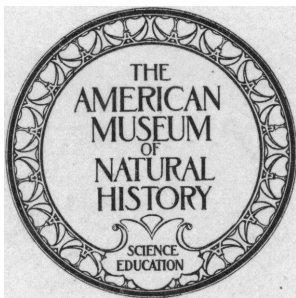


ANTHROPOLOGICAL PAPERS
OF
THE AMERICAN MUSEUM
OF NATURAL HISTORY

Vol. XVII

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NEW YORK
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EDITOR
CLARK WISSLER

ANTHROPOLOGICAL PAPERS
OF
THE AMERICAN MUSEUM
OF NATURAL HISTORY

VOL. XVII, PART I

RIDING GEAR OF THE NORTH AMERICAN INDIANS

BY

CLARK WISSLER

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EDITOR'S NOTE.

This paper is the first of a volume treating certain phases of material culture in North America. When completed a permanent title page with table of contents and index will be supplied. Then the temporary title pages can be discarded.

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RIDING GEAR OF THE NORTH AMERICAN INDIANS.

By CLARK WISSLER.

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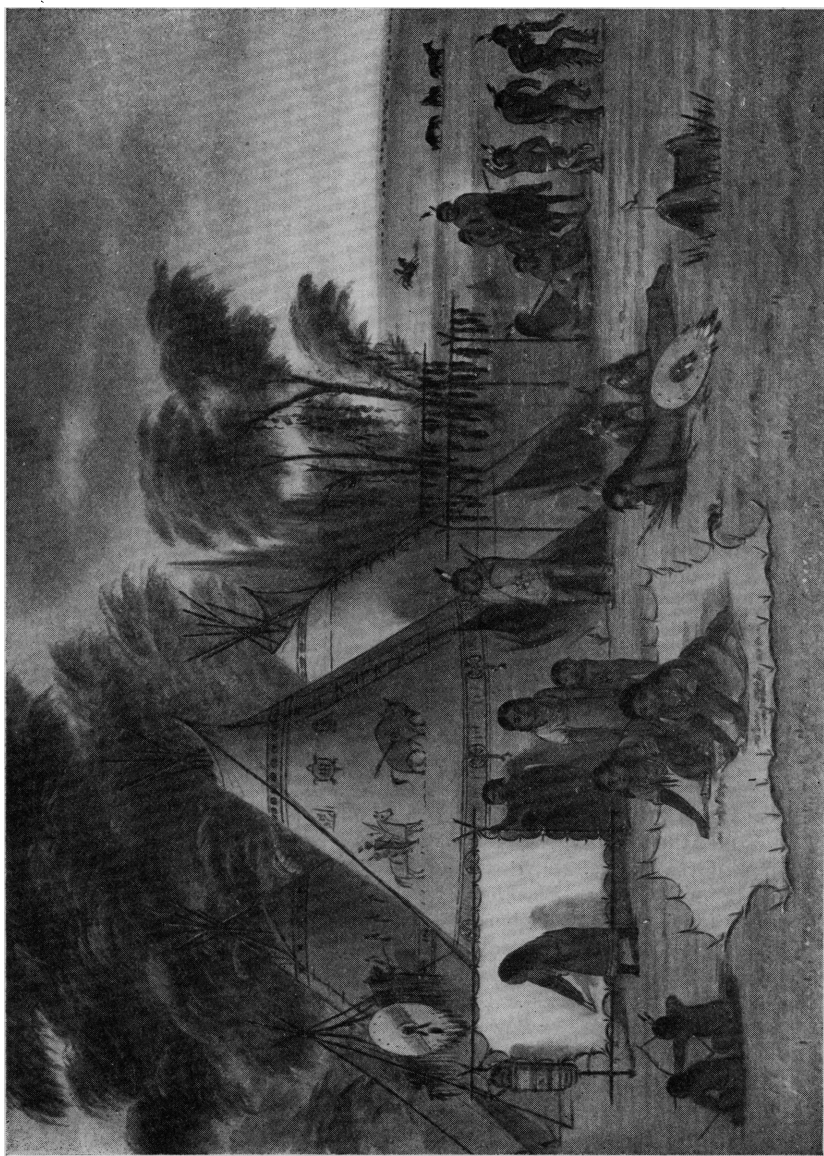


Fig. 1. Camp Scene showing a Saddle staked down while the Rawhide Cover dries and sets. Painting by Ckllin in the Mills Collection.

INTRODUCTION.

The investigation of the horse culture complex among the American Indians was undertaken to discover the procedure in a concrete case of culture diffusion, an important anthropological problem of the day. One of the most difficult tasks confronting the anthropologist is the elucidation of the precise complexes by which various traits of culture are produced. Since there is on every hand abundant evidence that many traits of culture are borrowed, or diffused, over large areas, the study of typical concrete instances of diffusion are of the first importance. A number of European anthropologists have been so impressed with the significance of diffusion, that they have developed from it a theory to account for the origin of culture traits. This theory is usually known as that of single origin as opposed to the theory of independent invention. The former asserts that all important traits of culture were invented but once and subsequently gradually diffused; the latter, that the same invention was made independently in many parts of the world, whence its diffusion is but apparent. As everyone knows, the discussion of such problems comes to naught unless concrete cases can be investigated.

The horse culture complex of the American Indian offers an excellent opportunity to study diffusion, because most of the essential facts are obtainable. The horse was introduced by Europeans at an early date and spread ahead of interior exploration. In particular, many of the tribes west of the Mississippi River became horsemen before their discovery by Europeans. The history of horse introduction is briefly outlined in the *American Anthropologist*, Vol. 16, No. 1, pp. 1-25. The investigation here reported is the intensive study of collections of riding gear and horse-using appliances to be found in anthropological collections. The material available in the Museum gives us a representative series for each important tribe in the horse-using area so that we may proceed in confidence.

A preliminary statement of the results attained in this study were published in the *Proceedings of the National Academy of Sciences*, Vol. 1, p. 254. In the selection and comparison of specimens the writer has been aided by Mr. William A. Sabine, assistant in the Museum, whose great knowledge of specimens and their distribution was indispensable to the task. Other acknowledgments are due to Mr. S. Ichikawa for the illustrations and to my secretary, Miss Bella Weitzner, for gathering reference material.

July, 1915.

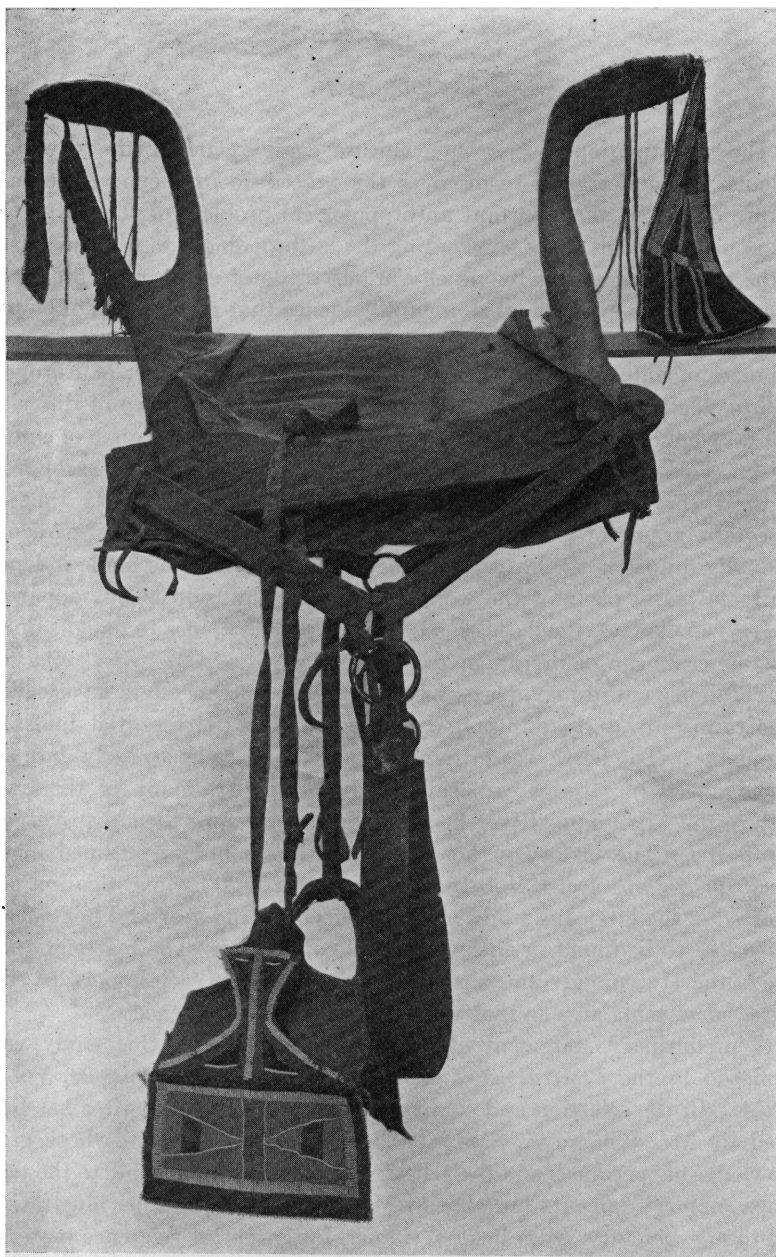


Fig. 2 (50-2280). A Shoshone Saddle.

