of the mountain!" But this is exactly what they do not want; they want the name of their city.

#### PROPORTIONATE OCCURRENCE OF THE NAMES "RAINIER" AND "TACOMA" IN PRINTED WORKS

An examination of the literature relating to the northwest coast region in general and to the State of Washington in particular, was



made several years ago under the direction of the United States Geographic Board, for the purpose of ascertaining the relative frequency of occurrence of the names "Mount Rainier" and "Mount Tacoma" in histories, guides, books on travel and exploration, scientific publications, and magazine articles; and also in the standard dictionaries, encyclopedias, gazetteers, and atlases of the world. This inquiry developed the following facts:

(1) Apart from documents and folders treating of or emanating from the city of Tacoma more than 90 per cent use the name "Mount Rainier" exclusively.

(2) In the bibliography of Washington Geology and Geography, published by the State of Washington in 1913, 47 publications on Mount Rainier are enumerated, 46 of which use the name "Rainier," and 1 the name "Tacoma."

(3) In the publications of the western societies of mountain climbers—the Sierra Club of California, the Mazamas of Oregon, the Mountaineers of Washington—and in the official Government publications relating to Mount Rainier National Park, the name "Mount Rainier" is used exclusively.

(4) Of 10 standard dictionaries, encyclopedias, and gazetteers consulted 1 gives preference to "Tacoma"; all others give "Rainier" either exclusively or followed by the word "Tacoma" in parentheses.

(5) Of 13 standard atlases of recent date, 9 use the name "Mount Rainier" exclusively, while 4 give "Rainier" followed by "Tacoma" in parentheses. Not one gives preference to "Tacoma."<sup>6</sup>

(6) Of 17 foreign atlases consulted in the Library of Congress, all without exception use the name "Mount Rainier."<sup>7</sup>

To the foregoing list of titles the following should be added:

#### GAZETTEERS

*Rainier oder Tachoma.*—Ritter's "Geographisch-Statistisches Lexikon," 9th edition, Vienna, 1910.

*Rainier (Rainier, Tacoma, or Tachoma), Mount.*—"Longman's Gazetteer of the World," London, 1920.

*Rainier (or Tacoma), Mount.*—Lippincott's "Gazetteer of the World," Philadelphia, 1922.

#### ATLASES

*Mt. Rainier.*—The "Times Atlas and Gazetteer of the World," London, 1922.

*Mt. Rainier.*—"Atlas Universel de Géographie," Paris 1923.

*M. Rainier.*—"Grande Atlante Geografico" (Baratta-Visintin), Novara, 1922.

*Mt. Rainier.*—Andree's "Allgemeine Handatlas," 8th edition, Leipzig, 1922.

<sup>6</sup> Those using "Mount Rainier" exclusively are: Stanford's London Atlas of Universal Geography, 1904; Stieler's Hand-Atlas, Gotha, 1905; Andree's Handatlas, Leipzig, 1881 and 1907; Rand McNally Commercial Atlas of America, 1917; Atlas of World Commerce, Edinburgh Geog. Inst., 1907; Velhagen & Klasing's Kleiner Handatlas, 1917; Debes, Neuer Handatlas, Leipzig, 1914; Schrader, Atlas de Geographie Moderne, 1915; Petri & Shokalsky Russian Atlas, 1913.

Those using "Mount Rainier" first, followed by "Mount Tacoma" in parentheses are Century Atlas, 1914; Cram's Atlas of the World, 1916; Hammond's Standard Atlas of the World, 1914 and 1917; Walker's New International Atlas, 1913.

<sup>7</sup> Fifteen of these are in foreign languages, as follows: German: Stieler, Hand-Atlas, Gotha, 1905; Andree's Handatlas, Leipzig, 1881 and 1907; Debes, Neuer Handatlas, Leipzig, 1914; Velhagen & Klasing's Kleiner Handatlas, Leipzig, 1917. French: Schrader, Atlas de Geographie Moderne, Paris, 1915; Atlas Larousse, illustre, Paris [1899]. Italian: Borghi, B. Atlante general, Firenze, 1819; Zerolo, Elias, Atlas Geografico Universal, Paris, 1904; Pennesi, G. Atlante scolastico per la Geografia, Roma, 1894. Spanish: Portulano de la America Setentrional, Madrid, 1869; Atlas de las Cinco Partes del Mundo, Madrid [19—]. Dutch: Kuyper, J. Nieuwe atlas der wereld, Amsterdam, 1864. Belgian: Vandermaelen, Atlas Universal, Bruxelles, 1827. Russian: Petri & Shokalsky [Large general table atlas], St. Petersburg, 1913. Arabic (transliterated): Atlas al mejmu'ah khartat resm al-arz, Malta, 1835.

