

THE UNIVERSITY OF MANITOBA

THE USE OF PLANT MEDICINES BY
THE DAKOTA INDIANS

by

Thomas M. Sersha

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
MASTER OF ARTS

DEPARTMENT OF ANTHROPOLOGY

WINNIPEG, MANITOBA

OCTOBER, 1973



To Sue
and My Parents

ABSTRACT
THE USE OF PLANT MEDICINES BY
THE DAKOTA INDIANS

by

Thomas M. Sersha

This paper describes the use of medicinal plants by the Dakota Indians. A brief ethnographic summary on the Dakota presents the history of these people during the last 250 years and provides an insight into the life and customs of this Indian group. Because medicine, to the Dakota, was not only physical but spiritual, the second part of the paper develops the concepts of religion, world view, and magic, relating them to the practice of Dakota plant medicine. The role of the medicine men, their specific types, functions, recruitment, procedures of practice and equipment, is also included. The main body of the paper describes the plants used for medicine, how they were administered, and the medical reasons for administering them. The appendix includes a comprehensive taxonomic list of all the plant material used by the Dakota for medicine as well as a glossary of the plant names and tables of drug treatments.

ACKNOWLEDGEMENTS

I wish to acknowledge my indebtedness to the many individuals whose efforts were invaluable in the preparation of this paper.

My sincere appreciation is extended to my advisor, Dr. E. S. Burch, Jr. for his council and advice throughout the course of this study and for his careful examination of the preliminary drafts of the paper. Edwin O. Anderson's scrutiny of the paper and his many constructive criticisms have been of the greatest importance and are thankfully acknowledged. The assistance provided by Doug Elias to help construct the museum exhibit is also greatly appreciated. I wish to thank Dr. Joan F. de Pena for her contributions and assistance in completing my work.

I am also grateful to the many people at the Manitoba Museum of Man and Nature who contributed their time and technical data toward the building of the exhibit. Among those were, Karon Johnson, curator of Botany, who provided the material on plant classification and plant identification and Dave McInnes who assisted in supplying the herbarium sheets for study and plant specimens for the exhibit.

My special thanks go to my wife, Susan Sersha, for the

work done on the preparation of the tables and bibliography and for her assistance in typing the paper.

Finally, I express my gratitude to the Minnesota Historical Society for the invaluable information and pictures they provided for this study.

PREFACE

The aboriginal Dakota people, who lived in close harmony with the elements of nature acquired uncanny knowledge about the flora in their own environment. As part of their subsistence, plants were utilized in a number of ways for food, and in this process some were found to have medicinal properties or characteristics that would alleviate or cure various ailments. This paper constitutes an investigation of these plants, the variety as well as the special processes involved in their preparation, and their purported uses. In addition the use of herbal medicine will be examined to show how they were related to religion, magic and supernatural forces.

My interest in ethnomedicine, as practiced by the Dakota, has been stimulated by several interrelated aspects. Familiarity with the Dakota, through earlier work, has provided the basic knowledge and interest to do further research on these people. Since medicine was a profession of considerable interest to me, the focus of my research was directed to the Dakota Indian medicine man, his effectiveness and his utilization of plant medicines. My examination of the literature dealing with the Dakota and ethnomedicine among North American Indians in general, revealed abundant ethnobotanical informa-

tion. However, there was a lack of any basic compilation of data on the practical and applied plant medicines of the Dakota. Thus I found a relatively fertile avenue of research open to me with an opportunity to add significantly to the ethnographic data available for the Dakota.

The primary objective of this paper is to develop my knowledge of Dakota medicine to the point where I can interpret and graphically illustrate it. The preparation of a detailed description of herbs and plants will be a basic compilation of data on Dakota Indian plant medicine. The results of this research will take the form of a museum display which will graphically depict this aspect of the Dakota culture to the general public. The use of a museum display is based on a premise noted by A. E. Parr: "The need to learn is universal, and so is the resistance to being taught" (1963:12). Such a display can contribute to the interpretation of ethnographic research data so they serve as a useful teaching aid enabling members of the community-at-large to recognize and appreciate life styles of early inhabitants of a particular milieu (Parr, 1963:12). An understanding of the relationship of these plants to Dakota curing practices can be developed to fully clarify medicine in general and more specifically the effectiveness of Dakota medicine.

Within the area of ethnomedicine and ethnobotany there can be found a vast amount of information that pertains to the way different cultures made use of plant material, but

this paper will differ in content from most other studies. Some of the major works are outlined briefly below in order to show how my work fits into the larger field of ethnobotany.

Melvin R. Gilmore (1911), in a major piece of work lists a large number of plants and their different uses by four tribes in the Missouri region: Dakota, Omaha, Winnebago, and Pawnee. His study is based on the data obtained from Indian informants in the field. The study is quite complete, even including Indian words for the various plants. Food, medicine, and certain religious functions are some of the more important ways the plants were utilized by the Indians. A description is made as to how the plants were used, as food or administered as medicine, but there is no information on how the plants were collected, stored or the various steps employed to prepare the plant materials for either purpose. Thus, the work is not a detailed study on ethnomedicine, but rather a study on ethnobotany. Gilmore merely introduces the reader to the various plants and their uses and how the aboriginal human population established a relationship with the flora of the area. My paper introduces the reader to the plant medicines used only by the Dakota Indian and in so doing a detailed study will be made concerning the collection, use, and preparation of these plants used for medical practices.

A study on the ethnobotany of a particular Indian culture was done by Huron H. Smith (1932). His work deals with the Ojibwa and their uses of plants native to their region. The study did not pertain specifically to the medicinal qualities of plants, but it included an extensive list of plant uses for food, medicine, and technology. The study of Ojibwa plant material is a good general study on the uses of plants, but it does not provide adequate information for a specific study of ethnomedicine.

Smith compares the Ojibwa uses of the plants to the methods employed by the white man. The cross-cultural aspect suggests an interesting comparison of the uses of medicinal plants between the Ojibwa and the Dakota. Since the Dakota at one time occupied the land now held by the Ojibwa, it might be of value to analyze the differences and similarities that the two groups exhibited toward the same plant material. However, this is beyond the scope of the present study as previously outlined.

Ethnographic and archaeological data has been combined to study the relationships between the aboriginal human population and the plant material in the area (Yarnell, 1964). The data breaks down into two main categories: plants that are native to the region, and plants that were introduced by man and survived in the area through the efforts of the indigenous human population. The appendix to Yarnell's work gives the different uses of plants and puts them in various

categories of use. The list of medicinal plants is extensive, but it lacks data to demonstrate how these plants were utilized for their medicinal properties. General information on the plants includes scientific name, common name, area and range of habitat, and tribes using the plants. The collection, preparation and storage of the plant material is not included nor is the way the plants were administered. This study merely introduces the reader to the variety of plant materials used by the aboriginal tribes.

The previous studies of ethnobotany have not focused on the medical uses of plants, instead the researchers have concentrated their efforts on the general uses of plant material and have applied this information, in many cases, to several tribes. My paper concentrates on one specific Indian group. Thus, my study is unique; it describes in detail all the procedures involved in using plants for medicine by only the Dakota Indians. The paper contains not only a taxonomic list of plant material, but a description detailing the collection, preparation, and utilization of the plants by the Dakota medicine man or "herb root man." In addition, the use of herbal medicine is related to the supernatural curing practices conducted by the Dakota.

TABLE OF CONTENTS

Part		Page
	ABSTRACT	ii
	ACKNOWLEDGEMENTS	iii
	PREFACE	v
I	ETHNOGRAPHIC SUMMARY	1
	Distinction Between Dakota, Sioux, and Siouan	2
	Original Home	3
	Tribal Divisions	5
	Movements to the Plains	7
	Developments up to 1973	10
	Spatial and Temporal Focus of Study	14
II	DAKOTA RELIGION AND MEDICINE	15
	World View	16
	Magic	18
	Theories of Illness and Disease	19
	Definition of Medicine	20
	Magical and Religious Treatment of Illness	21
	DAKOTA MEDICINE MEN	25
	Types of Medicine Men	26
	Recruitment of Medicine Men	29
	The Practice of Dakota Medicine	32
	Equipment of Medicine Men	34

Part		Page
II	PLANT THERAPEUTICS	36
	Plant Material	38
	Roots	39
	Bark	40
	Leaves	41
	Herbs	42
	Berries and seeds	42
	Summary	43
	Administration of Plant Medicine .	43
	Decoction	44
	Febrifuges	44
	Antiblenorrhagic	44
	Expectorant	45
	Antidysenteric	45
	Vermifuges	45
	Diuretic	46
	Stimulant	46
	Tonic	46
	Emetic	47
	Cathartic	47
	Steeped or Infused Medicine .	47
	Demulcent	48
	Poultice	48
	Direct Application	49
	Direct Inhalation	49
	Rectal Injection	50
	Dosage of Medicine	50

Part		Page
III	APPENDIX	52
	Taxonomic List of Plants Used by the Dakota Indians for Medicine	53
	Tables of Drug Treatments	85
	Glossary of Plant Names	96
	BIBLIOGRAPHY	104

PART I

ETHNOGRAPHIC SUMMARY

E T H N O G R A P H I C S U M M A R Y

DISTINCTION BETWEEN DAKOTA, SIOUX, AND SIOUAN

The Indian group to which this study pertains is often referred to as the "Sioux" or "Dakota." The word Sioux, Scioux or Soos originated with the early "voyageurs." The Ojibwes called the Dakotas Nadowaysioux, which signified enemies or snakes. Thus, the voyageurs nicknamed the Dakota, Sioux, which is the last syllable of the Ojibwa word for foe (Neill, 1858:51). The term Siouan is the generic name for a linguistic family to which the Sioux or Dakota belong. This group is composed of many tribes having a common origin and speaking a similar language (Robinson, 1967:15).

The Dakota comprise an alliance of seven bands closely related through their common origin in one parent stock. The word Dakota is derived from the word "Koda" of the Santee and "Kola" of the Teton dialects, both signifying friend. Thus, Dakota is "an alliance of friends or allies that came from one parent stock" (Robinson, 1967:19). The Dakota Indians at first spoke a common language. After they dispersed from their original home to new regions, each of the resulting three divisions developed a dialect of their own. These divisions were the Santee, Yankton and Teton Dakota (Blegen,

1938:21).

The Dakota, one of the largest and most powerful tribes of North America, were a tall, sturdy, proud, fierce and warlike people who had lived in Minnesota for hundreds of years (Blegan, 1938:14). They were feared or respected by most other tribes.

ORIGINAL HOME

The home of the Dakota was not always on the prairies and plains. Their "original" or "parental" home was located in the northern woods of Minnesota. The earliest reports of the Dakota in this area are from the Ojibwa legends which state that they came in contact with them in the northern regions around Sault Saint Marie (Hubiak, 1970:225).

In the 1660's Groseiller and Radisson established the first European contact with the Dakota in Minnesota. Brower gives an account of these two men on the location of the Dakota during this time:

M. Groseiller and M. Radisson, two Frenchmen, . . . about two hundred and thirty four years ago, passing west from Lake Superior, came in contact with the Sioux or Dakotas, and as it is quite certain that these two first Europeans reached and crossed the Mississippi some thirty or forty miles above the present site of the city of St. Paul, the gradual retirement of the Sioux before the aggressive Ojibwe can be fairly traced from the happenings subsequent to that time. There is little doubt but that the two Frenchmen named, who at one time carried on their explorations under British auspices, were

the first Europeans who came in contact with the Sioux tribes. They then lived in great numbers in the territory which afterward fell into the hands of their mortal enemies. While the full facts are not known, it is probable that the Sioux then occupied the entire waters of the Mississippi from the region of the St. Croix to the source of the river, a distance of more than six hundred miles, with the adjacent country literally swarming with buffalo, elk, deer, bear and beaver, region which they subsisted in comparative comfort . . . they came into possession of the country west from the extremity of Lake Superior, and remained there until they were, by force of arms, driven out by the Ojibwes (Brower, 1900:242-243).

Du Luth in 1679 and Hennepin in 1680 found a large number of Dakota Indians living in villages around Mill Lacs (Folwell, 1921:79). When the Dakota inhabited the woodland area their clothing was made from animals' skins, they dwelt in wigwams made from bark and earth and they hunted deer and other animals in the forest. Maize was planted and harvested by the women and native plants such as wild rice and berries were collected to supplement the food supply (Meyer, 1967:22).