FRAME SADDLES.

American Indian saddles are of two distinct kinds readily characterized by the names frame saddle and pad saddle, each representing quite distinct structural concepts.

The fundamental pattern of all the frame saddles we have seen is identical: viz., two parallel side bars, supporting two forked or bowed uprights (a pommel and a cantle), between which is suspended a hammock-like seat. The side bars are of wood ranging in lengths from 31 to 55 cm. though of the sixty-six specimens examined fifty-one fall between 37 and 49 cm. and tend toward two norms, 42 and 48 cm. respectively; their widths average about 9 cm. and their thickness, 1 cm. Their forms vary somewhat but seem to be of four types, straight, curved, boat-shaped, and tree-shaped (like a shoe-tree), Fig. 3*a, b, c, d*. The ends are rounded and pierced with one or two holes for the girths. Tribal differences are not consistent but in the main the tree-shaped side bars are found in the Southwest among the Navajo, Jicarilla, and Hopi and are probably copies of modern trade saddles. The form appears in one specimen from the Sauk and Fox but not elsewhere. The boat-shaped bar is most pronounced in Mescalero saddles. The Ute, Cheyenne, Blackfoot, Sarsi, Winnebago, Menomini, and Plains-Cree are straight. The Shoshone are very slightly curved but the Crow and Dakota decidedly so. The Hidatsa-Mandan are both straight and curved. The number of holes in the ends tend toward uniformity, two for each, but the Ute and Shoshone usually have but one while the Cheyenne vary. In all cases, however, the number is the same in each saddle.

The bows or fronts of the saddles are not so uniform as the side bars, in fact presenting the greatest individuality of all parts. In general, however, they are of four types. The horn type is shown in Fig. 2 and is made of a single piece of wood with a curious prong under the pommel upon which the quirt and rope can be secured. This form occurs among the following tribes: Blackfoot, Crow, Cheyenne, Dakota, Mandan, Sarsi, Shoshone, Thompson, Ute, and Winnebago. In no case is it the only type of bow for the tribe, but is strongly developed among the Shoshone. One Blackfoot saddle (Fig. 6) has bows and cantle of antler which has been trimmed and apparently bent into the required shape.

In the above grouping we have taken all bows having the distinct hook, but in many cases the pommel itself was not of the Shoshone type.

The Y type of bow takes its form from the material. A forked piece of antler is trimmed as shown in Fig. 4. It is most strongly developed among the Cheyenne but occurs among the Crow, Dakota, Thompson,

Mandan-Hidatsa. An analogous form in wood is found among the Sauk and Fox, Winnebago, Menomini, Caddo, and Mescalero. It may be noted that the Ute, Shoshone, Blackfoot, and Sarsi do not have this form.

The bow type results from the use of a simple curved piece of antler,

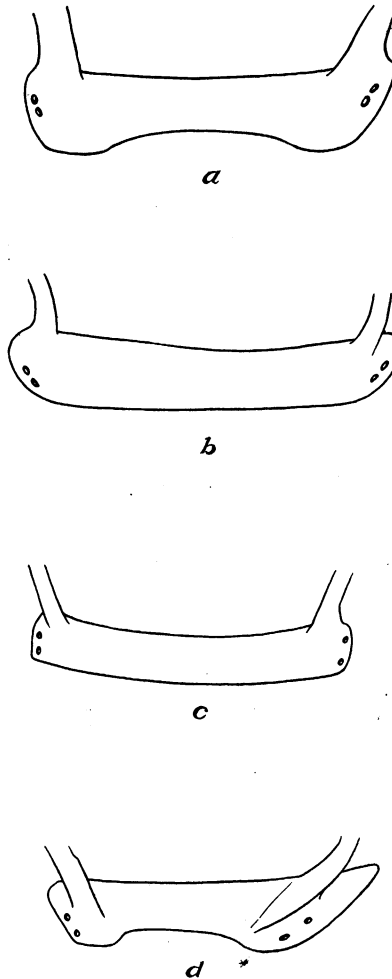


Fig. 3 (a, 50.1-6931; b, 50.1-465; c, 50.1-466; d, 50-6780). Side Bar Forms.

not a fork (Fig. 5). It occurs among the Shoshone, Ute, Cheyenne, Crow, Dakota, Mandan-Hidatsa, and Plains-Cree. Somewhat analogous forms in wood are found among the Hopi, Navajo, Taos, Sauk and Fox, and Menomini.

The angular type is found chiefly among the Navajo (Fig. 7). There is one specimen in the Ute collection but that is probably intrusive.

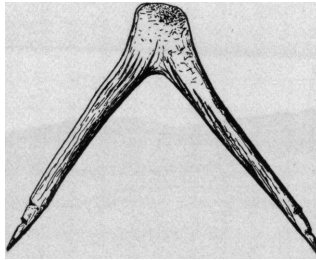


Fig. 4 (50-5526a). Saddle Bow of Antler. Cheyenne.

CANTLES.

As a rule, the cantle of an Indian saddle is a duplicate of the bow. The horn type of bow is accompanied by a cantle of similar shape, but instead of the hook we find an eye for the support of the seat. There are a few saddles in which a Y-shaped bow is used with a simple bowed cantle, but these are not confined to a single tribe. The saddles of the Navajo and of the several divisions of the Apache as shown in the Figs. 7 and 3*d* are nearer to the types of modern saddles and present not only different forms for the cantle and bow but set them at different angles. However, a close inspection of all types of Indian saddles shows that in almost every case there is a slight difference in these angles, the bows tending to be vertical or even slightly inclined inward while the cantles incline outward. This shows that there was a definite concept as to the relations of these two parts.

SEATS.

All the frame saddles we have seen have the suspended seat, simply a broad band of skin supported by the bow and the cantle. Where the bow is supplied with a hook, this is passed through a hole in the skin, while the rawhide binding of the cantle has an eye through which a wooden pin is passed to hold the other end of the seat. With bows and cantles of the Y type, the ends of the seat are looped over the projecting parts while in case of the simple bows they are passed around the horn and sewed. The universality of this seat is shown by its use in the more modern forms of the

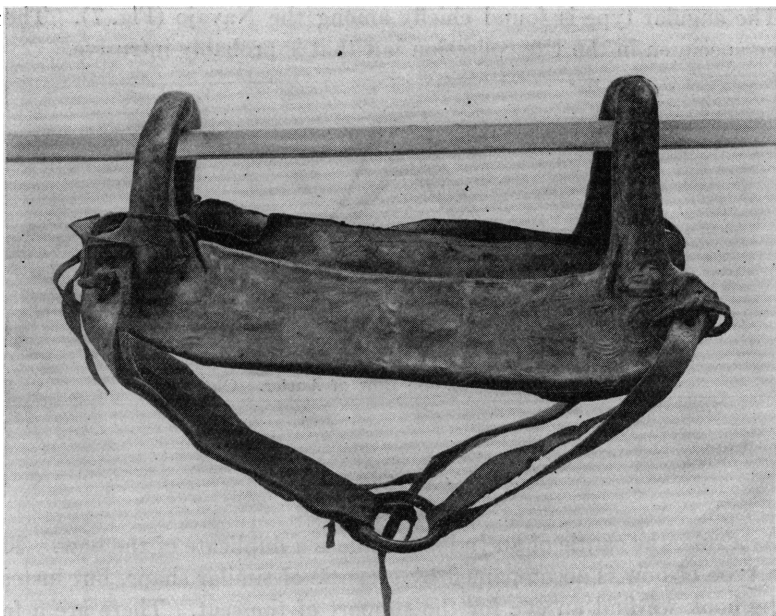


Fig. 5 (50.1-724). A Crow Saddle.



Fig. 6 (50.1-1069). A Blackfoot Saddle.



Fig. 7 (50.1-944). A Navajo Saddle.

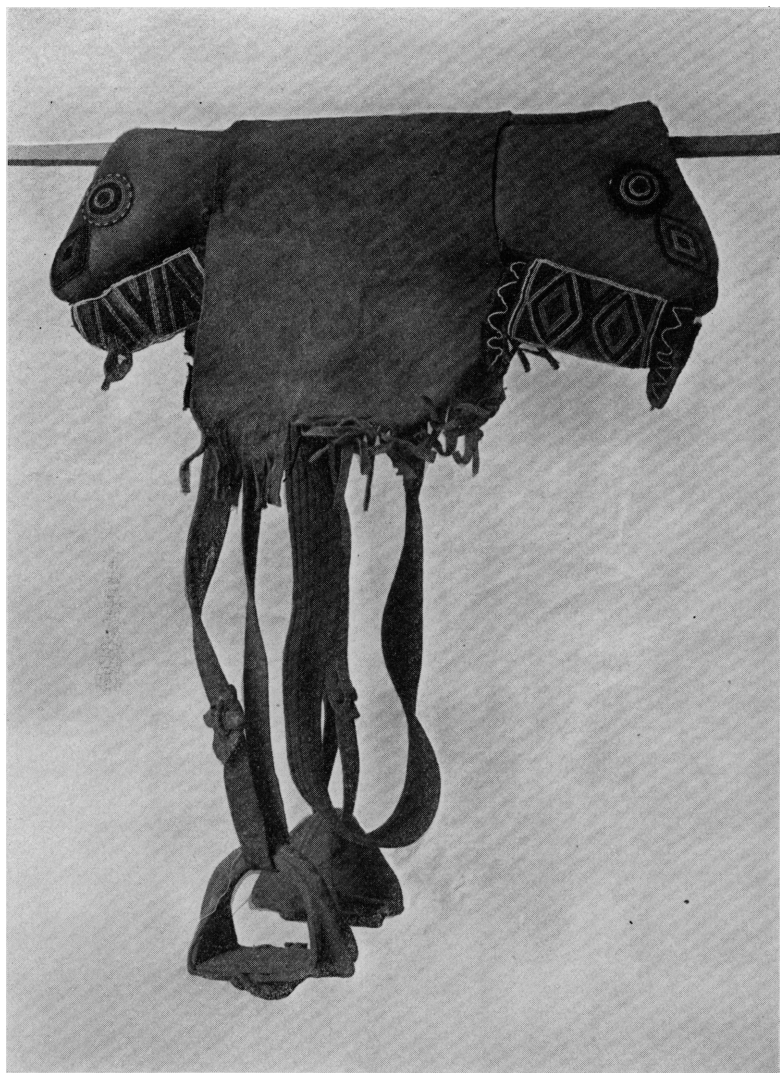


Fig. 8 (50.1-7515). A Pad Saddle. Dakota.