#### OTHER ENGLISH NAMES

It has been pointed out by Dr. George Otis Smith and others that no protest from the people of Tacoma has been discovered against any of the other names bestowed by Vancouver at the time he named Mount Rainier, although several of these—as Puget Sound, Mouni Baker, Port Orchard, and Whidbey Island—were named for British officers on his own ship. Among the additional names given by Vancouver in honor of Englishmen are Bellingham Bay, Penn Cove, Vashon Island, and Port Townsend.

And if our sense of patriotism should lead us to cancel English place names because we were once at war with England, would not the map of the United States look like a skinned cat? And who would undertake the task of renaming the hundreds of cities, towns, and geographic features thus bereft of their titles from Cambridge and Mount Vernon in the East to Bellingham and Puget Sound in the West?

#### COST OF CHANGE OF NAME

Has the cost of the proposed change been considered—the cost to the Government of reengraving and reprinting the maps and official documents on which the name occurs, as published by the United States Geological Survey, the United States Coast and Geodetic Survey, the War Department, the Hydrographic Office of the Navy, the Forest Service, the Biological Survey, the National Parks Service, the General Land Office of the Department of the Interior, the Post Office Department, and the Department of Agriculture? And aside from the expense of changes in Government maps and documents, what justification could be offered for the alterations that would be required in the multitude of maps, guide books, histories, school readers, and other publications of prominent business firms, the aggregate cost of which would reach appalling figures?

If the present Congress should change the name, is it not extremely probable, owing to the rapidly increasing protests from the great majority of citizens of Washington and other States, that during the next Congress a counterresolution would be introduced, changing it back to "Rainier"?

Recapitulating, it appears:

1. That the name "Tacoma" in this form is not strictly an Indian word of the Northwest, but seems to be derived from a number of more or less similar words used by the Indians of the region as a generic term, meaning "white mountain," and applied to all snow peaks of the Cascade Range from British Columbia to Oregon. It is not, in any of its forms, the distinctive name of any mountain.

2. That Peter Rainier, for whom the mountain was named, instead of being "an obscure person," was a valiant officer who attained the highest rank in the British Navy.

3. That the clamor for substituting "Tacoma" for "Rainier" as the name of the mountain arose in and is continually fomented by a group of citizens of the city of Tacoma.

4. That by means of propoganda emanating from Tacoma and carried on over a series of years, consisting of personal argument



and correspondence, newspaper and magazine articles, lectures, and appeals to patriotic and historical societies and women's clubs, hundreds of people have been misled to believe that the change ought to be made.

5. That the agitation begun and so persistently carried on by this one city—as against the rest of the world—threatens one of the most firmly established names on the face of the earth and if successful would deal a death blow to the stability of international geographic nomenclature.

C. HART MERRIAM, *Chairman.*  
JAS. McCORMICK, *Secretary.*

*[Faint, illegible text, likely bleed-through from the reverse side of the page.]*



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THE NATIONAL ACADEMY OF SCIENCES

*Concentration of remnants of Indian tribes in northwestern California:* C. HART MERRIAM. Probably no part of the United States is so little known from the standpoint of its aboriginal inhabitants as a small area in the mountains of northwestern California—an area restricted to the drainage basins of the Salmon and New Rivers with adjacent parts of the main Trinity and its South Fork. Within a radius of forty miles from Hoopa Valley there were in whole or in part the home lands of nineteen tribes of Indians, representing eight linguistic stocks. It is doubtful if in any other part of the world there are in so small an area so many tribes speaking different languages. Most of these tribes are fairly well known, but during the mining days of the fifties and early sixties several of them were practically exterminated by the onrush of gold seekers and the troops called in to help. Indeed, so complete was the destruction that in the case of four of the tribes the few survivors succeeded so well in remaining hidden from inquisitive eyes that not even the names of the tribes were ascertained by anthropologists.