For many years the Dakota had occupied the whole area of Minnesota, but eventually were invaded by the Ojibwa. The Ojibwa "original" home was located northeast of Minnesota on the banks of Lake Nepissing between Lake Huron and the St. Lawrence (Schoolcraft, 1885:143). Because of their early contacts with the French traders, the Ojibwa acquired firearms and buckshot enabling them to be far superior in battle

to the bows and arrows of the Dakota. As a result of their superiority in warfare, they were able to drive the Dakota out of their native or parental homeland. The following represents one brief account of this transition:

. . . the Sioux began to be pushed back of Lake Superior to Sandy, Leech, and Red Lakes, not by the whites, but by another tribe of Red Men - the short, stocky, and strong Chippewa, or Ojibway Indians. A hundred years later, about the middle of the eighteenth century, the Sioux were driven out of their ancient forest homes at Sandy Lake and Mill Lacs to the country west of the Mississippi and south of the Crow Wing Rivers (Blegen, 1938:14).

Major battles were fought in the 1740's when invading Ojibwa drove the Dakota out of the northern area of Minnesota and forced them to move into the green grasslands to become a prairie people. Ruth Landes states:

There was no time remembered by either, among my Ontario and Minnesota Ojibwe informants and my Minnesota Santee informants, when they were not neighbors, rivals over game and rice supplies, and at war with each other. In 1935, my informants counted endless debts of revenge that families remembered for generations over killings in direct and collateral lines (Landes, 1968:10).

TRIBAL DIVISIONS

From one parent stock that originated in the northern woods of Minnesota, the Dakota moved to new regions branching out to form three major divisions comprising many bands or

"council fires." This is referred to in Dakota as Oceti-Sakowin (Howard, 1966:3). The Eastern division is called Santee, Issati or Isanyati. The name Santee means knife-bearers (Dorsey, 1893-1894:215). The latter two terms referred to the name of one of the lakes where they lived (Belden, 1875:2607). The four bands of this division were the People of the Mystic Lake (Mdewakantonwan), the People of the Leaves or Woodlands (Wahpeton), the People Who Shot Among the Leaves (Wahpekute) and the People of the Swamps (Sisston) (Landes, 1968:3). Originally, Santee designated only the Mystic Lake Sioux, but eventually it comprised all four bands. These four bands spoke dialects which were very similar and they were known by the tribal designation, Dakota (Douglas, 1932:2). The two bands of the middle division were called the Yankton and Yanktonai or Ihankton. They lived north of the Minnesota River (Bleden, 1870:260). The tribal name for this division was Nakota (Douglas, 1932:2). A western division, the Tetons or Lakota, was comprised of the following seven bands: 1) Brule or sitchanxa, "burned thighs," 2) Sans, Arcs or Itazipcho, "without bows," 3) Sihasapa or Blackfeet, 4) Miniconjoa, "those who plant beside the stream," 5) Two Kettles or Oohenonpah, "two boilings," 6) Ogalal, "to scatter one's corn," 7) Hunkpapa, "end of the circle" (Douglas, 1932:3).

MOVEMENT TO THE PLAINS

The first tribes to leave the northern forests for the plains were the Teton and Yankton Dakota bands. A portion of the plains and prairies of central North America provided a vast, rich area where the Teton could pattern their life around the seasonal hunts of the buffalo. By 1700 some of the Tetons had wandered westward to the Lake Traverse region in northeastern South Dakota. By the mid 1700's, small bands of Tetons moved further west and settled along the Missouri River (Douglas, 1932:2). Eventually their territory included all the land west of the Missouri and it extended from the Black Hills of South Dakota down to the Platte River in Wyoming and westward into Montana and Wyoming.

The vast buffalo herds in the Dakotas and eastern areas of Montana and Wyoming provided the Teton with an adequate source for subsistence. Their economy was based entirely on the buffalo: his flesh was used for food, his bones for tools, ornaments and arrowpoints, his horns for spoons, and small rattles, his hair was twisted into ropes for horses, tendon for thread, skin for robes, tipis and moccassins, etc. (Wissler, 1940:159). The Teton lived in tipis made from buffalo hide and they travelled with the movement of the buffalo herd.

The Teton adopted readily to their new environment and soon they became a powerful tribe on the plains. Murray L.

Wax describes the Teton in this manner:

The Teton became the scourage of the northern plains, acquiring a reputation for irascibility, impetuosity, and stealthy ferocity. The settled agriculturalist tribes, which had built a rich ceremonial existence and complex societal organization, could not cope with the Dakota raids, even though they themselves acquired the horse and some of the traits of the horsenomads. The Tetons harassed the traders who attempted to utilize the Missouri River, later they continued this action with the wagon trains crossing the plains (Wax, 1971: 18-19).

The Yanktons moved to the Missouri River area around 1765-66. The James River valley, located by the Missouri, provided a new home for the middle Dakota. Fiske gives this description of the area, "It was a fine land of good grass, timber, and water and the tribe prospered there" (Fiske, 1917:22). The middle bands expanded into parts of Iowa and Minnesota as well as eastern South Dakota.

By the end of the eighteenth century, the eastern bands of the Dakota were moving from their original home in the forests and out into the grasslands. The Santee moved southward and settled in southern Minnesota along the Minnesota and Mississippi Rivers.

The eastern Dakota bands still retained old ties with their western bands, but the region they now occupied compelled them to develop different life styles from the Teton. Since the eastern Dakota lived on the border of the woodlands

and prairies, they did not rely solely on the buffalo to supply them with their necessities of life. Even though buffalo were hunted, they did not closely follow the trail of the herds. They settled in proximity to the buffalo herds and periodically went out onto the plains in search of buffalo.

These bands enjoyed a hunting and gathering economy with incipient agriculture. In the spring the families would tap the maple sugar trees to collect the syrup. The women would obtain the syrup while the men hunted for deer, elk, and other animals. The summer months were spent in relaxation and the women spent most of their time caring for maize and other crops. If a buffalo herd was spotted nearby, the men would organize a hunt and go out after the herd. After the hunt, if the hunters were successful, the tribe would feast and prepare the buffalo for future use. In the fall the crops were harvested and the wild rice was gathered. All of these tasks were done by the women and the men spent most of their time hunting and caring for the safety of the tribe. The tipi was employed as the main type of shelter when the tribe was traveling and houses made from bark and skins were used during the summer and winter months. The clothing was similar to that worn by the Tetons and it consisted of a breechclout, skin robe, and mocassins for the men and loose fitting skin dresses for the women.

DEVELOPMENTS UP TO 1973

Between 1750 and 1850, the Dakota bands lived quite peacefully in their new homes. After 1850 changes began to occur and the life style of the Dakota began to be threatened. The steady advancement of the white settlers and the army began to infringe upon the rich vast land of the Dakota. On July 18, 1851, 7,500 Dakota from the Wahpeton and Sisston bands of the Upper Sioux (Santee Dakota) traveled to the trading post Traverse des Sioux near St. Peter, Minnesota, to meet with government officials to discuss the sale of their land (Hubbard Milling Co., 1926:12). As a result of their treaty, the Santee Sioux relinquished their valuable hunting land to the United States government and eventually they were forced to live on reservations and become dependent on the white man. As the years passed the Dakota realized they had been robbed of their land by this treaty (Laviolette, 1944:32).

Annuities for their land were not paid by the government officials so the people were unable to buy food and provisions from the agency traders. In 1862, the Indians crop yield was poor. The people were starving, but the government refused to grant annuities to the Dakota because an outlaw Wahpokute chief who led a small band of Indians killed thirty persons in Okoloji, Iowa and several more in Wisconsin. The Dakota were forced to capture this chief if they wanted to.

receive their annuity (Carley, 1961:14).

These events contributed to the Minnesota uprising of 1862. Under the reluctant guidance of Little Crow (Ta-oyata-data) the Dakota waged a war on the white community in Minnesota. Within months the Dakota uprising was defeated and the Indian lost their last remaining land in Minnesota.

As a result, the Dakota were dealt additional suffering and hardships. Thirty-eight Dakota were hung at Mankato on December 26, 1862. Except for a few trusted Dakota in Minnesota, the remaining Dakota were removed from Fort Snelling in May of 1863 and forced on reservations in Iowa and Nebraska (Carley, 1961:67). Little Crow escaped to Canada with five hundred followers, but later he returned to Minnesota on a horse-stealing foray. On July 3, 1863 he was killed while picking berries near Hutchinson, Minnesota (Carley, 1961:68).

Throughout the 1860's, events were taking place in the area occupied by the western Dakota and their lands were also being threatened by the infringement of the white man. In 1866-67, Red Cloud, the chief of the Oglalas, waged a relentless guerrilla war to hold on to the territory around the Powder River area in Montana and Wyoming. In 1868, Red Cloud signed a treaty of peace with the U.S. Government, but he later found out that he had been tricked and he had actually signed a treaty establishing a Dakota agency somewhere

on the Missouri River (Brown, 1971:181).

The year 1874 brought a large contingent of U.S. soldiers to the Black Hills under the leadership of General George Armstrong Custer. The treaty of 1868 had prohibited the entry of white men into the area without the Indian's permission, but the idea of gold in the region obscured all the details of the treaty. The steady advancement of white settlers and prospectors angered the Dakota and they considered it an invasion of their region.

During this time the Dakota refused to stay on their reservations because they wished to live on lands that would supply them with enough fresh game to help supplement their government rations. In 1875 the government issued an order directing that all Dakota are obliged to live within the bounds of their reservations and unless they do so, they would be declared hostile and threatened with military force (Luce, 1949:3). Finally in 1876, a military force composed of three separate expeditions, started the westward march to round up the so-called hostile Indians. Custer commanded the 7th U. S. Cavalry that attacked the Dakota encampment at the Little Bighorn River. In one of the bloodiest confrontations the U. S. Government waged with the Indians, Custer's entire column was annihilated. After news of the battle had spread to the East, the U. S. Government began a campaign to punish all the Indians in the West (Brown, 1970:283).

The Dakota were rounded up and either killed in the process or forced to live in poor conditions on the reservations. Sitting Bull, the medicine chief of the Hunkpapas, a smaller band of the Tetons, fled to Canada to escape the punishment from the soldiers. In 1881, Sitting Bull surrendered his people to the United States government and immediately he was removed to an area on the Grand River, about forty miles from the Standing Rock agency in South Dakota (Hans, 1964:564). On December 15, 1890, Sitting Bull was killed by Bull Head, an Indian in charge of a squad who had come to arrest Sitting Bull for his participation in the ghost dance. By 1890 most of the great Dakota leaders had been killed or were forced to live on reservations and the last spark of hope for these people was wiped out at the Wounded Knee Massacre.

From 1890 until the present time, the Dakota continue to live on reservations scattered in many states and a few provinces in Canada. Small reserves are located in the provinces of Manitoba and Saskatchewan. A large number of Dakota people live on reserves in North Dakota, South Dakota, Montana, Nebraska, and Minnesota. The history of these people, like so many other Indian cultures, has been a sad story filled with misery, suffering, and finally expulsion from their native lands by the white man. Living on the reservations has taken away much of the spirit and freedom

of these people. Today, they are in the process of striving to regain their lost dignity and freedom in the hope of recovering from the abuses inflicted upon them.

SPATIAL AND TEMPORAL FOCUS OF STUDY

My study on the utilization of plant medicines by the Dakota Indians takes into account data from all three major Dakota divisions. The apparent deficiency of information on plant medicine precludes focusing on any specific group of Dakota. Therefore, this paper represents a general descriptive overview of the subject. The time period of this study focuses on the Dakota after they left their parental homes in northern Minnesota in the mid-1700's to the beginning of their conflicts with the U. S. Government in 1862.

PART II

DAKOTA RELIGION AND MEDICINE

DAKOTA MEDICINE MEN

PLANT THERAPEUTICS

DAKOTA RELIGION AND MEDICINE

The use of plant medicines by the Dakota Indians is difficult to understand without some knowledge of their spiritual and religious beliefs. Concepts concerning world view governed all actions of the people and the practice of medicine was influenced by magic and supernatural forces in the universe. In general, it can be said that the basic religious principle underlying the religious philosophy of the Dakota attributed spirit life to every heavenly body in the sky, in every animal, in every stone, and in every plant (Neill, 1898:54-55). Thus, the Dakota attributed supernatural or magical power, intelligence and life into every animate and inanimate thing. The terms world view, magic, and medicine are discussed to show how they related to each other in the area of Dakota plant medicine.