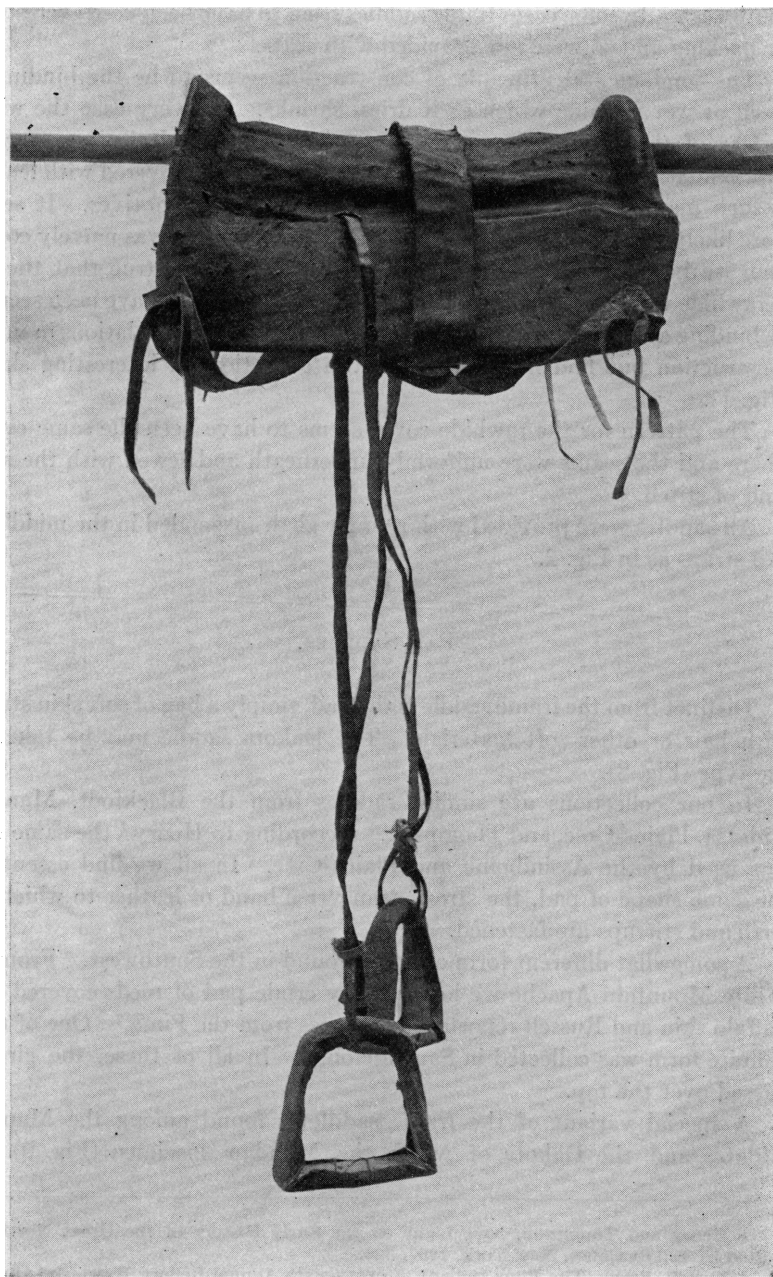


Fig. 9 (50.1-5481). A Mandan Saddle.

Southwest. In some cases frame saddles seem to have been used exclusively for packing and so were not provided with seats.

The fundamental principle of construction seems to be the binding of green or wet rawhide which as it dries, shrinks. In every case the whole surface of the frame is covered. That this is mechanically necessary is improbable and in Navajo saddles the frame is entirely covered with leather in such manner as to preclude any but conventional motives. It seems more likely that the practice of covering the entire frame was naively copied from leather-covered Spanish saddles. It is, of course, true that the use of rawhide would add strength to the frame but this could have been secured by binding at the joints. We have no data as to the manipulations in saddle construction but find in the Mills Catlin collection an interesting sketch (Fig. 1).

The pattern for the rawhide cover seems to have been the same everywhere and the seams were uniformly underneath and sewed with the same kind of stitch.

All saddles were provided with a single girth suspended in the middle by two straps as in Fig. 2.

PAD SADDLES.

Distinct from the frame saddle is the pad, simply a bag of soft skin stuffed with hair or other soft materials. The Dakota saddle may be taken as the type (Fig. 8).

In our collections are similar saddles from the Blackfoot, Mandan-Hidatsa, Plains-Cree, and Thompson. According to Henry¹ the same type was used by the Assiniboiné and Plains-Cree. In all we find essentially the same shape of pad, the strong transverse band of leather to which the girth and stirrups are fastened.

A somewhat different form of pad is found in the Southwest. From the White Mountain Apache we have a very crude pad of reeds covered with buffalo skin and Russell reports similar ones from the Pima.² One of more definite form was collected in San Ildefonso. In all of these, the girth is passed over the top.

A special variant of the frame saddle is found among the Mandan-Hidatsa and the Dakota of which the Mandan specimen (Fig. 9) may

¹ Henry and Thompson, *New Light on the Early History of the Great Northwest*, Edited by Elliott Coues, New York, 1897, 526.

² Russell, Frank, *The Pima Indians* (Twenty-sixth Annual Report, Bureau of American Ethnology, Washington, 1908), 113.

serve as the type. In this case the wooden side bars are set more nearly vertical than in other types. The bow and cantle are of curved horn and over all is stretched a skin covering.

STIRRUPS.

As a rule all Indian saddles are provided with stirrups. These, perhaps, more than saddles, exemplify the skill of the workman. A piece of wood about 1 cm. thick and 49 cm. long is cut as shown in Fig. 10. It is grooved as indicated and bent to the form in Fig. 10*b*. Over the overlapping arch is placed a rod or splint whose ends are secured by sinew usually underneath the foot rest. A strip of buffalo hide is then stretched around the outside

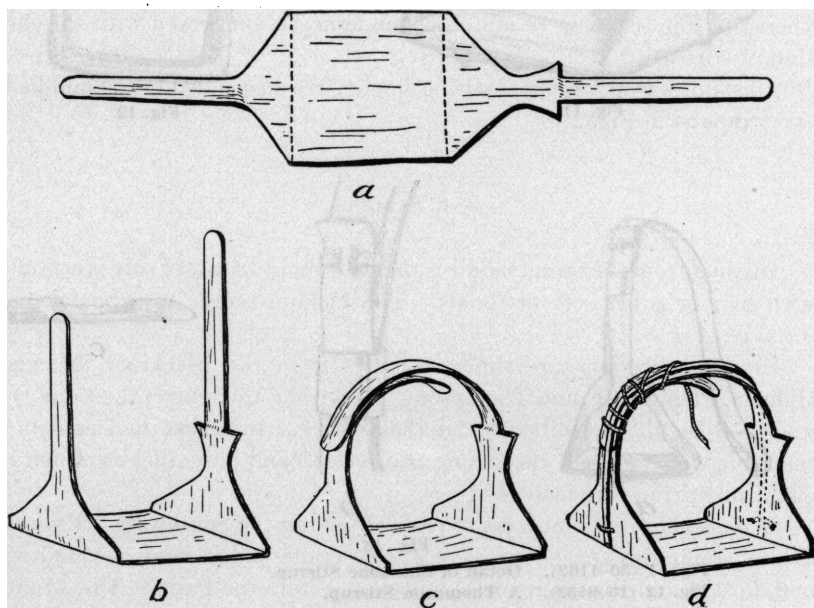


Fig. 10. Method of Constructing Wooden Stirrups.

and secured by lacing under the bottom or foot rest. In almost every specimen we have seen the form of this lacing is precisely the same. At the top of the stirrup the covering is carried entirely around the wooden arch and stitched underneath.

A comparative study of the stirrups in the collection indicates that Fig. 13 is the prevailing type in the Plains. For women's saddles among

the Shoshone, Crow, and Blackfoot, the shape is as shown in Fig. 11, but otherwise the structure is the same. In the Hidatsa-Mandan and Thompson collections there is a variant as shown in Fig. 12.