*A remarkable case of word borrowing among California Indians:* C. HART MERRIAM. Work among the Shoshonean tribes on both sides of the Nevada-California boundary south of the latitude of Mono Lake has brought to light a surprising if not unique case of the borrowing of words, particularly the names of animals. These names as used by the Monache of Owens Valley, on the east side of the Sierra, disagree almost wholly with the names used by their relatives only a short distance farther north—the “Northern Piute” bands of Mono, Walker and Pyramid Lakes. Further study has shown that the un-Shoshonean names of the Owens Valley Monache are in current use among the



several derivative Monache tribes on the west side of the Sierra. These names, that differ from those of the "Northern Piute," agree essentially with those of an unrelated stock, namely, the Yokut, of San Joaquin Valley. In other words, a series of tribes of Shoshonean stock have set aside the animal names in common use among their near relatives and have replaced them by the names used by several tribes of a widely different linguistic stock—the Yokut. So far as I am aware, no parallel is known.



## THE CRUELTY OF FORCED ALLOTMENTS IN CALIFORNIA

C. Hart Merriam

Only a year ago the Indians of Palm Springs on the edge of the Colorado Desert in California were thrown into a state of apprehension and dismay by the sudden unannounced appearance of Government surveyors sent by the Indian Office to subdivide their communal village and pasture lands into individual allotments. Not only was this a terrible shock, but when the surveyors had gone the anxious Indians were kept in suspense for months until Secretary Hubert Work, at last learning the truth, postponed indefinitely the final order.

It is well to remember that long ago the Indians had apportioned their land among themselves, in accordance with their own tribal laws, and that in their councils no action is taken except by unanimous consent.

Indians, like ourselves, are in the main social. From time immemorial the non-nomadic tribes have lived in villages, planting and harvesting in accordance with the tribal laws, and



since the advent of horses, cattle, and sheep, ranging their stock collectively. The practice of the Indian Office in breaking up tribal lands and apportioning small tracts to individual Indians is a violation of their hereditary customs and beliefs, the idea of individual land ownership being contrary to their traditions and understanding. Furthermore, the practical application of the allotment system is almost invariably unjust for the reason that the individual allotments are rarely of equal value. As a rule the Indian is not consulted. He is arbitrarily assigned a piece of land, often without water and worthless for cultivation.

It is only a few months since the Palm Springs Indians were assured that for the time being at least their homes would not be broken up.

They and their friends rejoiced, believing that the verdict in this case applied not only to Palm Springs but also to other small reservations in Southern California. But they were destined to disappointment, for the accursed

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✓ In the case of lands purchased for Indians, the Assistant Commissioner of Indian Affairs, Mr. Merritt, states: "We did not buy that land with a view of providing farms for the Indians but for homes so that they could live in safety in the community where they had been living for years and so that they could go out among the ranches and farms and earn their living."



work is still going on. It is now announced that the Indian Office has decided--in spite of protests and petitions from both Indians and whites--to allot the remaining Indian lands of Southern California!

Less than three months ago, according to the California press, a party of Indian Office surveyors was halted while attempting to survey allotments on the La Jolla Indian reservation in San Diego County. The facts as given in a signed statement by the Indians are:

"W.H.Thorn, while engaged in surveying preparatory to a forced allotment of reservation land, against the wishes and over the protest of the majority of the Mission Indians, entered with his party in many instances upon the cultivated lands of Indian farmers, injuring and destroying growing crops. The owners of the crops protested and endeavored to prevent him, but in no instance that we are able to ascertain was any violence attempted. At any rate none was intended."

What do these forced allotments mean?

They mean the practical confiscation and resubdivision of Indian homes, gardens, and pasture lands



that have been occupied for long periods--sometimes for generations. And in some cases they mean that the home and improvements of one Indian are transferred to another. They mean more. They mean the destruction of tribal government with its established system of laws and social codes--laws and codes that for ages have controlled the conduct and activities of the people. It is a heart-breaking affair; one calculated to destroy the last remnant of faith in our Government, and to rob the Indian of ambition for the present and hope for the future.

One of the agents in charge, when confronted with some of the iniquitous features of the proposed allotments, replied that such injustices "are necessary to the carrying out of the allotment plan"--as if the plan had to be carried out, suffer who will!

Why should the Government permit this persecution?

Why misuse the authority of the Government to forcibly allot and redistribute lands belonging to the Indians, lands they have held in communal occupancy for generations?

Why must we always interfere with the lives,



laws and customs of the original owners of the country--people whose lands we have absorbed without pretense of compensation?

Why should we interfere with their established mode of life? Why not let them live in peace? Why are we in such a hurry to impose upon them the white man's way for everything? The answer, as a recent writer puts it, is: "In the interest of standardization, let us force them to become like us."