WORLD VIEW

World view can be defined as the way the Dakota looked at the world about them; it was the life scene or structure of things as the Dakota were aware of them (Hoebel, 1966: 491). The Dakota organized their culture and way of life around a world full of spirits and their world view could be

called vitalistic. Accordingly, all things of the universe have spirit and life: the rivers, rocks, sky, sun, plants, earth, animals, and man. There is nothing, however trivial, that does not possess a spirit of its own. The Dakota sought to achieve a balance with these spirits in the universe. Each individual would be made whole only by learning to harmonize with the spirits (Storm, 1972:5). In doing so, they were always striving to find happiness and peace of mind in the temporal world. The belief of the future existence, or "happy hunting ground," was deeply rooted in concepts concerning the temporal world. To the Dakota, the beauty and happiness found in his relationship with nature and the spirits was in essence a combination of two worlds - spiritual and natural. The Dakota love for the living natural world and a utopia on earth was his idea of a "happy hunting ground." The spiritual world was not another world, but it was everything present in the natural world.

The supreme spirit was the Wakantanka or Great Spirit who was above everything else, but who was not alone in the universe. After creating the world, he sank into silence. The Dakota did not pray to the Great Spirit because he was too far away and they felt he was unable to hear their prayers. Also, because of the great distance in space, the Dakota were inclined to believe that he did not take an active interest in their affairs. As a result, no dances

or prayers were made to the Wakantanka (Lynd, 1889:151).

Under the Great Spirit there are many minor divinities. These spirits are either good or evil, the evil spirits are more dominant and they wander through the earth causing misery and suffering (Lynd, 1889:153). The administration of the universe is in the hands of these minor spirits and the power exerted by these spirits influenced the life of every individual and controlled his every motion.

MAGIC

The religion of the Dakota expresses a good deal of their world view, but the concept and practice of magic is also an important factor that is closely connected to their religion. Magic differs from religion in the distinction made between the attitudes and practices of the believer (Hoebel, 1958:477). A person dealing in magic believes that he possesses the power to control the spirits. There is a great deal of manipulation rather than supplication as a means of controlling the supernatural. Magic involves the ritual manipulation of objects, charms, amulets, and potions: the use of word formulas; and reliance upon a wide variety of actions, dancing, fasting, narcotics, hypnosis, and other techniques (Hammond, 1971:284). Magic can be used for good or evil and it was the evil spirits or foreign bodies within the individual, that manipulated the forces of the world

causing diseases and sickness according to the Dakota Indians (Hassrick, 1967:248).

THEORIES OF ILLNESS AND DISEASE

The Dakota treatment of disease was deeply embedded in this whole magico-religious system. Illness was not regarded as a natural event as it is in our society; rather it was considered to be caused by supernatural actions or forces that were exerting some evil effect on the individual. To them, illness was an especially frightening experience, for it involved not merely physical discomfort, but contamination with evil, loss of rapport with good, and fear of death. The whole spiritual and physical self was endangered (Hassrick, 1967:248).

All ailments that beset mankind were attributed by the Dakota to the anger of the gods or the malevolence of the evil spirits. This can be illustrated by the following examples:

Scabs and black splotches about the face and hands were due to a woman's tanning a bear hide during her menstrual period. Informed women, therefore, tanned bearskins only after menopause.

While butchering a bobcat, a man had to be careful not to tear the joints lest he himself suffer pains in his joints. Contact with menstrual flow caused diseases of the skin and genitals, though it has been said that skillful shamans were able to concoct from it love potions.

Certain ailments were the direct result of a breach of ethics. A thief was afflicted with warts, while a person given to telling lies suffered peeling of the palate (Hassrick, 1967: 249).

It may be said that according to Dakota theories, diseases resulted from four major causes. A malevolent spirit could assume material form, either animate or inanimate and then it could attack the victim with or without provocation. A medicine man or one who possessed special supernatural powers could inject supernaturally into a person, a spirit or an object. The Dakota held the highest respect and admiration for their environment and all living things. They strived to live in harmony with them, but if they angered the spirit of the dead or those of animals, plants and other material objects, then they would be inflicted with a disease. A disease could also strike a person if a patient's soul was abused or his spirit was ill-treated (Whitebread, 1925:10).

DEFINITION OF MEDICINE

When the Dakota Indians refer to medicine, their concept of the word is entirely different from that of westernized society. In general, medicine in our society may be defined as an agent or influence employed to prevent, alleviate, or cure some pathological condition or its symptoms (Hrdlicka, 1932:1664). An important concept associated with Indian medicine and the use of plant drugs, is "magic;" all practices,

ideas, and beliefs revolve around this mysterious, extraordinary, and inexplicable power. Hrdlicka goes on to further state this about Indian medicine:

The scope of agents among the Indians was extensive ranging, as among other primitive peoples, from magic, prayer, exhortation, force of suggestion, and a multitude of symbolic and empirical means, to actual and more or less rationally used remedies (Hrdlicka, 1932:1664).

Whitebread refers to magic medicine in the following way:

. . . as a "pretended art" of producing supernatural effects by bringing into play the action of supernatural beings, or departed spirits, or of the occult powers of nature (Whitebread, 1925:11).

MAGICAL AND RELIGIOUS TREATMENT OF ILLNESS

Indian medicine may refer to some exotic drug or herbal remedy to cure a pathological disorder, but that cure normally involved a supernatural article or agency as a further aid in curing diseases. Since the Dakota believed that all animate or inanimate objects possess a soul that contains supernatural powers; then these objects may have therapeutic or mystical qualities that will effect the mental and physical state of an individual. Henshaw has this comment to make about Indian medicine:

The medical art among all Indians was rooted in sorcery; and the prevailing idea that diseases were caused by the presence or acts of evil spirits which

could be removed only by sorcery and incantation, controlled diagnosis and treatment. This conception gave rise to both priest and physician (Henshaw, 1905:108).

When a person became afflicted with an illness, this was a visible sign that he was being besieged by some evil supernatural power. In order to relieve the physical and emotional discomforts of the illness, the medicine man used his adept power in dealing with the spirits to cure the patient.

Some medicine men were more knowledgeable in the use of herbs and plant remedies than others, however, many medicine men relied solely on their skills to stage effective rituals and techniques to induce the patient into thinking that he was being cured. In this case, sickness was a spiritual matter which affected the physical self of an individual and consequently the proper cure was psychotherapeutic.

If a person's illness was caused by disease-object intrusion, then it was necessary for the medicine man to use his power and influence with the spirits to expel the evil. Using techniques such as skill in prestidigitation, and the creation of optical illusions, the medicine man would eventually be successful in removing the evil object from the person's body. He would skillfully remove the object, in the form of a small rock or pebble, and the evil it contained from the suffering person.

An important point to consider in this process involves the patient's faith and his belief in the practice of the medicine man. Hassrick makes the following point:

Expelling spirits was no easy task. It demanded the patient's devoted faith in the shaman's complete rapport with the supernatural (Hassrick, 1967:251).

The Dakota also performed ceremonial therapeutics that involved many medicine men and predetermined rituals that fit into the whole magico-religious system of their culture. Ellen Rice Hollinshead, an early pioneer of Minnesota, describes a Dakota Medicine Dance that was performed near Mendota, Minnesota in the summer of 1848.

The usual Indian music was furnished. It might have been classical for ought I know, but it was certainly hideous. The Indians always sang in low guttural tones when they danced, and with their tomtoms accompanied themselves. They danced from morning until night and from night until morning. The sick they brought there to be healed, and as they danced around in a circle they would thrust their medicine bags in the faces of their patients and the sick ones would fall prostrate on the ground, where they would remain for some time. Then they would rise and others would go through the same performance (Hollinshead, 1966:13).

From the description of this Medicine Dance, it seems that the people were cured by the mystical and hypnotic effects of the atmosphere that prevailed during the period of the dance. The medicine men, throughout their incantations, cast magic spells over the people and this proved to

have direct results in curing their sicknesses.

The idea of magic or witchcraft as a cause of illness is also widespread in the Dakota culture. Good and evil forces can be manipulated by human beings who possess the power to inflict harm on another individual. When Christianity began to spread throughout the Indian tribes the medicine man could have felt his position and power within his community was being threatened and he could retaliate by casting evil spells over members of his tribe who adopted the new religious ideology. Through various tactics such as whipping people and abolishing them from the tribe, the medicine man managed to maintain his influential position in the face of early missionary work (Goldfrank, 1943:82).

Dakota medicine combines magic, sorcery, and supernatural powers that are deeply embedded in the religious ideology and concepts of world view. The practice of medicine can be performed in two different ways within this magico-religious system: (1) symbolic and empirical means, or (2) the application of applied plant remedies (Hrdlicka, 1932:1663). Within this system, the Dakota medicine men possessed all the power and skill to cure diseases throughout the manipulation of supernatural powers, the application of effective plant medicines, and by magical rituals and ceremonies.

DAKOTA MEDICINE MEN

The term "medicine man" conjures up in our minds many bizarre images of individuals who dealt in magic, sorcery, and special herbal potions. Strange as these persons may appear, they fulfilled a very important role in the life of the community. Some dealt solely with supernatural spirits, while others worked predominately with plant medicines, drawing their power from both supernatural and natural sources.

Within each community there were many individuals who were considered medicine men or Indian doctors. George Belden, in the late 1800's, spent twelve years among the Indian tribes of the plains and he gives this account on what the medicine man meant to the Dakota:

The early French explorers called a doctor "medicine," and all Dakota have thereby called their doctors "medicine-man" or Wa-ka Pa-zhir-tu We-cha-sa (spirit medicine man). A medicine man means then, in the broadest Indian sense, "a doctor" who calls to his aid charms and incantations to cure the sick (Belden, 1875:273).

Pond said that there were five to twenty-five shamans in each Dakota village, and that the number varied with the size of the population (Pond, 1889:252). Among the medicine men there would be a distribution of economic, war, curing, and other abilities (Landes, 1968:48). Each medicine man had

his own speciality and regardless of the number of different roles and functions he performed; he could be divided into two major groups.

TYPES OF MEDICINE MEN

Schoolcraft mentions the mysterious or supernatural god-men who were called Wica-sta Wakan, and who belonged to the Zuya Wakan or war prophet class of medicine men. The other medicine men were mysterious, supernatural or god-dreamers called Taku Wakan Ihamnanpi and they belonged to the class of Wupiya or renovators and restorers (Schoolcraft, 1854:642).

The Wicu-sta Wakan was concerned with the spiritual needs of the community and his powers were performed to interpret to the people, the Dakota way of life as set forth by the spirits (Hassrick, 1967:248). It was his duty to organize the community in times of great stress and on special religious occasions when they needed his advice and guidance. The people immediately turned to these individuals for help and leadership, and it was their responsibility to care for the well-being and needs of the people. Eric Stone sums up the duties of this type of medicine man in this way:

This type of medicine man advised, protected, and insured success in both the ordinary and unusual events of life of the individual, the family, and the tribe (Stone, 1932:6).

Because he was called upon to lead the people and advise them, this type of medicine man formed a kind of priesthood with the other members in his class. His power and sacredness were basically his own, but there was a special power and position he held for being in the class of Zuya Wakan. The eastern Dakota cult, referred to as the Medicine Dance Society of Wa-ka wa-cippi, was served by the Wicu-sta Wakan medicine men whose interests were directed toward special spirits and functions. The Medicine Dance Society constituted a religious bureaucracy with its structured traditions; certain powers came from within the relationships the cult made with the supernatural. The missionary Samuel Pond, describes some aspects of the Medicine Dance Society:

Those who received admission into the society paid liberal fees and received bags made of the entire skins of small animals or birds, containing some little things which they were taught to consider of great value. Besides the wakan-bag and its contents, they received instruction and advice which was said to be very good (Pond, 1908: 409).

Pond goes on to state further some information on the Medicine Dance itself:

Before the dance began, most of the dancers arranged themselves in two rows or lines, one on each side of the enclosed area, with their backs to the fence, and holding their wakan-bags in their hands.

After the persons who led off the dance had passed up and down the lines a few times, they suddenly turned, one after, and each touched on the breast, with the head of the bag, one of these who stood in

the lines. The one who was touched, uttering a groan or shriek, fell suddenly on his or her face headlong on the ground, and after lying apparently lifeless a minute or so, began slowly to recover, raised himself or herself a little on the hands and succeeded, after several convulsive efforts, in coughing up a little shell (Pond, 1908: 409).