Teit¹ described a stirrup made from a block of wood. This is almost

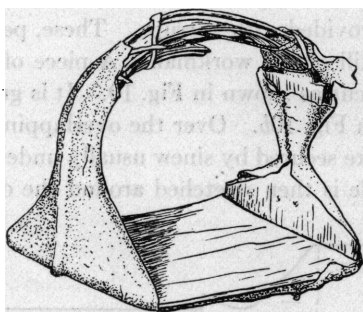


Fig. 11.

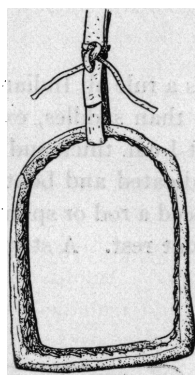


Fig. 12.

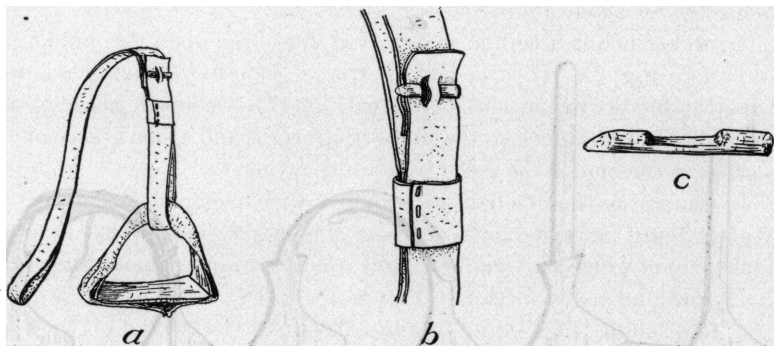


Fig. 13.

Fig. 11 (50-1162). Detail of Shoshone Stirrup.

Fig. 12 (16-9152). A Thompson Stirrup.

Fig. 13 (50-3032b). Detail of Attachment for a Stirrup. Dakota.

identical with a trade stirrup and may, therefore, be considered a direct copy. The saddles from the Navajo and other Southwestern peoples have iron trade stirrups; Russell, however, collected a specimen from the Pima which is apparently made of bent wood.²

¹ The Thompson Indians of British Columbia (Memoirs, American Museum of Natural History, vol. 2, part 4, New York, 1900), 258, Fig. 244.

² Russell, *ibid.*, 113.

The stirrup is supported by a strap or thong passed over the side bar and through the stirrup. In most cases it rests free upon the side bar so that it may slide forward and backward as desired. It is only in a few Mandan-Hidatsa saddles that a hole is made in the side bar through which the stirrup is passed. In but one Dakota specimen have we found any device for raising or lowering the stirrup except the simple retying of the strap. In this case a kind of toggle has been devised as a substitute for a buckle (Fig. 13).

ACCESSORIES.

Many saddles, especially those used by women, are provided with cruppers. Among the Sarsi, Blackfoot, Crow, and Shoshone¹ these are large and ornamental as shown in Figs. 14 and 15. It is interesting to note that we have two specimens from Guatemala of the same general type, Fig. 16. The Spanish horsemen in the days of the Conquest often used very elaborate cruppers and back harness and also highly decorated collars. Of the latter, a form is sometimes found with women's saddles among the Shoshone and Crow.

A single cinch is used and so adjusted as to bear upon the middle of the saddle (see Fig. 2). It is usually a strip of hide but sometimes is woven of hair. On the Thompson specimen (Fig. 17), y-shaped pieces of antler are used to join the cinch to the supporting straps and a short piece of antler inserted in the end of the cinch to serve as a ring.

In some cases the side bars are provided with fixed pads, but it was usual to place loose pads or blankets under the saddle. A special ornamental blanket upon which the saddle rests is used by women among the Dakota, Ute, Crow, and some Shoshone (Fig. 18).

A few saddle bags occur in the collections (Fig. 19) but their exact distribution cannot be determined.

Various ornamental attachments are found, the most typical of which are shown in the figure. The high pommels are usually trimmed with long fringes of buckskin. Among the Ute, Shoshone, and Crow pendant beaded flaps are often seen. In a few cases the bows and cantles are studded with brass nails which among the Navajo seems to be a prevailing style. While the pommel obviously offers opportunity for realistic carving, examples are rare. Figs. 20 and 21 present the only cases noted.

Beaded pendants are usual on the stirrups used by women among the Ute, Shoshone, and Crow (Fig. 22).

¹ See this series, vol. 5, 94.

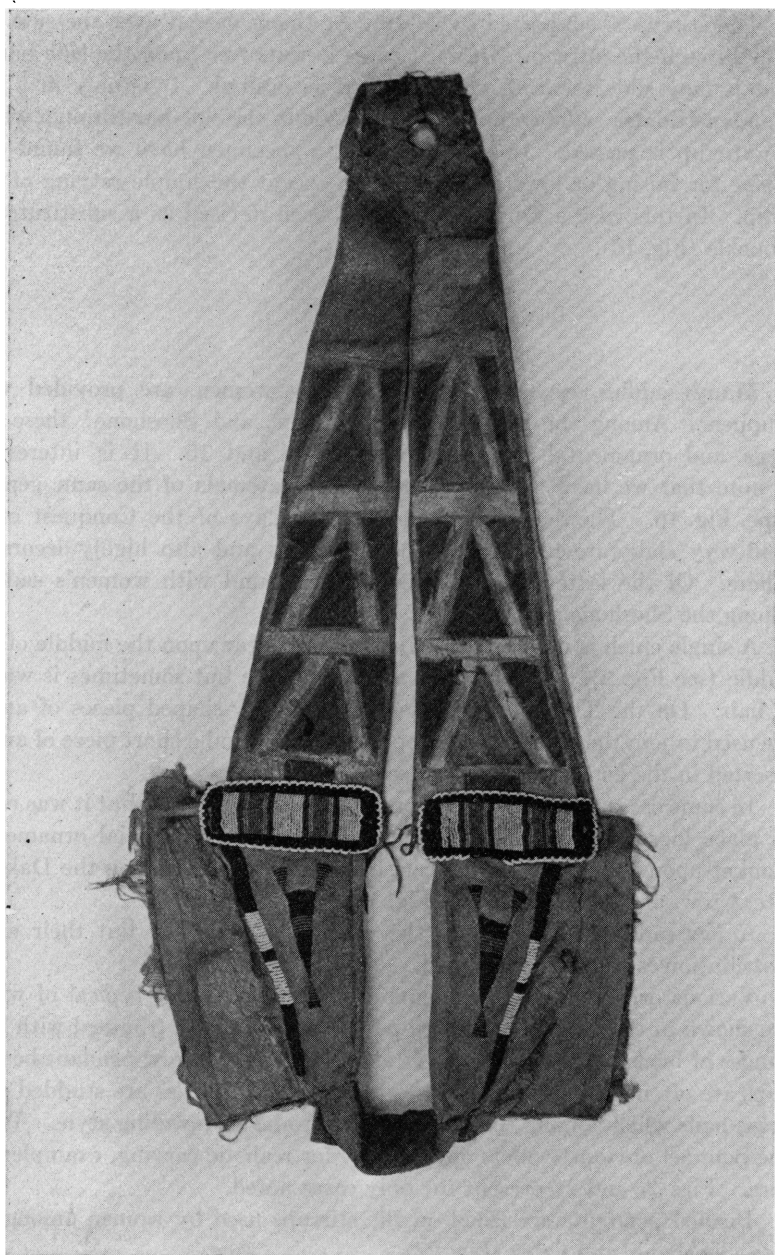


Fig. 14 (50-2291). Crupper for a Saddle. Shoshone.

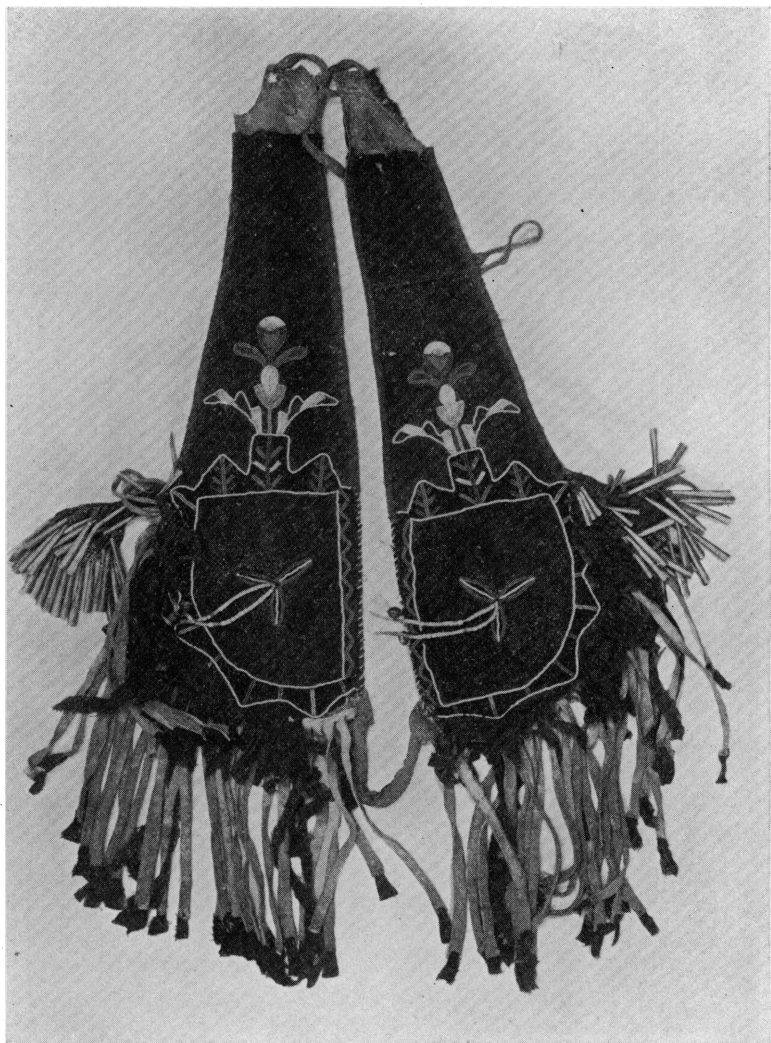


Fig. 15 (50.1-1067). Crupper for a Saddle. Blackfoot.