They do not need to be forced. The young people are yearly adopting more and more of our ways; the change is coming naturally without need of pressure. The difficulty is of quite another sort, namely, of persuading the younger Indians to appreciate and preserve the beautiful and worth while arts, industries, customs, and ceremonies of their forefathers.

Returning to the Southern California allotments: The feelings of the Palm Springs Indians are thus expressed by one of their own number: "We believe in living in our simple way, each working for the good of all with things in common. It was the way of early tribal living and it binds us together in many ways . . . Most of us are too old to



rebuild and remake our lives. To interfere with our land is to work against our hearts--a very real disturbance. Life to us is more than 'bread and butter', and these lands are everything to us." And in an appeal to the Secretary of the Interior the chief, speaking for the tribe, says: "Our tribe is whole against allotment. We have [a] patent for our land. . . We want to keep it whole."

Not only was it proposed to allot the home or village lands of these Indians, but also the more remote desert lands valuable only for pasturage. The use of these as individual instead of community holdings would necessitate the impossible expense of fencing and would lead at once to the inevitable difficulty of obtaining water for the stock.

Why should the Government play false?

The officers of the Government in charge of this work not only operate against the expressed wishes of the Indians, but go through the pretense of complying with an imaginary request of the Indians. For instance, the blanks used on the Agua Caliente reservation at Palm Springs in 1923 are entitled 'Selection for Allotment' and go on to say:

"This is to certify that \_\_\_\_\_  
has selected the lot . . . . . containing \_\_\_\_\_



acres more or less, according to Government survey." Does this not savor of the "voluntary admissions" wrung from the victims of the Inquisition?

It is generally admitted--even by the white neighbors of Southern California Indians--that every survey of Indian lands leads to shrinkage. Forty years ago, under the direction of a government Indian agent, the Palm Springs Indians were "surveyed out" from a material part of their most valuable lands--lands now occupied by the white settlement of Palm Springs where small lots bring from \$1500 to \$2000--but this is another story.

#### Attitude of the Indian Office

I have no sympathy with many of the attacks on the Indian Office--such for instance as holding it culpable for insufficient schools and appallingly inadequate medical attention, when as a matter of fact Congress has provided only a fraction of the funds necessary to properly perform its duties in these directions. The position of Commissioner of Indian Affairs is one of the most difficult and trying in the government service and no man can conduct the affairs of that office in such manner as to escape criticism.



Nevertheless I hold the Indian Office responsible for the general attitude of overbearing dictatorship and intimidation by veiled threat that for years has characterized many of its actions--an attitude observable both on the reservations and in the central office at Washington. This spirit applies to small as well as large things--as shown by such needless antagonisms as the refusal until a couple of months ago to do away with the obnoxious term 'Digger' for a California tribe--a term known to be regarded by the Indians as one of inferiority and contempt. The rejoicing of the Indians on hearing of its abandonment is thus described by the Stockton Record of April 21: "Burned at the stake amid the jeers and taunts of hundreds of warriors in full regalia, and with their faces covered with war paint, an effigy representing the hated name of Digger was consigned to oblivion yesterday afternoon at a ceremonial gathering of the tribesmen from a half dozen counties of Northern California."

While relatively this is a small matter, it nevertheless illustrates the same spirit of unsympathetic arbitrary dictatorship that prompts the persistent determination to force the diabolical



allotment rule upon unwilling tribes now living under a communal system long ago worked out by themselves.

An editorial in a California paper (the Banning Record) asks: "Is it not a contemptible procedure for us who talk about liberty and individual rights to force a small handful of Indians to lose their homes and be dispossessed of their lands against their will, when they have a clear title from the United States Government?"

It is hardly too much to say that one of the greatest needs of our Indian service today is the replacement of official indifference, coldness, and arbitrary dictatorship by an attitude of kindly sympathetic friendship, patient cooperation and helpfulness, together with the recognition of the rights of Indians to their own lands and to their own modes of life.

There is reason to believe that the present Secretary of the Interior, Dr. Work, is in sympathy with this point of view and that under his influence reforms have already begun. Indications of this may be seen in the recent abandonment of the official use of the odious term 'Digger,' in the support given the wise policies of the Superintendent of the



(10)

Blackfeet tribe, and in the postponement--I wish I  
dare say absolute annulment--of the effort to allot  
the communal lands of the Palm Springs Indians.  
May the good work continue and may it expand until  
it covers the whole field of governmental relations  
with the Indians of the United States!