The people who were watching the dance were made to believe that when a person was touched with the waken-bag, the shell or object in the bag would pass into the person and then they would cough it up. It would appear that these ceremonies were staged as an impressive show to convince the people that its members were almighty and did possess supernatural powers.

Within the second class of medicine men called Wupiya, can be found the true physician and healer who combined plant medicine with supernatural forces to alleviate the suffering of the sick people. He was primarily concerned with caring for the physical needs of the community.

Dr. Thomas S. Williamson, a missionary who founded the mission at Lac qui Parle, Minnesota in 1832, gives the Dakota name for physician as "pay-zhe-hoo-ta we-chasta," which means "herb-root man" (Jordan, 1953:222).

Hassrick refers to the "herb-root man" as a "dreamer" and makes these comments on this individual:

Dreamers, men who had actively sought visions and who may have participated in one of the three lower forms of the Sun Dance, were organized by the people as influential sources of power, but were not

accorded the priestly position reserved for shamans. Their powers were limited to those instructions received from their particular animal intercessor and the directions given by a man who had enjoyed a like vision. Such cult members had specialities, either for curing certain ailments or wounds or for preparing wotowes or protective devices (Hassrick, 1967:248).

The herb-root man did not belong to a cult or a religious group, and he acted as an individual. Each medicine man in this class practiced on his own, and closely guarded the secrets to the different plant medicines he used.

RECRUITMENT OF MEDICINE MEN

If a person wished to become a medicine man there were many ways he could do so. Usually the individual realized very early in his life that he was destined to become a medicine man in his tribe. He could obtain his position through one of these methods: (1) heredity which was only moderately developed, (2) by individual initiative involving searching and seeking, (3) selection by older medicine men to serve as an apprentice, and (4) by seeking a vision or dream. The two latter constitute the primary methods employed by the young Dakota novice.

If a young child chose to become a medicine man and showed his enthusiasm and quest for such a position, then he might be fortunate to come under the guidance of a gifted medicine man in the tribe. Serving in an apprenticeship

role, the novice would be instructed by his teacher in the tricks, incantations, and herbal remedies that he had at his disposal. Careful observation and diligent work would be expected of the novice if he wished to become a wise and powerful medicine man.

When one wished to seek a vision he would undergo the hanbelachia by going to the top of a hill or lonely secluded spot away from the village and pray to the spirits to give him a direction and purpose for his quest to become a medicine man (Hassrick, 1964:231). The solitude would help to stimulate the imagination and prepare the mind for a vision. Accompanying the loneliness, he would also be required to fast, thus making his body weak and vulnerable to the tricks his mind would play on him. Walker gives a vivid description of a young Dakota who was seeking a vision:

To seek a vision one should strip and wear only a robe, a breechcloth, and moccasins. Clothed thus, he should take a pipe, smoking materials, and a knife, and go to the top of a high place where others are not likely to intrude. There he should remove every living or growing thing from a space on the ground sufficiently large for him to sit or lie upon. Then he should go to this space and remain on it until he has a vision, or until he is convinced that he will have none. When he enters the cleared space, he should invoke the Four Winds in order that they may not bring inclement weather upon him. Then he should await a vision, meditating continuously upon his quest. He may invoke the gods, verbally or mentally, either in song or prayer.

The vision may come to him, either

when he is awake or when he is asleep. It may appear in the form of anything that breathes or as some inanimate thing. If it communicates with him, it may speak intelligibly to him, or it may use words that he does not understand, or speak in the language of birds or beasts. By something that it says or does it will make known to him that it is a vision he seeks (Walker as seen in Cortlette, 1935: 67).

The future medicine man might also obtain his connection with the supernatural in dreams that would come to him while he was fast asleep or in a deep trance. Black Elk, a Holy Man of the Oglala Dakota, established his relationship with the gods when they came to him in a vision or dream while he was very sick. The Grandfathers in the Flaming Rainbow Tipi came to be his "guardian spirits" and they bestowed upon him the supernatural powers of the World. Black Elk comments:

The oldest spoke again: "Your Grandfathers all over the world are having a council, and they have called you here to teach you." His voice was very kind, but I shook all over with fear now, for I knew that these were not old men, but the Powers of the West; the second, of the North; the third, of the East; the fourth, of the South; the fifth, of the Sky; the sixth, of the Earth. I knew this, and was afraid, until the first Grandfather spoke again: "Behold them yonder where the sun goes down, the thunder begins." You shall see, and have from them my power; and they shall take you to the high and lonely center of the earth that you may see; even to the place where the sun continually shines, they shall take you there to understand." (Neihardt, 1961:25).

It was not uncommon for women to enter into the group

of medicine. They were accorded the same high honor and respect that men received and their deeds were accepted by all members of the tribe. When it was time to treat the people, the women usually cared for the children and women, but rarely treated the men (Hrdlicka, 1932:1663).

THE PRACTICE OF DAKOTA MEDICINE

When an individual finally became a respected medicine man or Dakota "herb-root man," there were certain procedures that he followed very closely in his practice of medicine. Before he administered his services he would usually ask the person who was sent to fetch him for some payment or fee. This could be a blanket, pony, or some other useful and valuable present. After he received his payment he would then go to the sick person's dwelling with his medical knowledge. Upon entering the lodge or tipi he first would diagnose the nature of the illness to determine what course of action he would pursue. Since many medicine men were specialists, the diagnosis was given to determine if he was qualified to cure the patient. If not, then another medicine man qualified to cure the patient would be summoned.

To begin the treatment one basic procedure was employed. The use of the Sweat Bath or Vapor Bath for both spiritual and therapeutic reasons prepared the Dakota medicine man and the patient for a successful cure of the illness. Since the curing practices were associated with the religious ideology

of the community, the idea of purification in a Sweat Bath prepared the body for communication with the spirits. Also, the effects of the profuse sweating in the Sweat Bath seemed to help draw the illness from the patient's body. Schoolcraft describes the manner in which the dwelling was constructed:

The manner of preparing this bath is to set four sticks in the ground and bend them all inward, which makes them cross and become round on the top. This enclosure is three or four feet in diameter, and about three or four feet high, with two or three blankets thrown over, which excludes the air all round. In the center of this is placed a red-hot stone, that would weigh from six to eight pounds (Schoolcraft, 1852:182).

He comments further on the treatment in the sweat bath:

The patient's posture is half-sitting or stooping over the stone. Another Indian is inside and pours water over the stone. The steam arising from it is very oppressively hot and causes great perspiration in a short time. After the patient has endured it as long as he can, he goes with the older man and they both plunge into the water, which ends the vapor bath (Schoolcraft, 1852:182).

After the sweat bath, the patient was involved in a ceremony, which included mysterious incantations, music and bodily gestures from the medicine man. At this time herbal remedies would be administered; one of the principle techniques of curing associated with the administration of plant remedies utilized the shaking of a gourd rattle and the constant beating of a tom-tom over the patient. While the

medicine man sang in either melodious or guttural tones to frighten the evil spirits away, the rattle and drum were employed to draw the attention of the good spirits. From time to time, the hand was slowly drawn over the patient's body to help present a tangible cure for the disease. The medicine man also applied his mouth to parts of the body and attempted to suck the evil from the inflicted area.

Some medicine men in the Wupiya class restored good health and strength to a patient by using powers derived from animal spirits. The following example illustrates how one Dakota medicine man's skills in the administration of herbal medicine were aided by the supernatural power he received from the bear:

Bear-With-White-Paw, like Eagle Shield, received his knowledge of healing herbs from a bear. He said that when summoned to treat a sick person he put on a necklace consisting of a strip of hide to which were attached two small bags of medicine, one edged with blue, the other with pink and white beads, and a bear's claw. In explanation of the latter he said that he pressed the claw into the flesh of the patient in order that the medicine might enter more readily and be more effective (Densmore, 1948:178).

EQUIPMENT OF MEDICINE MEN

To be more effective in his practice of medicine, the medicine man carried equipment and paraphernalia containing special powers that were necessary to his calling. The

medicine bag contained such things as: special costumes, medicine sticks to serve as offering pieces, pieces of bone used for sucking, animal skins, and an enormous variety of parts of animals or birds and they contained the great power to ward off evil spirits. Because of the tremendous power associated with these bags, they were carefully handled by only the possessor and a few select individuals.

The medicine bag might be handed down from an older medicine man to his young apprentice or it could be made from the totemic animal belonging to a person. The number and variety of a bag's contents determined its value. Each bag had its own song or chant that was used as a prayer by its owner and each article in the bag had a similar song or prayer (Stone, 1932:13).

Even though the medicine bag was used in the practice of medicine, it was primarily a religious object. Because religious beliefs were closely intertwined with every aspect of the culture, it is very difficult to separate the spiritual and supernatural from the practical and applied concepts of Dakota life. Likewise, it is equally as difficult to separate the administration of herbal medicine from those of spiritual beliefs; both were part of the complex, interwoven network used to administer to the physical as well as the mental health needs of the Dakota.

P L A N T T H E R A P E U T I C S

The knowledge of plant therapeutics involving the use of actual and applied remedies was known by only a few people, and they were careful to guard their secret herbal potions. The "herb-root man's" livelihood and position within the tribe depended on his knowledge of the plants and he did not want others to find out what secrets he possessed for making medicines. Also, the average person was led to believe that the drugs were made from special plants that came from far off places, whereas, the medicine man actually used local plant material (Stone, 1932:32). The reasoning behind this, and I can only speculate on it, could have been to give the plant medicines a greater degree of power and help to instill in the patient the idea that he was being treated with some exotic drug.

Not all plants used by the Dakota "herb-root man" were utilized for making medicines that could be applied to a sick patient. Some plants were considered very sacred because of the supernatural and mystical powers found in them. These plants were used in special ceremonies and served a variety of religious functions. The medicine man, in most cases, possessed the power to control and use these plants that were

looked upon as being powerful "medicine." The wild gourd (CUCURBITACEAE, *Pepo foetidissima*) is one such plant.

Gilmore states:

People were afraid to dig it or handle it unauthorized. The properly constituted authorities might dig it, being careful to make the prescribed offering of tobacco to the spirit of the plant, accompanied by the proper prayers, and using extreme care not to wound the root in removing it from the earth (Gilmore, 1919:116).

The wild gourd was used in religious rituals and the Dakota medicine man was the authorized person whose duty it was to handle this plant. There were other plants that could be utilized by all members of the tribe for certain ceremonial functions. The wild plum (ROSACEAE, *Prunus americana*) is an example:

Sprouts or young growths of the wild plum are used by the Teton Dakota in making wau-ya-pi. This is an offering or prayer consisting of a wand made preferably from a wild plum sprout that has been peeled and painted. If painted, the design and color are emblematic. Near the top of the wand is fastened the offering prayer, which may take the form of anything acceptable to the higher powers. A small quantity of smoking tobacco is an article very frequently used for this purpose. No matter how small a portion of the thing offered is used, the immaterial self of the substance is in it. Such offerings are usually made for the benefit of the sick. Wau-ya-pi may be made by anyone at any place if done with appropriate ceremony, but the most efficient procedure is to prepare an altar with due ceremony and there set the wand upright with the offering fastened near the top (Gilmore, 1919:87).

Aside from the supernatural and mystical qualities of plant material, the medicinal lore of most primitive peoples is based on the "doctrine of signatures." According to this theory, many medical plants exhibit clearly visible signs which indicate their uses. The shape, color, and size of plants were matched with diseases that possessed characteristics similar to the local plant material (Weiner, 1972:4). The seneca snakeroot (POLYGALACEAE, *Polygala senega*) is a perfect example. Since the twisted roots of this plant resembled a snake, it was used to treat people suffering from the effects of a snakebite. The wild gourd (CUCURBITACEAE, *Pepo foetidissima*) was also used medicinally according to the "doctrine of signatures," simulating, it is believed, the form of male or female. As a remedy for any ailment, a portion of the root from the part corresponding in position to the affected part of the patient's body was used. For headache or other trouble in the head, the tops of the root were used. If it was going to be used for abdominal trouble a bit of the middle of the root would be used and so on (Gilmore, 1919:116-117).