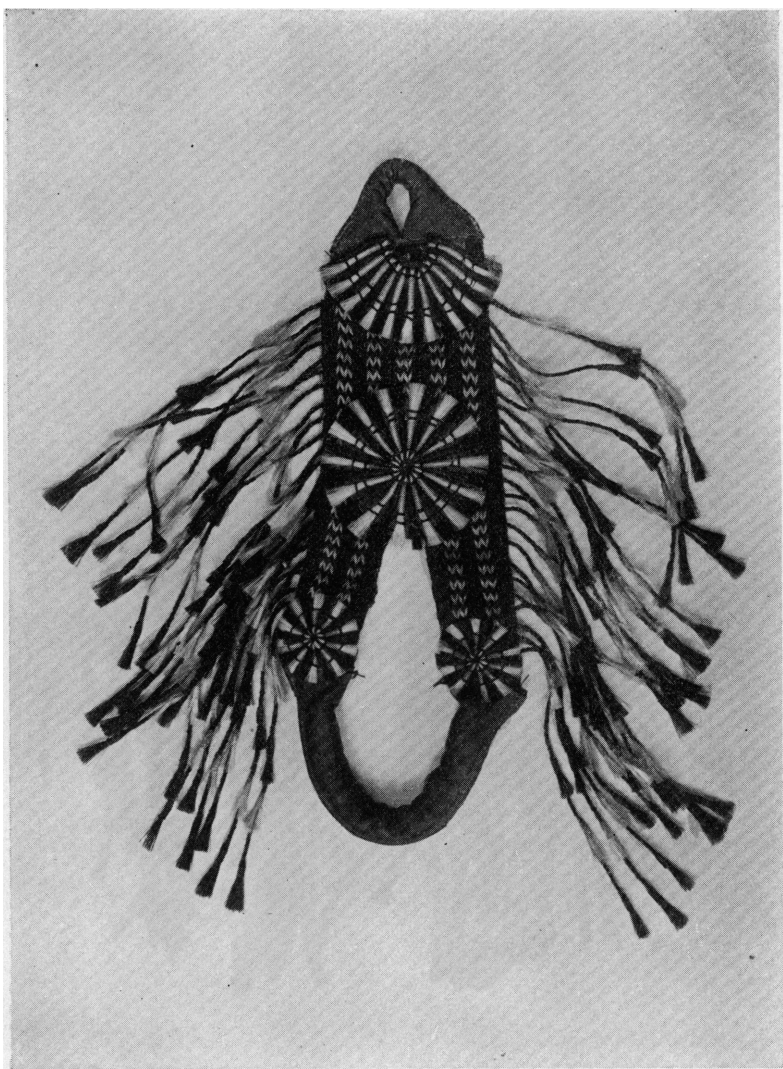


Fig. 16 (65-2177). Crupper for a Saddle. Guatemala.



Fig. 17 (16-9152). Saddle with Native Attachments. Thompson.

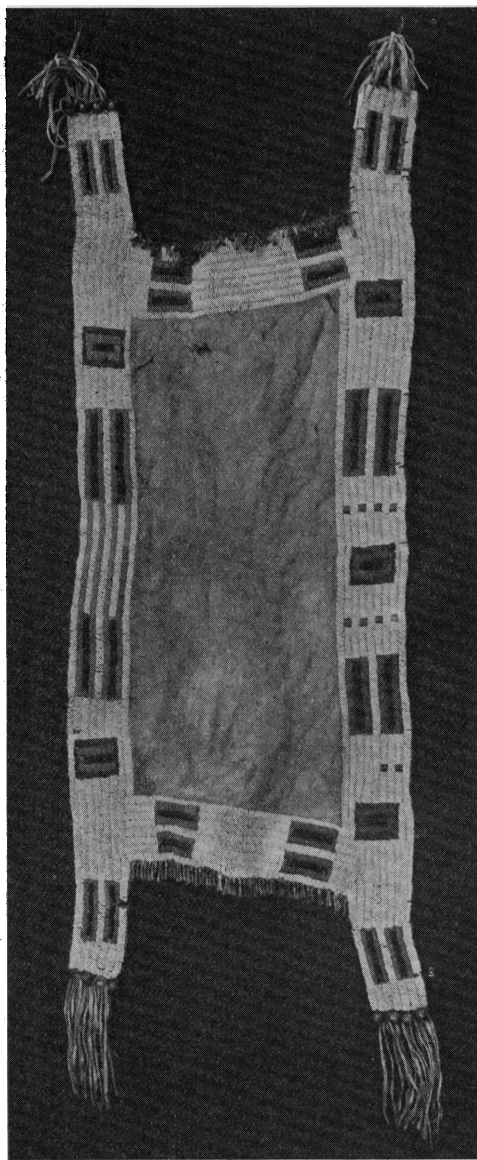


Fig. 18 (50.1-7503). Saddle Cloth of Buffalo Skin. Dakota.



Fig. 19 (1-2642). Saddle Bag of Buffalo Skin. Dakota.

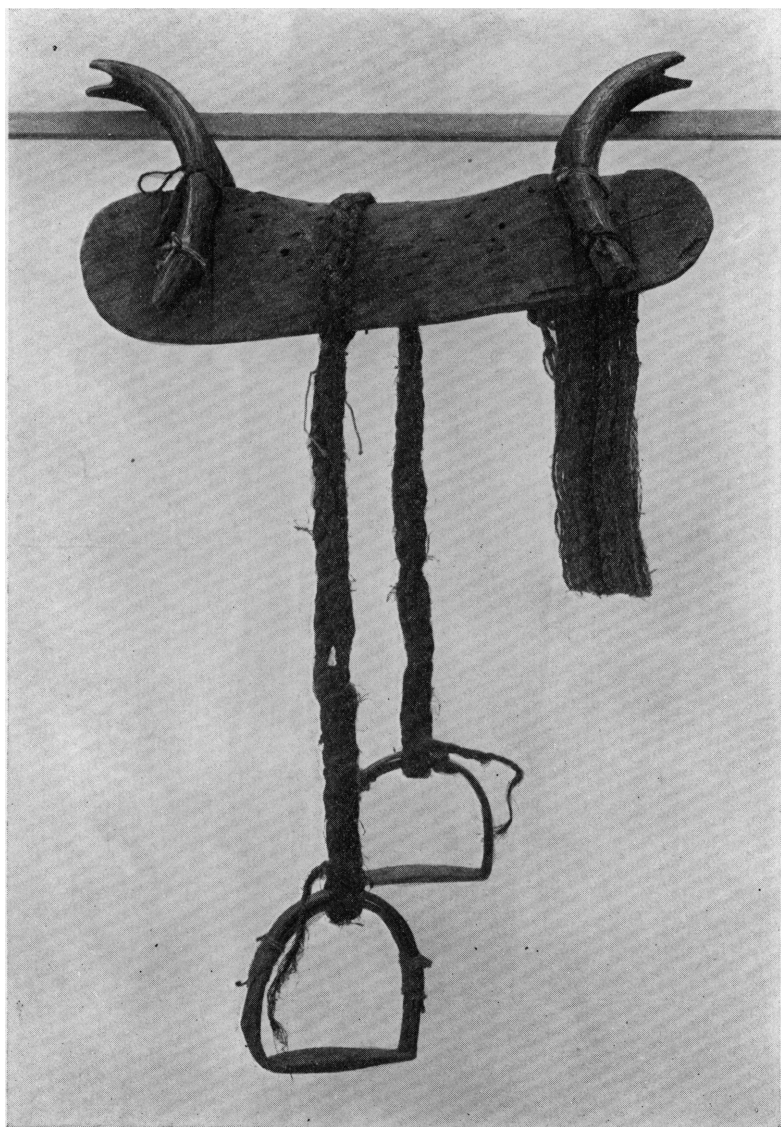


Fig. 20 (16-8710a). Saddle with Carved Antler Bow and Cantle fashioned and decorated to resemble Bird Heads. Thompson.



Fig. 21 (50-4848). Wooden Saddle with Carved Cantle. Menomini.

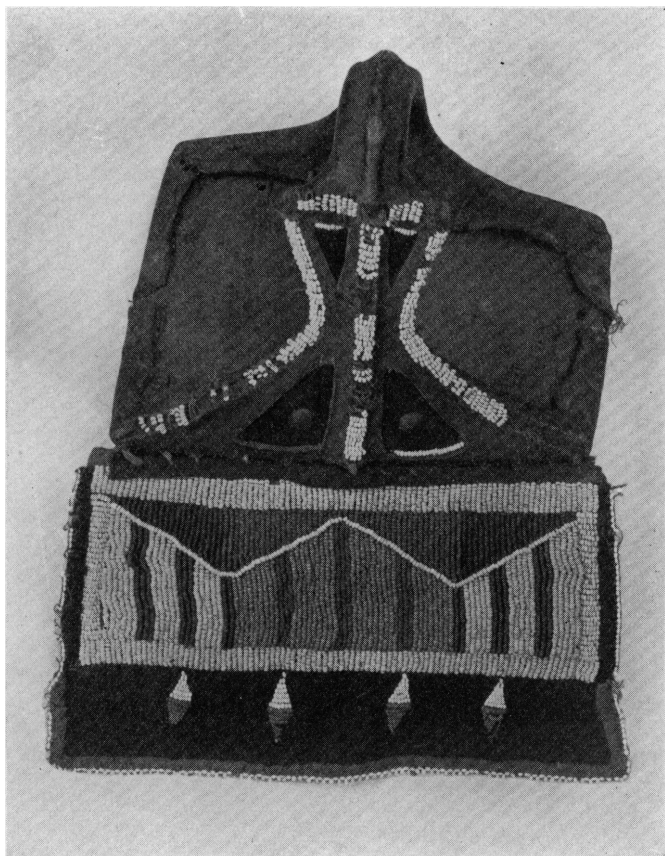


Fig. 22 (50.1-731b). Crow Stirrup.

QUIRTS AND ROPES.

For completeness some account of driving appliances may be added. The use of a spur is rare, the only native-made specimen we have seen was from the Pima.

Quirts were universally of the same general pattern throughout. One common form is shown in Fig. 23. The lash is inserted in the butt where it loops over a wooden pin. The smaller end is pierced and provided with a wrist guard, or hanger. A number of wooden handles are found in the collections from the Kootenai, Blackfoot, and Dakota with the lash inserted in precisely the same manner, from which we infer that they are copies of the antler type. On the other hand, we note a number of larger flat club-shaped handles of wood with the lashes passed through a single transverse hole near the end as in Fig. 24. This illustration presents a special serrated form found chiefly among the Arapaho and Cheyenne. It is similar to the large ceremonial quirt carried in some forms of the grass dance. In the Southwest we sometimes find quirts of braided horsehair, but these are usually secured in trade.

One unusual specimen is of polished elkhorn (?) of the precise form shown in Fig. 25 and said to come from the Plains-Cree. Another striking handle is of carved wood and was collected in northeastern Oregon in 1882. It is probably from a Shahaptian tribe. It is doubtless copied from some other implement (Fig. 25).

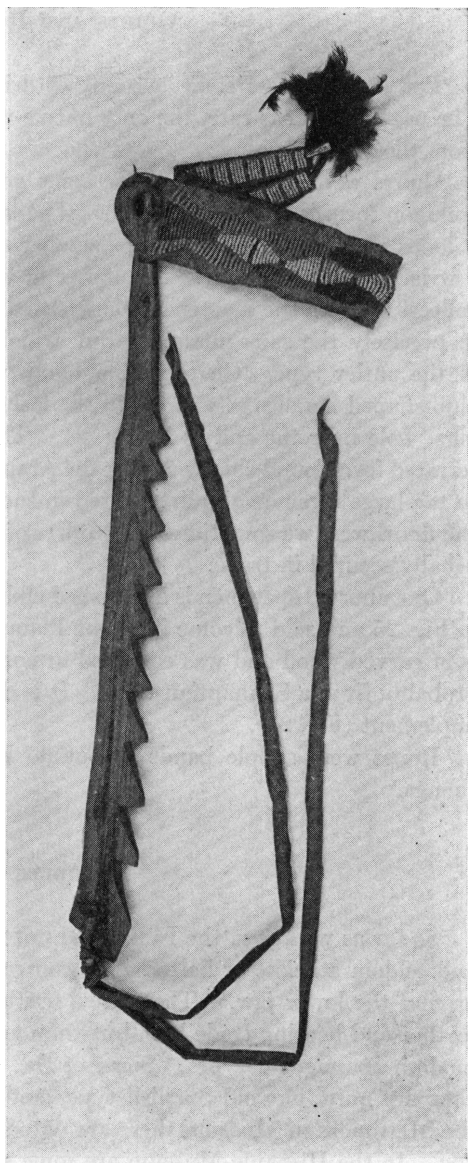
Ropes were simple bands of buffalo hide or braided cords of hair or thongs.¹

BRIDLES.

So far as we know, the Indian did not use a bit of his own manufacture and seldom a bridle or halter. He controlled his mount by a cord looped around the lower jaw.² There are a few bridles in the collection of native leather and bearing trade bits, but they are obviously copied directly from modern commercial types. Some of the bits are of historical interest for they are quite like old Spanish types and may be of respectable age. In the Metropolitan Museum there are dated specimens of 1787 similar to Fig. 26*a*. In the Hispanic Museum are some similar to Fig. 26*b* dated 1600.

¹ This series, vol. 5, 96.

² This series, vol. 5, 96.

**Fig. 23.****Fig. 24.****Fig. 23 (50-5). Typical Plains Quirt. Blackfoot.****Fig. 24 (50.1-630). Wooden Handled Quirt. Cheyenne.**

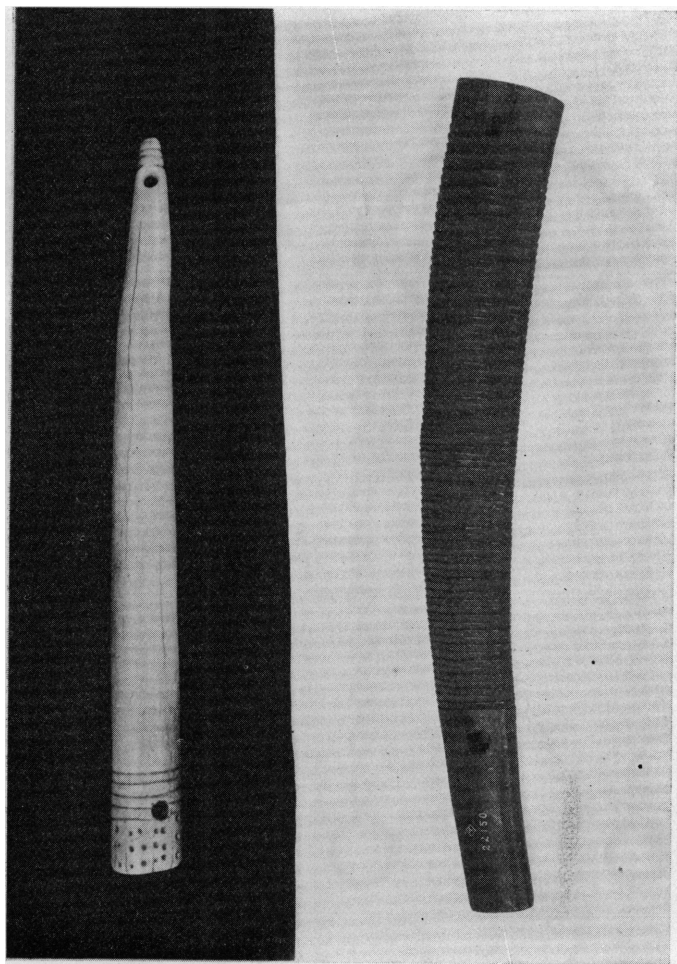


Fig. 25 (*a*, 50.1-7833; *b*, T-22150). Unusual Quirt Handles. *a*, polished antler; *b*, red cedar.

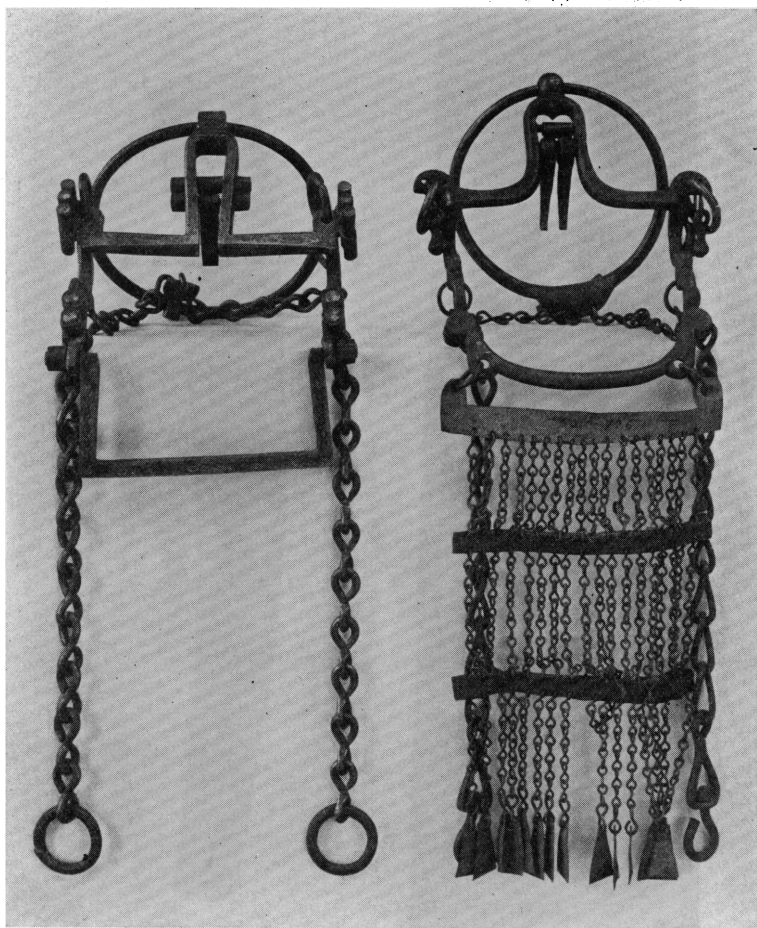


Fig. 26 (a, 50.1-6784; b, 50.1-726). Spanish Bits found among the Navajo and Crow respectively.