PLANT MATERIAL

Collection, Preparation, and Storage

Before plant medicine was made into medicine, the roots, bark, leaves and flowering tops were collected by the Dakota

"herb-root man" during proper seasons of the year to insure that the drugs would contain their full potency and curing affects when administered. Alice Henkel, an Assistant Drug Plant Investigator for the U. S. Department of Agriculture, was an expert on the use of American plant medicines. The following information is derived from a compilation of data on the collection of plant materials which is general to native Americans and it can be applied to the Dakota (USDA, 1906, 1907, 1909, 1911, 1913).

ROOTS:

"Root drugs" were drugs that are made from the underground portion of the plant. This includes the root, root-stalk, bulb, or corm. This part of the plant was used solely for its bark, gums, or resins. The best time to obtain the roots was just before the plant started to flower. Biennial and perennial plants were collected in late autumn or early in the spring, the object being to collect them at the period when there was a cessation of growth; for besides shrinking more and weighing less if collected during the growing season, they were deficient in medicinal properties.

After the roots were dug, the following steps for processing were probably employed: 1) the roots were washed and cleaned to remove all excess dirt, 2) the roots were sliced or split to facilitate drying, and 3) the roots were spread out in thin layers on rocks or shelves to dry. The roots.

needed to be plenty of light and air for the roots, but they could not be exposed to direct sunlight. The entire process of curing took about six to eight weeks.

Sweet flag (ARACEAE, *Acorus calamus*) rootstocks were pulled from the ground in early spring or late autumn. The rhizome, which is another name for rootstock, is the horizontal, rootlike stem under or along the ground which usually sends out roots from its lower surface and leafy shoots from its upper surface. It was cleaned, dried, and left unpeeled for future use. The skunk cabbage (ARACEAE, *Symplocarpus foetidus* (L.) Nutt.) rhizomes were collected in early spring, after the appearance of the flower or after the seeds ripened in August or September. Again, the rhizome was cleaned, dried very carefully, and stored. The roots from culver's root (SCROPHALAIICCEAE, *Veronicastrum virginicum* (L.) Farwell) were collected in the fall of the second year. If the roots were kept for a long period of time, they tended to lose their acidic taste.

BARK:

As with other medical portions of plants, the best time for the collection of bark at a period when the greatest quantity of the active constituents were contained in them. This period fell in early spring, before growth took place. Late fall or even winter were considered equally as good.

To obtain the bark, in some cases, the outer corky layer

was shaved off before the bark was peeled. This process, called "rossing," was done when the outer layer was considered inert. Incisions, a few inches wide, were made and strips of bark peeled off. The bark of some branches or roots was removed by making long, lengthwise incisions which permitted the bark to readily slip off. In other cases, the bark was first loosened by pounding with a mallet.

After collecting the bark, it had to be cleaned, put in a well-dried or arid place for drying, and covered to prevent the absorption of moisture, even though bark absorbs less moisture than other parts of plants. When the bark had been thoroughly dried, it was broken or cut up into suitable lengths for making medicine.

Bark from the willow (SALICACEA, *Salix* (Tourn.) L.) was collected in the spring when the sap began to flow. Slippery elm (ULMACEAE, *Ulmus fulva* Machx.) bark was shaved off the tree or "rossed" before the inner bark was removed. The bark from the red oak (FAGACEAE, *Quercus maxima* (Marsh.) Ashe.) was collected in the spring. The bark from the root was scraped and put into a container after it dried. In spite of the different methods of collection, the above three types of bark were prepared using the same three step process previously outlined.

LEAVES:

The leaves were collected after they had achieved full

development. The leaves were picked from the trees. A common method used to obtain leaves from small plants was to cut off the entire plant and strip the leaves from the stem. The gathering of these leaves took place before the time of blooming or in the fall.

HERBS:

An herb is any seed plant whose stem withers away annually, as distinguished from a tree or shrub whose woody stem lives from year to year. In gathering herbs, only the flowering tops were collected in the spring. Flowering tops from flax (LINACEAE, *Linum usitatissimum* L.) were also collected. Information was not available on the preparation procedures for flowering tops of plants, but I would assume that they were prepared for medicine in the same way that other parts of the plant were prepared.

BERRIES AND SEEDS:

Berries were collected at the height of maturity and this was usually in late summer. Berries from the smooth sumas (ANCARDIACEAE, *Rhus glabra* L.) were gathered by the Dakota. Seeds were collected before the seed pods opened. The only plant from which seeds were obtained by the Dakota was the skunk cabbage (ARACEAE, *Symplocarpus foetidus* (L.) Nutt.).

SUMMARY:

Summing up the procedure for plant collection, we find that the Dakota gathered the roots, bark, leaves, flowering tops, berries, and seeds for use in making various drugs and medicines. The time of collection was usually when the plant portions possessed the greatest amount of medicinal properties. This was probably in early spring or late fall for roots, bark, and leaves. The flowers were collected in the spring, berries in late spring, and seeds in the spring. After having been collected the plant portions were cleaned, dried, and stored in dry places. The plant material would be left whole, crushed, cut-up, or pulverized into powder. They were then placed in containers made from the skin of animals such as otter or mink, and stored for future use.

Administration of Plant Medicine

It was this combination of supernatural and natural aids to curing that made the "herb-root man" as well as other medicine extremely important parts of the Dakota lifestyle. Until the coming of the "white" medicine, the responsibility for the physical and mental health of their people was entrusted to them. Their medical practice was a sophisticated one based not only on an understanding of emotional states of the mind, but the knowledge that common plants from the surrounding environment could be used as treatment for various illnesses that afflicted fellow tribal members.

DECOCTION:

The most common method of administering plant medicine internally was in the form of a decoction. A decoction was made by boiling the prepared plant portion a considerable period of time. Hard materials such as the roots and bark were often prepared in this way because they usually required extensive boiling to extract their medicinal properties. The boiled liquid was then cooled and administered to the patient with the aid of a spoon or small cup.

Medicinal plants used in decoction form had many uses among which were febrifuges, antibleorrhagics, expectorants, antidysenterics, vermifuges, diuretics, stimulants, tonics, emetics, and cathartics.

Febrifuges:

A febrifuge is any substance used for reducing or removing a fever. Willow bark is one example used in decoction form as a febrifuge (Weiner, 1972:59). It is interesting to note that the fresh willow bark contains salicin, which decomposes into salicylic acid in the human system. Its chemical properties are similar to those found in aspirin, which is also used as a febrifuge (Weimer, 1972:59).

Antibleorrhagic:

Bearberry is a plant that was used as an antibleorrhagic to soothe the effects of gonorrhoea. This plant contains a

glucoside Arbutin, which is largely absorbed unchanged in the body and is excreted by the kidneys. During its excretion, Arbutin exercises an antiseptic effect on the urinary mucous membrane (Grieve, 1967:89). It had its place in the London Pharmacopoeia for the first time in 1788. It is official in nearly all Pharmacopeias some of which use the name Arbutus (Grieve, 1967:90).

Expectorant:

The root of the sassafras was used in decoction form and administered as an expectorant (Androw, 1883:118). The medicine acted to stimulate or cause the expulsion of phlegm or mucus from the respiratory tract.

Antidysenteric:

One form of antidysenteric was made from red oak. The bark of the root was scraped from the tree and boiled. The liquid was then given to children and served to counteract the inflammation, abdominal pain and diarrhea associated with dysentery (Gilmore, 1919:78).

Vermifuges:

The roots of wild four-o'clock together with the roots of the coneflower were boiled to make a vermifuge to expell worms from the intestinal tract. The prescription for this purpose required the drinking of it before retiring for bed over a period of four nights, after which, at the next bowel

movement, the worms would be voided (Gilmore, 1919:78).

Diuretic:

The Dakota made a strong decoction from the berries of the smooth sumach and used it as a diuretic, a medicine to increase the flow and secretion of urine (Stone, 1932:48). The leaves of the wintergreen were also used as a diuretic (Grieve, 1967:639). Oil of wintergreen is still listed as official in the U. S. Pharmacopoeia as a diuretic (Weimer, 1972:36).

Stimulant:

Stimulants are substances given to people to increase various functional actions of the human system. Horse mint was made into a tea by the Dakota and administered as a cardiac stimulant (Weimer, 1972:69). The word tea refers to a boiled or steeped liquid preparation of various plant parts (Weimer, 1972:5).

Tonic:

A decoction was made from the root of the gentian and it was used as a tonic either alone or with a combination of other different medicinal plants (Gilmore, 1919:109). A tonic is a medicine administered to produce or tending to produce good muscular tone or tension in the body.

Emetic:

A medicine or substance that induces vomiting is an emetic. The Dakota administered large doses of pleurisy root or butterfly-weed to bring about the desired effect. It was listed in the U. S. Formulary from 1916 to 1936 (Weimer, 1972:28).

Cathartic:

The roots of the spurge were used internally as a cathartic (Williamson, 1940:803). A cathartic is an agent which promotes evacuation from the bowels by their action on the ailimentary canal. Depending on the amount of liquid administered, it could have been used as either a laxative or purgative. Laxatives are agents which are mild or feeble in their action upon the intestinal canal, while purgatives induce profuse evacuation of the bowels. Purgatives were probably used for stubborn conditions in adults.

STEEPED OR INFUSED MEDICINE:

Some plants were steeped or infused to produce a liquid medicine. Unlike decoctions, the plants were placed in water to soak and they were not boiled to extract the soluble elements or active medicinal properties. Wild mint was steeped or infused to obtain a carminative which is an agent used for expelling gas from the stomach and intestines. The liquid was sweetened with sugar before it was administered

to the patient (Gilmore, 1919:112).

Demulcent:

Whether the plant parts were boiled in decoction or steeped, some liquid could have been used as a demulcent. Demulcents are substances, usually of a mucilaginous and oily nature, that are taken internally to soothe or protect the inflamed or irritated mucus surfaces. The Dakota obtained the tops and rhizomes from flax to make a very effective demulcent infusion (Stone, 1932:46). The linseed oil, present in the plant, contains a lot of mucilage (gummy material) for coating and soothing sore surfaces.

POULTICE:

A poultice is a hot, soft, moist mass applied to a sore part of the body or wound. The warm mass, in the form of a paste or cream, was used to soothe the pain and draw the blood or pus from the wound. Usually the leaves of a plant were chewed in the mouth or pulverized between two stones; the hot mass was then applied directly over the afflicted area.

Water-plantain was employed by the Dakota in the form of a poultice to relieve the effects of snakebites, poison ivy, and poison sumach (Andros, 1883:118). The flowers of the prairie-lily were pulverized or chewed and applied as an antidote to relieve the bites of a certain small poison-

ous spider (Gilmore, 1919:71). It is said to relieve the inflammation and swelling immediately. Scarlet mallow was chewed and applied as a poultice to inflamed sores and wounds. It seems the whole plant was used in this manner as a cooling and healing salve (Gilmore, 1919:103).

DIRECT APPLICATION:

The direct application of plant material to a sore spot on the body was a fast and easy way to administer medication to a suffering individual. This method of applying medicine differs from a poultice because the direct application of plant material does not involve extensive preparation of the plants before they are applied. They were simply obtained and placed on the wound with no preparation.

The puffball offers an excellent example of a plant used without much prior preparation. It was gathered and kept for use as a styptic for any wounds, especially for application to the umbilicus of a newborn baby (Gilmore, 1919:62). A styptic is a substance that tends to stop bleeding.

DIRECT INHALATION:

Another method of obtaining the soothing effects from plant medicines involved the direct inhalation of smoke. The sick person would sit by the smoldering twigs and place a blanket over the twigs and himself so he could achieve the

full effects of the smoke (Gilmore, 1919:63-64). This treatment was commonly used to relieve the discomforts from head colds.

The smoke from the burning twigs of red cedar were sometimes inhaled for head colds (Gilmore, 1919:63-64). Purple poppy-mallow roots were dried and comminuted or then burnt so the smoke could be inhaled for head colds (Gilmore, 1919:103).

RECTAL INJECTION:

The last method, used by the Dakota to apply plant medicine, made use of rectal injections or enemas for purging. Prior to contact with the Europeans, an animal bladder was used for the bulb and a hollow cylindrical bone from a prairie chicken was used for the tube. This instrument was supposedly very useful in administering an enema.

The bark from the roots of the kentucky coffee-tree was pulverized and mixed with water. This mixture was then used in a rectal injection for severe cases of constipation, for which it was said to be an infallible remedy (Gilmore, 1919:89-90).