DISTRIBUTION OF TYPES.

In general, it appears that the saddles with high pommels as in Fig. 2 were used by women while men used either a pad or the low-bowed frame saddle. Yet, the pad was not exclusively for men, especially among the Dakota. So far as we have data, the highly decorated saddles of whatever model were used by women.

In the distribution of types one point is clear, the type of Fig. 2 is almost exclusively confined to the Ute, Shoshone, Shahaptian, and Crow. However, random specimens are found among the Blackfoot, Thompson, and other Salish and also among the Hidatsa who, no doubt, obtained them from the Crow. The stirrups of the Ute, Shoshone, and Crow, used by women, were also distinctive as to some details of form and decoration. Again, these are the people using the large decorated cruppers and collars, reminding one of types used in the days of knighthood. That these are not recent is made clear by Lewis and Clark, Cox, Franchère, etc. In late days we find the Navajo and the Southwest generally to incline decidedly toward trade models but that this was not formerly true is suggested by the illustrations in Whipple's report of 1855, showing Navajo riders with stirrups and saddles of the Shoshonean type.

Among the Comanche, Cheyenne, Arapaho, Dakota, Assiniboine, Mandan, and Cree, the frame saddles use bowed or y-shaped cantles and pommels of elkhorn. Farther east we find the Sauk and Fox, Winnebago, Menomini, and Caddo making a bow or rounded cantle of wood. According to Morgan this type was used by the Iroquois and certain remarks by Adair suggest the same style for the Southeastern tribes. Thus, we have the appearance of three geographical types ranging from south to north and radiating from the Mexican border. It is quite probable that these represent three different lines of diffusion for horse culture.

Now that our descriptive and analytic task has been performed we may turn to the problems leading to this preliminary work. The most fundamental problem is how the Indian came by the various elements of his horse culture complex. If we consider the mere possibilities of the case it is clear that having acquired the horse, he could have independently invented saddles, bridles, etc. On the other hand, it is also possible for him to have invented nothing whatever but to have taken over the whole complex from Europeans. Again, it is conceivable that we may find any degrees of compromise between these extremes in that some appliances were borrowed entire, some slightly modified, some more, some entirely original, etc. Since we cannot expect much in the way of definite historical

information on these points we must turn to the objective data in the preceding pages.

We have seen how surely the frame saddles were constructed according to one definite structural concept and how uniformly the three variants of this were distributed in geographical bands converging toward Mexico. In a former paper we have shown how the data for the diffusion of the horse was quite consistent with the conclusion that the source of Indian supply was Mexico and that the colonies of the Atlantic Coast were a negligible factor. It is therefore likely that definite structural concepts for riding gear came from the same source. The difficulty in this case is that we have so far no good data as to the types of saddles used by the Spaniards. Lewis and Clark give us an accurate description of the Shoshonean saddle and add that "it is made like the pack saddles in use among the French and Spaniards."¹ Adair comments upon the same type among the South-eastern tribes as follows: "the shape of it is so antiquated and mean, and so much like those of the Dutch West-Indians, that a person would be led to imagine they had formerly met, and been taught the art in the same school."² In discussing the saddles of the Iroquois, Morgan says: "This is an Indian invention, but came originally from the west. It closely resembles the saddle of the native Mexicans in its general plan, but its pommel is not as high, and its side-pieces are longer."³ Also, Franchère observed the Shoshone type on the Columbia River: "The saddles for women differ in form, being furnished with the antler of a deer, so as to resemble the high pommelled saddle of the Mexican ladies."⁴ Noting that these observations cover almost a century preceding 1850 and are by men of wide experience in the country, we must give them great weight. They agree in asserting specific resemblances to southern types and on the whole Spanish types.⁵ Mr. Mooney informs me that according to his data one of the chief reasons why the Southern Plains tribes took Mexican captives was that they were better skilled in the care of horses and in metal work. Doubtless this developed as an early concomitant of horse raiding and as such is a suggestion as to how directly all parts of the horse culture complex were taken over from Spanish settlements.

All these data are rather against any important inventions of the Indian;

¹ Lewis and Clark, *Original Journals of the Lewis and Clark Expedition* (Thwaites Edition, New York, 1905), vol. 3, 31.

² Adair, James, *The History of the American Indians*, London, 1775, 425.

³ Morgan, Lewis H., *League of the Ho-de'-no-sau-nee or Iroquois*, Rochester, 1854, 377.

⁴ Franchère, Gabriel, *Narrative of a Voyage to the Northwest Coast of America*, etc. (*Early Western Travels*, Thwaites Edition, New York, 1854, vol. 6), 341.

⁵ According to Col. R. T. Dodge, *Our Wild Indians* (Hartford, 1885), 338, the Indian cinched his saddle by the Mexican method.

but we must not overlook the fact that while we have a fine series of specimens from the Indians we have very little of the kind from the period of Spanish colonization. The modern Mexican saddle with its high pommel and horn appears to have had its counterpart in the days of the Conquest; in fact numerous native drawings appear in the later codices and a single sketch of a saddled horse in the Codex Baranda, Fig. 27. In these we see

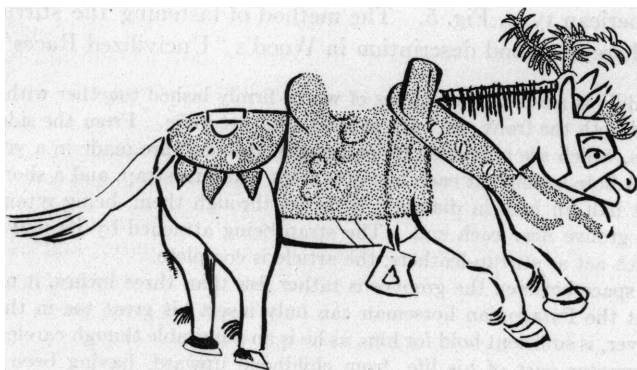


Fig. 27. Sketch found in the Codex Baranda.

the prominent pommels and cantles, the Shoshone type of stirrup, the wide crupper, and a collar like those of the Crow. The prevailing Mexican type of some years ago is said to have had a high pommel and a round-headed projecting cantle. The sketches of Southwestern Indians in Whipple¹ show a cantle that fits this description and which also has its prototype in our collections from the northern tribes.

In Europe the English have used a simple saddle for several centuries in contrast to the high pommel and cantle of the continent and this latter also seems to prevail still in Africa and Asia. The English colonies brought with them the small flat English saddle which has been the prevailing type east of the Mississippi but westward in the cattle country, the large Mexican type is still in use, with the lasso or rope, large spurs, etc. It is interesting to note how tenaciously the type introduced by the Spanish colonies and first diffused by the Indian, has held sway in the whole region west of the Mississippi. No doubt the same causes that tended to diffuse horse culture among the Indians operated with the American settlers in so far as they preferred to adopt a culture trait already in function rather than to devise

¹ Report upon the Indian Tribes (Reports, Explorations and Surveys, 1853-4, vol. 3, part 3, Washington, 1855).

a new one. Perhaps we have here a good example of how the environment may hold a culture trait to a certain area in spite of racial displacements.

It may be worth while comparing the horse culture of the South American Indian since it must also have been initiated by the Spaniards. The data at hand are meager enough but yet sufficiently positive. In Ratzel's "History of Mankind" (vol. 2, 82) are illustrations of the saddle, stirrup, bit, and spur used in Patagonia. The saddle is of wood but quite like the North American type, Fig. 5. The method of fastening the stirrup is the same. There is a good description in Wood's "Uncivilized Races":—

The saddle is made of four pieces of wood, firmly lashed together with raw-hide thongs, and both the front and back of the saddle are alike. From the sides depend the stirrups, which are appended to leathern thongs, and are made in a very simple manner. A hole is made at each end of a stout leathern strap, and a short piece of stick about half an inch in diameter is thrust through them, being retained in its place by a groove near each end. The strap being attached by its middle to the thongs which act as stirrup-leathers, the article is complete.

As the space between the grooves is rather less than three inches, it necessarily follows that the Patagonian horseman can only insert his great toe in the stirrup. This, however, is sufficient hold for him, as he is an admirable though careless looking rider, the greater part of his life, from childhood upward, having been spent on horseback.