DOSAGE OF MEDICINE:

The "herb-root man," like the modern doctor, knew the dangers of incorrectly administering certain plants. For example, the spurge could produce serious side effects if

used incorrectly. It was therefore given in small quantities in dry form. A piece of root would be eaten and the patient would be forbidden to eat or drink anything (Williamson, 1940:803). Decoctions were often only given once throughout the illness, the dosage being approximately equal to about one pint of the medicinal tea (Weimer, 1972:5). Generally, only a single plant was used, but among some Indian tribes as many as four plants were combined in a single medication (Whitebread, 1925:19).

P A R T I I I

A P P E N D I X

TAXONOMIC LIST OF PLANTS USED BY THE
DAKOTA INDIANS FOR MEDICINE

GLOSSARY OF PLANT NAMES

TABLES OF DRUG TREATMENTS

TAXONOMIC LIST OF PLANTS USED BY THE
DAKOTA INDIANS FOR MEDICINE

LYCOPERDACEAE

Lycoperdon bovista Pers. Puffball
Hokshi chekpa (Dakota, "baby's navel" (hokshi, baby;
chekpa, navel)).

The prairie mushrooms, commonly designated puffballs, were gathered and kept for use as a styptic for any wounds, especially for application to the umbilicus of newborn infants (Gilmore, 1919:62).

These puffballs are white in color. They grow to about the size of a turnip and they grow among the grass in pastures and meadows (Grieve, 1967:337).

PINACEAE

<i>Pinus</i> (Tourn.) L.	Hard pine, pitch pine
<i>Strobus</i> Opiz.	White pine
<i>Alpinus</i> Necker.	Cembra pine
<i>Larix</i> (Tourn.) Adans.	Larch, tamarack
<i>Abies</i> (Tourn.) Hill.	Fir, balsam
<i>Tsuga</i> (Endl.) Carr.	Hemlock
<i>Picea</i> Link.	Spruce

The pines and their relatives are trees with resinous wood clothed with stiff needle-like or scale-like evergreen leaves. The genus *Pinus* is known by its long needle-like angle leaves. They are found in all types of terrain

(Rogers, 1902:182).

Eastern Dakota tribes used the cambium or layer of tissue between the bark and wood for making expectorants to help expel phlegm or mucus from the respiratory tract (Andros, 1883:118). It was also used to treat venereal diseases such as gonorrhoea. All varieties of the pine family were utilized in the form of decoction (Stone, 1932:64).

JUNIPERACEAE

Juniperus virginiana L.

Red cedar

Hante or hante sha; sha, "red."

The red cedar or savin is usually a small tree, narrow and pyramidal in form. Its leaves are close and scale-like or spreading and needle-like. The tree grows sparsely in sterile soil that is either wet or dry (Rogers, 1902:189-90).

The fruits are known as hante tika, "cedar eggs," by the Dakota. The fruits and leaves were boiled together and the decoction was used internally for coughs. The smoke from the burning twigs was sometimes inhaled for head colds. The person would sit by the smoldering twigs and place a blanket over the twigs and himself so he could achieve the full effects of the cedar. In some cases it was administered when someone was inflicted with either smallpox or cholera. Horses were also given a decoction of red cedar as a remedy for colds (Gilmore, 1919:63-64).

TYPHACEAE

Typha latifolia L. Cattail
Wihuta-hu, wihuta, "the bottom of a tipi," hu in the
Dakota language signifies "plant" or "herb, shrub, or
tree."

The cattail is a stout perennial that is found in most marshes and shallow lakes. It served as a dressing for burns or scalds. The down was applied to the injured or burned area (Gilmore, 1919:64).

ALISMACEAE

Alisma plantage Bigel G. B. Mad-dog weed, water-plantain

It is a water plant that grows freely around the edges of lakes, streams, and in watery ditches. The roots are fibrous and a stem from one to three feet rises directly from it. The smooth large leaves taper to a point and all spring from the root (Rydberg, 1917:27).

The Dakota quite successfully used this plant in the form of a poultice. Chewed leaves were applied to snakebites and to areas infected with poison ivy or poison sumach (Andros, 1883:118).

ARACEAE

Acorus calamus L. Sweet flag, calamus root
Si kpe-ta-wote, "muskrat food," si kpe, "muskrat," wote,
"food."

Sweet flag is a vigorous, reed-like, aquatic plant

flourishing in ditches, by the edge of lakes and streams, and in marshy areas. It is generally associated with reeds, bullrushes, and bur-reeds. The leaves are erect, smooth-shaped and all parts of the plant have a peculiar, agreeable fragrance (Grieve, 1967:726).

All the Dakota held this plant in very high esteem. It was used as a carminative, a decoction was consumed for fever, and the rootstock was chewed as a cough remedy and as a remedy for toothache. For colic, an infusion of the pounded rootstock was drunk. As a remedy for colds the rootstock was chewed or a decoction was drunk or it was used in the smoke treatment (Gilmore, 1919:70).

A fluid extract from this plant is an official preparation in the United States and some other Pharmacopoeias (Grieve, 1967:727).

Symplocarpus foetidus (L.) Nutt.

Skunk cabbage

This plant grows in abundance in moist places in the prairie region. The large leaves are borne on thick stems. Hood-shaped, purplish flowers appear before the leaves, in February or March. Its presence can easily be known by the foul-smelling odor it emits (Weiner, 1972:63).

The seeds and roots were used in decoction as an expectorant and to relieve the discomforts from respiratory infections or asthma (Andros, 1883:118).

The roots and rhizome were official in the U. S. Pharma-

copoeia from 1880 to 1882 (Weiner, 1972:63).

ALLIACEAE

Allium (Tourn.) L.

Wild Onion, garlic

All species of this perennial bulbous plant were used by the Dakota. Growing predominately on dry hills in the prairie, the bulbs were collected, crushed, and applied to insect bites and stings to relieve the pain (Weiner, 1972:74).

The European species (*Allium sativum*) was official in the pharmacopoeias of the United States and Britain when it was employed to rid the respiratory tract of phlegm, to rid the bowels of parasites, and to aid digestion (Weiner, 1972:74).

LILIACEAE

Lilium umbellatum Pursh.

Prairie-lily

The prairie-lily is a tall leafy plant with thick scaly bulbs and large funnel formed flowers. It grows in dry prairie regions, in sandhills, open woods, and clearings (Rydberg, 1917:163).

The flowers of this plant, pulverized or chewed, were applied by the Dakota as an antidote for the bites of a certain small poisonous spider. It is said to relieve the inflammation and swelling immediately (Gilmore, 1919:71).

SALICACEAE

Populus tremuloides Michx.

Aspen

Aspen, like willows, are found in moist places. The bark is pale green or whitish and the leaves are broadly ovate and finely toothed (Rydberg, 1917:186).

Popular bark is similar to that of the willow and it contains salicin, which is thought to decompose into an aspirin-like acid (Weiner, 1972:42). It is unclear as to whether the Dakota knew about these properties, but they did use the leaves and bark in decoction for fevers.

Salix (Tourn.) L.

Willow

The willows are trees or shrubs that are found along marshes and watercourses. They grow rapidly producing soft, weak, pale-colored wood. The leaves are thin, narrow, and they possess short leaf stocks (Rogers, 1902:142).

A decoction was used as a febrifuge to reduce fever. The fresh bark contains salicin, which probably decomposes into salicylic acid in the human system. Its chemical properties are similar to those found in aspirin, which is also used as a febrifuge (Weiner, 1972:59).

The glucoside salicin as obtained from various species of willow, was official in the U. S. Pharmacopoeia from 1882 through 1926. It has since been superceded by aspirin and other synthetic drugs (Weiner, 1972:60).

CORYLACEAE

Corylus americana Walt.

American hazelnut

The hazelnut is found in the thickets and light woods. It is a shrub or tree with branched stems and smooth bark. The leaves are oval shaped (Scoggan, 1957:240).

The Dakota used the inner bark as an antiluetic, in powder form and dusted it on sores to relieve the suffering from the disease (Stone, 1932:63).

FAGACEAE

Quercus lubra L.

Red oak

Uta-hu, "oak tree."

The red oak is a large tree with hard, deeply furrowed bark. The leaves are oval shaped, with rounded sinuses and sharp bristle-tipped lobes (Fernald, 1950:546).

The bark of the root, from any species of oak, was scraped from the tree and boiled to make a decoction. This liquid was then given to children and served as an antidysenteric for bowel trouble (Gilmore, 1919:75).

ULMACEAE

Ulmus fulva Michx.

Slippery elm, Red elm

Pe tututupa, or in Teton dialect, pe tutu-tu pa

Slippery elm is found in rich woods or lowland areas, especially along streams (Fernald, 1950:551). The bark is rough, gray and fragrant. The leaves are large, harsh, and

fragrant.

The sweet, mucilaginous inner bark was gathered in the spring by the Dakota to make an emollient. This bark was made into a tea and used to coat the inflamed lining of a sore throat or the bark could be applied directly to wounds, fractures, or dislocations. The mucilage was said to have a soothing effect on the surface of sore tissues (Grieve, 1931:284).

CANNABINACEAE

Humulus americana Nutt.

Common hop

Cha iyawe, but this only means twining, iyawe, on a tree, cha. Since its European use in connection with yeast has become known to them they call it wahpe onapohye, wahpe, "leaves" onapohe, "to puff up."

The common hop is a perennial leave-like twining vine (Rydberg, 1917:208). It is found in the thickets and light woods. The Teton Dakota steeped the fruits to make a drink to allay fevers and intestinal pains (Gilmore, 1919:77).

The glandular hairs of the fruiting body contain lupulin, which is a sedative and hypnotic drug. The effects of lupulin, which was recognized by the U. S. Pharmacopoeia from 1831 through 1916, soothed the pain of digestive or intestinal disorders (Weiner, 1972:120).

A part of the root down three or four feet in the ground was called maka skithe, "sweet medicine"; this was chewed and applied to wounds, either alone or in combination with the

root of *Physalis lanceolata*, "the crooked medicine," and that of *Anemone canadensis*, "the little buffalo medicine" (Gilmore, 1919:77).

POLYGONACEAE

Rumex crispus L.
Shiakipi

Yellow dock, sour dock

Yellow dock is usually found in moist ground and waste areas (Grieve, 1931:259). It is a perennial plant with thick roots and leaves that alternate, either wavy or without divisions, lobes or teeth (Rydberg, 1917:230,232).

Among the Teton Dakota, the green leaves crushed, were bound as a poultice and put on boils to draw out the suppuration (Weiner, 1972:25). A poultice was also used on snakebites to bring about a discharge of foul blood, etc. (Stone, 1932:70). The roots of this plant were official in the U. S. Pharmacopoeia from 1863 to 1905 (Weiner, 1972:25).

In all the sources pertaining to Dakota medicine, this was the only plant present in all of them and its uses coincided with each other.

NYCTAGINACEAE

Mirabilis nyctaginea (Michx.) Mach.
Poipie

Wild four-o'clock

This plant occupies dry areas on the prairie and regions that are quite rocky (Scoggan, 1957:268). It is a perennial

plant with ovate, rounded leaves. The floral envelopes of the flower are clustered (Fernald, 1950:606).

The root was boiled by the Teton Dakota to make a decoction to drink in cases of fever. Together with the roots of *Echinacea angustifolia*, it was boiled to make a vermifuge. The prescription for this purpose required the drinking of it before retiring for bed over a period of four nights, after which, at the next bowel movement, the worms would be voided. Fast Horse, an Oglala Dakota, said, "If one has a big worm (tape worm) it comes away, too" (Gilmore, 1919:78).

Roots of *Mirabilis* and *Echinacea* were also boiled together to make a remedy for swellings of the arms and legs. When applied, this medicine was always rubbed downward on the affected parts to reduce the swelling (Gilmore, 1919:78).

RANUNCULACEAE

Cimicifuga racemosa Nutt.

Squaw root, black cohosh

Black cohosh grows best in moist areas. It is a tall herbaceous plant with slender candlelike flowers that rise in clusters of from one to three feet in length (Weiner, 1972:89).

A decoction was made from the roots and rhizomes. This medicine acted as a sedative for rheumatism and it also promoted menstruation. Because it was used to treat "women's

problems," it was known as squawroot (Weiner, 1972:89).

It was official drug in the U. S. Pharmacopoeia between 1820 and 1936 where it was listed as a sedative, a medication for rheumatism, and a medication to promote menstruation (Weiner, 1972:897).

Pulsatilla patens (L.) Mill. Pasque flower, twin flower
Hokshi-chekpa wahcha, "twin flower."

This plant is perennial with a thick taproot and a short thickened tumblelike stem. It grows on the prairies, plains, and hillsides. The flowers are colored blue, purple, or white (Fernald, 1950:663).

In cases of rheumatism the fresh leaves were crushed and applied on the surface of the affected area. It has been noted that this plant acts as a counter-irritant and will cause a blister if left on the skin long enough (Gilmore, 1919:82).

LAURACEAE

Sassafras variifolium (Salisb.) Kuntze. Sassafras
Ague tree

The tree stands to forty feet high and it has many slender branches and a smooth orange-brown bark. The leaves are broadly oval and the flowers are small and greenish-yellow in color. It grows in woody areas (Grieve, 1967:715).

The root is used in the form of decoction and administered as an expectorant (Andros, 1883:118). The root was also used

in decoction for respiratory affections.

PAPAVERACEAE

Sanguinaria canadensis L.

Puccoon, bloodroot

A perennial plant that grows in the rich, open woodlands of the Mississippi, it has waxy white blossoms that are among the first to appear in the spring (Weiner, 1972:114).

Among the Dakota it was a favorite rheumatism remedy. The rhizome was collected in the fall after the leaves had withered, and it was stored in a dry place because moisture encouraged deterioration (Weiner, 1972:114).

PLATANACEAE

Platanus occidentalis L.

Plane-tree

In the rich soil in the woods can be found the plane-tree. It is a tree with watery sap and bark that peels off in layers (Fernald, 1950:753). The leaves are broad and wide.

A decoction was made from the bark to serve as a medicine for dysentery. Its taste was said to resemble chocolate (Andros, 1883:118).

ROSACEAE

Prunus americana Marsh.

Wild plum

Ka te, "plum," ka te-hu, "plum tree."

Sprouts or young growths of the wild plum are used by

the Teton Dakota in making wau ya pi. This is an offering or form of prayer, consisting of a wand, made preferably from a wild plum sprout peeled and painted. If painted, the design and color are emblematic. Near the top of the wand is fastened the offering prayer, which may take the form of anything acceptable to the higher powers. A small quantity of smoking tobacco is an article very frequently used for this purpose. No matter how small a portion of the thing offered is used, the immaterial self of the substance is in it. Such offerings are usually made for the benefit of the sick. Wau ya pi may be made by anyone at any place if done with appropriate ceremony, but the most efficient procedure is to prepare an alter with due ceremony and there set the wand upright with the offering fastened near the top (Gilmore, 1919:87).

The wild plum serves no practical or applied medicinal use, but it is very important in the empirical sense. Its supernatural powers can have profound effects on the condition of a patient's mental state. Thus his faith and strong convictions can aid and help to cure his ailment.

Rubus occidentalis L.

Black raspberry, blackberry

The black raspberry is a perennial plant with prickly or bristly stems or a leaf-like plant in texture with rootstocks or creeping stems and devoid of spines and prickles. It grows in the thickets, rock outcrops, and clearings (Scoggan,

1957:352).

The Dakota boiled the root bark of blackberry for dysentery. The U. S. Pharmacopoeia listed the fruit of this plant from 1882 to 1905 as a flavoring (Weiner, 1972:49).

LEGUMINOSAE

Gymnocladus dioica (L.) Koch.
Wahnahna

Kentucky coffee-tree

The kentuck coffee-tree is a pod bearing tree that has thick, clumsy twigs and stout, stiff branches. The leaves are twice-compounded and they are usually large. The flowers are small, greenish-yellow and flat (Rogers, 1902:180).

The bark of the roots, after it was dried, was pulverized and mixed with water. This mixture was then used as a rectal injection in cases of severe constipation, for which it was said to be an infallible remedy. Prior to contact with the Europeans, an animal bladder was used for the bulb and a hollow cylindrical bone from a prairie chicken was used for the tube. This instrument was very useful in administering an enema (Gilmore, 1919:89-90).

FABACEAE

Astragalus canadensis L.

Loco-weed, milk vetch

The loco-weed can be either a perennial or annual plant. It has no woody stems above the ground and the leaves are not opposite each other; the leaflets are arranged on each side

of the leaf-stalk. The flowers are elongated in a cluster with the stalk of a single flower in a flower-cluster. The plant is found on river banks and in rich thickets (Fernall, 1950:911).

A decoction of the root was used among the Teton as a febrifuge for children (Gilmore, 1919:91).

Glycyrrhiza lepidota (Nutt.) Pursh. Wild licorice
Wi-nawizi, "jealous woman," wi, "woman," nawizi, "jealous."

Wild licorice can be found on the prairie, in the thickets, and in small clearings in the woods (Scoggan, 1957:372). It is a tall leafy perennial plant. The roots are thick and sweet and the leaves are compound with the leaflets arranged on each side of the leaf-stalk (Rydberg, 1917:523).

Among the Teton Dakota a poultice for sore backs of horses was made by chewing the leaves of this plant and applying them to the sore area. For toothache, the sufferer chewed the root and held it in his mouth. The Indians said, "it tasted strong at first, but after a while it became sweet." The leaves, after being steeped, were applied to the ears for earaches. A decoction of the root was also used as a remedy for fever in children (Gilmore, 1919:92).

Pasoslea aurea (Nutt.) Britton
Pezhuta, "bitter medicine."

This plant has few stems, oblong or obovate leaves and it grows on the plains and hills.

The Oglala Dakota made a decoction of the leaves and administered it for colic and dysentery in children (Gilmore, 1919:93).

Psoralea tenuiflorum (Pursh.) Rydb.
Tichanicha-hu

The stems are erect, diffusely branched, and marked with slender, longitudinal grooves and stiff hairs. The leaves are long and the flower is a light blue (Rydberg, 1917:481).

Among the Teton Dakota the root of this plant, with two others, the names of which I do not know, were boiled together to make a medicine to be taken for consumption or tuberculosis of the lungs (Gilmore, 1919:93).

LINACEAE

Linum usitatissimum L.

Flax

Flax grows in open fields and is a graceful plant with turquoise blossoms. It is tall and erect, an annual plant that grows from one to two feet high. The stems are quite smooth and the leaves are linear and without a stalk (Grieve, 1967:318).

An infusion made from the tops and rhizome of this plant was given to people suffering from respiratory infections (Stone, 1932:46).

The linseed oil, present in the plant, contains a lot of mucilage so it makes a very effective demulcent infusion.

The dried rhizome was listed in the U. S. Pharmacopoeia from 1820 to 1916 as an astringent.

POLYGALACEAE

Polygala senega L.

Seneca snakeroot

This perennial herb, about a foot high, grows in the woods and in dry rocky soil. The leaves are small and small white flowers are crowded onto a narrow terminal spike from one to two inches long (Fernald, 1950:955).

The roots were chewed and applied as a poultice directly on the bite of a snake (Andros, 1883:118). Used in decoction, it was administered for gonorrhoea (Stone, 1932:64). Seneca snakeroot contains senegin, which is a saponinlike compound and polygalic acid. It was official in the U. S. Pharmacopoeia from 1920 to 1936 and was used as a stimulant and expectorant (Weiner, 1972:125).

EUPHORBIACEAE

Euphorbia L.

Spurge

The spurge is a leafless plant that resemble a cactus in appearance. It grows to about four feet and has many branches. The flowers are simple, small and bright yellow. It can be found in dry places on the prairie (Grieve, 1967:764).

Roots of the plant were used internally as a cathartic

or laxative (Williamson, 1940:803). At the present time internal use of the drug has been abandoned, owing to the severity of its action on the organs of the intestinal tract (Grieve, 1967:764).

ANACARDIACEAE

Rhus glabra L.

Smooth sumach

Growing in dry sandy soil, the sumach has flowers that are greenish-white and the fruit grows in clusters of small berries. It is a shrub from six to fifteen feet high with straggling branches and pale-gray bark, that is sometimes slightly red (Fernald, 1950:976-77).

The Dakota made a strong decoction from the berries and used it as a diuretic to increase the flow of urine. The leaves in decoction were given as an antibleorrhagic for gonorrhoea and other blenorrhagic disorders (Stone, 1932:64).

RHAMNACEAE

Ceanothus ovatus Desf.

Redroot

Redroot is found in areas that are sandy and rocky. It is a low shrub with upright slender branches and leaves that are oblong or oval in shape (Fernald, 1950:994).

A lotion is made from the whole plant and it is applied locally for the treatment of gonorrhoea (Stone, 1932:64).

MALVACEAE

Callirrhoe involucrata (T. & G.) A. Gray Purple poppy-mallow

The purple poppy-mallow is a perennial that grows in dry soil. It has a turnip-shaped thick root and the stem trails on the ground. The leaves are rounded and the flowers are crimson or purple (Rydberg, 1917:558).

Short, a half brule, half Oglala, called this plant pezhuta na tiazilia, "smoke treatment medicine," pezhuta, "medicine," na tiazilia having reference to its use to produce smoke for medicinal use. Fast Horse, an Oglala, called it pezhuta, "medicine."

Among the Teton Dakota this plant was utilized in the smoke treatment. The dried root having been comminuted and fired, the smoke was inhaled for head colds and aching parts of the body were bathed in it. The root was also boiled and the decoction drunk for internal pains (Gilmore, 1919:103).

Sphaeralcea coccineum (Nutt.) Rybd. Scarlet mallow
Heyoka ta pezhuta, heyoka, "a dramatic order among the Dakota; ta, the genitive sign; pezhuta, "medicine."

Found in dry places on the plains, the plant is a perennial with several stems. The leaf-blades are three-cleft to the base and the lateral divisions are deeply two-parted. The flowers are brick red (Rydberg, 1917:561).

The scarlet mallow possesses to a large degree the mucilaginous property that is in some degree common to all

species of this family. On account of this property, the Dakota heyoka utilized it by chewing it into a paste, which was rubbed over the hands and arms, thus making them immune to the effect of scalding water so that to the mystification and wonderment of beholders, these men were able to take up pieces of hot meat out of a kettle over the fire.

The plant was chewed and applied as a poultice to inflamed sores and wounds as a cooling and healing salve (Gilmore, 1919:103).

LOASACEAE

Nuttallia huda (Pursh) Greene.

Mentzelia decapetala (Pursh.) Urban & Gilg

Sand lily

Toka hupepe

This biennial has a high leafy and very rough stalk. The lower leaves are wider than they are broad and the flowers are yellow or straw colored. Its habitat is on the plains and foothills (Rydberg, 1917:570,572).

The stems, after being stripped of their leaves, were pounded to extract the gummy yellow juice. The juice was applied externally as a remedy for fever after it had been boiled and strained (Gilmore, 1919:103).

CACTACEAE

Opuntia humifusa Raf.

Prickly pear, cactus

U chela

Found in sandy soil, the prickly pear has a loosely

spreading stem with oblong sections located between the nodes. It has slender reddish-brown thistles that are devoid of spines and sulphur yellow flowers (Fernald, 1950: 1043).

On account of the mucilaginous property, the stems were peeled and bound to wounds as a dressing (Gilmore, 1919:104).

ARALIACEAE

Aralia hispida Vent. Dwarf elder, sarsaparilla

A perennial plant, it has a stem that is one to two feet high. The lower part is woody, shrubby and beset with sharp bristles. The upper part is leafy and branching with leaves that are rather oblong (Fernald, 1950:1077).

Used in decoction, the plant parts were given as a diuretic (Stone, 1932:48).

CORNACEAE

Svida alternifolia (L. F.) Dogwood

Growing on hillsides, the dogwood is a small shrub or tree with greenish branches striped with white. The leaf blades are oval, rounded at the base, and tapered on the other end (Fernald, 1950:1108).

A decoction of bark was used internally and locally to treat gonorrhoea (Stone, 1932:64).

PYROLACEAE

Chimaphila maculate (L.) Pursh.

Prince's pine
Spotted wintergreen

Prince's pine is a small evergreen perennial with a creeping yellow rhizome. The leaves are a deep olive-green color with greenish-white veins. The flowers are a light purple (Grieve, 1967:639).

The stem and leaves were used to make a decoction that served as a diuretic with an antiseptic influence on the urine (Grieve, 1967:639).