The spur is as primitive as the stirrup, and exactly resembles in principle the prick-spurs of the ancient knights.¹

Of the Araucanians he says:—

Their saddles are made very much after the fashion employed by the Patagonians, being little more than rude wooden frames. A few skins are laid on the back of the horse, the saddle is placed on them, a saddle cloth of thick brown leather is thrown over it, and the whole apparatus is complete. The bridle is made, like that of the Patagonians, of twisted hide, or sometimes of a number of strips of horse-skin plaited together, a few threads of silver being mingled with them. The bit is generally the ordinary Spanish bit, with its cruelly powerful arrangement of curb and ring.²

Somewhat vague but parallel accounts are found in Dobrizhoffer's *Abipones*, vol. 1, 235.

This data, fragmentary though it is, shows clearly that the same structural concept for saddles is found in South as in North America. The methods of attaching the stirrups is also the same, but in many parts of South America a small stirrup is used for the great toe. Yet certain remarks by Wood and Dobrizhoffer (vol. 1, 275) indicate that this was by no means

¹ Wood, Rev. J. G., *Uncivilized Races of Men in all Countries of the World*, Hartford, 1876, 1173.

² Wood, *ibid*, vol. 2, 1196. Bits of this type are still in use in Central America and parts of Mexico.

universal. Of accessories we may note the Mexican cinch, the lasso, the primitive form of bridle and the ornamental collar.

We have previously discussed the method of mounting but some further data have come to hand. Col. Dodge says:—

Civilized people mount on the left side of the horse, because the knights of old, from whom we get our ideas of horsemanship, wore their swords on that side, and could not, therefore, mount on the right without inconvenience from that weapon.

The Indian mounts always on the right side, and this is undoubtedly natural and most convenient, as it leaves the left hand free to hold the reins and manage the horse, while the right grasps the mane or pommel of the saddle.¹

It is stated that the Roman cavalry under Vespasian changed the sword from the right to the left side and also the method of mounting. So far as we can learn this was the custom from that time to the present among European nations. The Spanish cavaliers were no exception to the rule. Hence, the Indian did not learn the mount from the Spaniard. It is fairly clear that if men are left to their own devices they will mount from the right side, unless left-handed.² According to Dobrizhoffer the natives of South America mount from the right side (vol. 2, 113). Thus it is clear that the horse culture complex of the two continents is practically identical and is therefore best explained as having a common origin in Spanish colonies. The Indian therefore contributed next to nothing to this complex.

If we turn to the Old World we get the suggestion that outside of English influence, there was a uniform type of horse gear and that this has changed very little in historic times. Bits from the bronze age show the same fundamental types in use today and the wide distribution of the side-bar frame saddle suggests its antiquity. It is said that saddles were not used in Egypt and Greece and not by the early Romans. The frame saddle appears among the Romans about the fourth century A.D. Stirrups appeared late in Europe. The Romans adopted them about 100 A.D., but their invention is attributed to the Franks. Before the era of the frame saddle a padded cloth was used, no doubt similar to our Indian pad saddles.³

There is one factor in North America that may have modified horse culture, viz., dog traction. Unfortunately, no studies of dog culture have

¹ Dodge, *ibid.*, 338-339.

² In a theoretical discussion of material culture (*American Anthropologist*, N. S. vol. 16, 494) the writer cited this mounting custom of the Indians as a possible effect of racial motor differences. At that time it was assumed that the difference between Indians and Americans was due to historical causes. The data now before us are consistent with that assumption, except that it is the American-European method of mounting that has a distinctly historical origin.

³ Dobrizhoffer noted a similar type in South America, *An Account of the Abipones, an Equestrian People of Paraguay*, 3 vols., London, 1822, vol. 1, 275.

been made in the Plains area except G. L. Wilson's unpublished work among the Mandan-Hidatsa. This investigator's parallel study of horse culture shows very little direct transfer of one to the other in the care, rearing, and training of dogs. Castration seems to have been practised on dogs in prehistoric times and in this instance to have been transferred to horses with little or no change. On the other hand, the ritualistic procedures to train and properly rear horses seem to have little in common with the rituals for dogs. When we turn to the use of the horse and the appliances for the same, we note the example of the travois and methods of packing. According to Hendry¹ the Assiniboine in 1754 used their horses like dogs for transporting baggage but did not ride. Probably this was the first step among all tribes. We have previously discussed the historic importance of the substitution of the horse for the dog and how he passed directly into the burden-bearing complex already developed. It is probable that as there was no riding complex in dog culture, there was no resistance to taking over the whole Spanish complex.

CHRONOLOGY.

It would be interesting to follow up the chronology of the introduction of saddles to see how closely it correlates with the diffusion of the horse, but our data are likely to be too meager. The earliest data we have for the extreme north is the journal of Hendry 1754-55. In one place he says of the Blackfoot:—

Their horses are turned out to grass, their legs being fettered: and when wanted, are fastened to lines cut of Buffalo skin, that stretches along & is fastened to stakes drove in the ground. They have hair halters, Buffalo skin pads & stirrups of the same. The horses are fine tractible animals, about 14 hands high; lively and clean made. The Natives are good Horsemen, & kill the Buffalo on them.²

We have previously noted the evidence for the first appearance of the pad saddle in the north (vol. 5, 93). This may have been but a preference on the part of these northern tribes, for since they had the stirrup, halters, and ropes there is no apparent reason why they could not have used frame saddles also. On the other hand, the structure of the frame saddle is more complicated and demands considerable skill in working wood, an art not conspicuous in the Plains, hence, it may well be that the pad saddle was carried along with the horse while the frame saddle came northward at a slower rate.

¹ Proceedings and Transactions of the Royal Society of Canada, 1, 351.

² Hendry, Anthony, *ibid*, 1, 338.

If we take a world wide view of our subject we are impressed with the uniformity of the frame saddle in Asia, Europe, and America. The only distinct variant is the English type. The history of the former is not clear but everything indicates a single origin. While we have a date for its appearance in Rome, its eastern distribution suggests that it was not invented there. The same may be said of the Franks as inventors of the stirrup. It seems far more probable that the earlier horse-using tribes of western Asia, who first appear on the scene with a distinct horse culture in contrast to ox culture contributed these now universal appliances.

We may then summarize this study as making clear that each appliance for riding and driving horses used by the American Indians was of one distinct structural pattern, which can be traced to the Old World. Since at the time of colonization the English had a different kind of saddle from that prevailing on the continent, we find in America two geographical types, which persist to the present. As the continental type appeared among the Indians in an unfamiliar setting, it was naturally considered as of Indian origin. By analyzing the structure of the Indian made appliances we have shown how accurately the respective structural concepts were diffused. This was shown clearly when we tabulated the measurements for our specimens. Thus, while the widths of frame saddles are to a large extent determined by the size of the horse, the length is far less so limited. Yet, our Shoshone saddles of the same precise pattern range from 50 to 52 cm.; Ute, 43 to 45 cm.; Menomini, 40 to 42 cm., Cheyenne, 41 to 49 cm.; Crow, 48 to 50 cm., etc. It is barely conceivable that these dimensions should be so uniform within a tribe without some chosen standard of measure. While there are here some tribal differences, it should be noted that the extreme variation recorded above is but 12 cm. When we consider that this uniformity throughout the Plains area was secured without the aid of a graduated system of linear measure, it is clear that a size type was also diffused.

SUMMARY.

We may summarize the results of this study as follows:—

1. The Indian has shown no originality. He devised no important appliances for using horses. He manufactured his own saddles, bridles, etc., but followed precisely a few definite patterns. Though these patterns appear to us as Indian, that is because the English colonists brought with them the English saddle. The Indian model is fundamentally like that of Southern Europe and Asia during the period of American colonization and

still survives among the tribes of Patagonia. In general, the complete data will show that the greater part of the horse complex of the North American Indian was borrowed first by the tribes in contact with the Spanish settlements and then diffused as far as the Plains of Canada without loss or essential modification of detail.

The one striking Indian variation is the habit of mounting on the right side of the horse instead of the left as do Americans and Europeans. The comparative data on this point make it clear that if left to their inclinations right-handed people will mount from the right. Historical data show the European method to have been first introduced into cavalry tactics by Vespasian and to have survived to this day because the sword is worn on the left side. The difference, therefore, is not due to motor differences in the Indian but, like most other culture differences, to historical factors.

2. The Indian did not take the cart. Yet the Spanish colonists rarely if ever used the horse, mule, or donkey for anything but riding and packing; their carts were drawn by cattle. (The great abundance of buffalo no doubt prevented the development of an Indian cattle culture.) On the other hand, the Indian of the Plains had developed dog traction by the travois long before the horse came. When he got the horse, he fitted the travois to him. In any event, it is probable that the established use and simplicity of the travois would have inhibited the use of carts. Thus, while in the travois we have an instance of the use of an Indian invention with the horse, the presence of the horse had nothing to do with its origin.

3. The rapidity and completeness of horse culture diffusion in America is a good illustration of how fully traits of borrowed culture may be assimilated. In this instance we have sufficient data to determine the general lines of diffusion but such is not often the case. For example, maize culture was once diffused over a large part of North and South America, for the wild plant is found only in one area which must have been the place of origin. In the Old World the spread of horse culture was most likely strictly analogous to its diffusion in America. Returning to our problem, it will be seen how if a non-historical people had brought Old World horse culture to America, we should be puzzled at the similarities observed between these traits on the two hemispheres, but would probably set it down as another case of assumed independent invention. This investigation shows that the invoking of independent invention, to be more than a plea of ignorance, must rest upon specific data.