ERICACEAE

Arctostaphylos uva-ursi

Bearberry

Bearberry is a small shrub with much branched irregular stems and evergreen leaves. The waxy-looking flowers are in small closely-crowded, drooping clusters. They vary in color from reddish white to white with a red lip. The plant is found throughout the open prairies and grasslands (Grieve, 1967:89).

The usual form of administration was in the form of decoction, which produced a soothing effect in gonorrhoea. It contains a glucoside Arbutin, which is largely absorbed unchanged and is excreted by the kidneys. During its excretion, Arbutin exercises an antiseptic effect on the urinary mucous membrane (Grieve, 1967:89).

It had its place in the London Pharmacopoeia for the first time in 1788. It is official in nearly all Pharmacopoeias, some of which use the name *Arbutus* (Grieve, 1967: 90).

Gaultheria procumbens L.

Wintergreen

Occurring in cool, damp places, under large trees and shrubs, this small shrubby creeping evergreen grows to about only five or six inches. It is found in large patches on the sandy plains. The stem bears alternate leaves, that are shining, dark green above and thick and leathery to the touch. The flowers are white and waxy looking (Weiner, 1972: 36-37).

The leaves yield an oil called Methyl salicylate, which is closely related to acetylsalicylic acid found in aspirin. The oil was used as a diuretic and stimulant. Wintergreen leaves were official in the U. S. Pharmacopoeia from 1820 to 1894 (Weiner, 1972:36-37).

OLEACEAE

Fraxinus americana L.

White ash

White ash is quite a large tree and it grows in rich moist soil. The leaves are downy with seven leaflets on each stalk and the bark is light gray (Rogers, 1902:162).

The buds, taken in decoction, were used to relieve the pain and discomfort from snakebites (Stone, 1932:70). Dr.

Millspaugh quoting Dr. Porcher, who quoted "some unmentioned author" wrote in 1887:

The leaves of this plant are said to be so highly offensive to the rattlesnake, that the formidable reptile is never found on land where it grows; and it is the practice of hunters and others, having occasion to traverse the woods in summer months, to stuff their boots or shoes with white ash leaves, as a preventative of the bite of the rattlesnake.

It was included in the National Formulary from 1916 to 1926 for its tonic and astringent properties (Weiner, 1972: 109).

GENTIANACEAE

Dasystephana puberula (Michx.) Small. Gentian
Pezhuta-zi, pezhuta, "medicine," zi, "yellow"; so-called because of the color of its roots.

The gentian has an erect stem that is quite rough. The leaves are oblong in shape, pointed and rather stiff; they diminish in size as they grow up from the stem. The large flowers are in whorls in the axils of the upper-most pairs of leaves, forming pale blue flowers. It grows in low areas (Weiner, 1972:20).

The Dakota made a decoction from the root and used it as a tonic either alone or with a combination of other different medicinal plants (Gilmore, 1919:109). Unlike most of their medicines, this plant was one of the few that was mixed with others to make a herbal remedy.

ASCLEPIADACEAE

Asclepias tuberosa L.

Pleurisy root, butterfly-weed

Growing on the open prairie in dry sandy soil, it is a handsome plant that is a fleshy-rooted perennial. The height is about one foot and it bears corymbs of deep yellow and orange flowers (Weiner, 1972:27).

A decoction from the plant, administered in large doses, acted as an emetic (Stone, 1932:36). It also was chewed and applied on wounds (Stone, 1932:81). It was listed in the U. S. Pharmacopoeia from 1820 to 1905 and in the U. S. Formulary from 1916 to 1936 (Weiner, 1972:27).

VERBENACEAE

Verbena hastata L.

Wild verbena

Cha halogu pezhuta

The verbena grows in valleys, thickets, and waste areas and it is a perennial bearing very small pale-blue purplish flowers. Its leaves are opposite and cut into toothed lobes (Rydberg, 1917:739-40).

The whole plant was used in decoction and it was given for certain gastric disorders. Wild verbena was very popular for the common stomach ache (Stone, 1932:39).

LAMIACEAE

Hedeoma hispida Pursh.

Pennyroyal

Muka chiaka

Pennyroyal is an annual plant that grows in sandy soil. The stem is quite short with stiff bristly hairs. Its leaves are long and narrow and it has a few pale blue flowers (Fernald, 1950:1239).

An infusion of the leaves was used as a remedy for colds. It was also used as a flavor and tonic appetizer in diets for the sick (Gilmore, 1919:112). The dried leaves were listed in the U. S. Pharmacopoeia from 1831 to 1916 (Weiner, 1972:64).

Mentha canadensis L.
Chiaka

Wild mint

The Dakota found wild mint growing in wet meadows and among bushes. It has a high curved stem with many hairs. Wild mint is easily distinguished from other mints by its whorled flowers that are borne in the axils of the leaves (Weiner, 1972:135).

Wild mint was used as a carminative. It was steeped in water for the patient to drink and then sweetened with sugar (Gilmore, 1919:112).

Monarda fistulosa L. Oswego, horse mint
Hekaka ta pezhuta, "elk medicine," hekaka, "elk," ta
genitive sign, pezhuta, "medicine," or Hehaka ta wote,
"food of the elk," wote, "food."

Found in the thickets and dry hills, horse mint has a slender stem, usually branched and two to three feet high. The leaves are thin and oval shaped. Its flowers are lilac

to pinkish in color and they have hairy tufts on the upper lip (Fernald, 1950:1237).

The Teton Dakota boiled the flowers and leaves together to make a medicine which was consumed to cure abdominal pains (Gilmore, 1919:111). Thymol, which is extracted from the leaves and flowering tops, is a volatile oil used as a stimulant to remove gases from the digestive tract.

Monarda punctata L.

Horse mint

This species of horse mint grows in sandy soil. It is a perennial that has very fine hairs covering the stem. The leaf-blades are ovate with serrated edges. The flowers form dense whorls and they have large yellow corolla; the upper lip is spotted with purple (Fernald, 1950:1238).

A tea was made from the plant and administered as a stimulant (Andros, 1883:118). Monarda oil and thymol are obtained from the leaves. The leaves and flowering tops were official in the U. S. Pharmacopoeia from 1820 to 1882 (Weiner, 1972:20).

SCROPHALAICEAE

Veronicastrum virginicum (L.) Farwell
Leptandra virginica (Nutt.)

Black root
Culvers root

This is a tall perennial with a smooth downy stem that stands between three and four feet high. The leaves are pointed, minutely serrate and they stand on very short foot-

stalks. The flowers are deep purple and this plant is found in rich soil in the woods (Grieve, 1967:111).

It seems the Dakota used this plant for treating snake-bites (Andros, 1883:118). I am not sure how they utilized it, but I would guess it was either made into a poultice or administered internally to allay the effects of the bite.

CUCURBITACEAE

Pepo foetidissima (H.B.K.) Britton Wild gourd
Wagama pezhuta, "pumpkin medicine," wagama, "pumpkin,"
pezhuta, "medicine."

This is one of the plants considered to possess special mystic properties. People were afraid to dig it or handle it unauthorized. The properly constituted authorities might dig it, being careful to make the prescribed offering of tobacco to the spirit of the plant, accompanied by the proper prayers, and using extreme care not to wound the root in removing it from the earth. This plant is one which is held in very high esteem by all tribes as a medicinal agent. As its range is restricted to the drier parts of the Great Plains, it was difficult to obtain when the Indians were put on the reservations.

The root is used medicinally according to the doctrine of signatures, simulating, it is believed, the form of the male or female. As a remedy for any ailment, a portion of the root from the part corresponding in position to the affected

part of the patient's body was used. For headache or other trouble in the head, the tops of the root were used. If it was going to be used for abdominal trouble a bit of the middle of the root would be used and so on (Gilmore, 1919: 116-117).

CAPRIFOLIACEAE

Sambucus canadensis L. Elder

This branching shrub grows in low moist ground. Its trunk is covered with a yellowish gray bark and the small, white flowers appear from May to June (Weiner, 1972:39).

The bark was made into a poultice and then applied to wounds, fractures, dislocations, etc. (Stone, 1932:81).

Symphoricarpos symphoricarpos (L.) MacGill Coral-berry
Buck brush
Zuzecha-ta-wote, sapaapa, "black," zazecha, "snake," wote,
"food," ta the genitive sign, sapaapa, reduplication of
sapa, "black."

Coral-berry is a shrub with slender, purplish colored branches. The leaves are rounded, broadly ovate and rather thick firm. The flowers are white and pink. It can be found on hillsides, in open clearings, and along river banks (Rydberg, 1917:813).

The leaves were boiled to make a drink for weak or inflamed eyes (Gilmore, 1919:116).

Viburnum prunifolium L. Cranberry tree

This perennial plant grows on the prairies and along river banks. The stem is high and covered with densely matted woolly hairs. Its leaves are linear and often toothed (Rydberg, 1917:970).

The plant was taken for stomach troubles in decoction form (Gilmore, 1919:135).

Boebera papposa (Vent.) Rydb. Fetid marigold
Pizpiza-ta-wote, "prairie dog food," pizpiza, "prairie dog," wote, "food," ta genitive sign.

This plant has a stem that is diffusely branched and very leafy. The leaves are divided into linear lobes and the disk-flowers are yellow or orange. Its habitat is by roadsides and waste places (Fernald, 1950:1514).

The Teton Dakota say that this plant is always found in prairie-dog towns and that the animals eat it. A decoction of fetid marigold together with *Gutierrezia* was used as a medicine for coughs in horses (Gilmore, 1919:133).

Echinacea angustifolia D.C. Narrow-leaved purple cone flower
Ich' ahpe-hu, "whip plant," ichahpe, "whip."

This perennial plant has an erect stem with bristly stiff hairs. The leaves are nearly linear and the flowers are a light purple (Rydberg, 1917:926).

Purple coneflower was employed as an antidote for snake-bites and for stings caused by insects. A piece of the plant was also used for toothache and mumps. A piece of the root was kept on the painful tooth until there was some relief

(Weiner, 1972:125). The Dakota also washed their hands in a decoction of the plant to enable them to withstand heat (Gilmore, 1919:131).

The herb was official in the National Formulary from 1916 to 1950 (Weiner, 1972:125).

Grindela squarrosa (Pursh.) Dunal. Gum plant
Pte-ichi-yuha, "curly buffalo," pte, "buffalo," icki,
"together," yuha, "curly, frizzly."

The gum plant has a round, smooth stem and grows about eighteen inches in height. The leaves are broad and round at their perimeters and narrow toward their bases. They are leathery, pale green, and toothed. The flowers are large and yellow in color (Weiner, 1972:107).

Among the Teton Dakota a decoction of the plant was given to children as a remedy for colic (Gilmore, 1919:133).

The dried leaves and flowering tops of various species were official in the U. S. Pharmacopoeia from 1882 to 1926 and in the National Formulary from 1926 to 1960 (Weiner, 1972:107).

Gutierrezia sarthrae (Pursh.) Britton & Rusby. Broom-weed

Growing on the dry plains, this perennial plant has a woody stem, its leaves are long and covered with hairs, and the disk-flowers are yellow (Fernald, 1950:1378).

Used in decoction form, the herb was given to horses as a remedy for too lax a condition of the bowels. They were

induced to drink the bitter medicine by preventing them access to any other drink (Gilmore, 1919:133).

Helianthus annus L. Sunflower
Wahcha-zizi, "yellow flower," wahcha, "flower," zizi,
reduplication of zi, "yellow."

The sunflower with its long stem and huge bright yellow disk flower is a familiar and common sight throughout the plains.

Among the Teton Dakota a remedy for pulmonary troubles was made by boiling sunflower heads to obtain a decoction. This medicine was then administered internally (Gilmore, 1919: 130).

Silphium laciniatum L. Pilot weed, compass plant
Cha shi shi la

The pilot weed is a perennial growing on the prairie. The stem is long and course, and the leaves alternate up the stem. It has yellow flowers (Fernald, 1950:1475,1477).

The Santee Dakota used this plant as a vermifuge for horses (Gilmore, 1919:132).

TABLES OF DRUG TREATMENTS

TABLE I
Febrifuges

Common Name	Scientific Name	How Used
Wild four-o'clock	<i>Mirabilis nyctaginea</i>	Decoction
Sweet flag Calamus root	<i>Acorus calamus</i>	Decoction
Wild licorice	<i>Glycyrrhiza lipidata</i>	Decoction
Sand lily	<i>Mentzelia decapetala</i>	Decoction
Aspen	<i>Populus tremuloides</i>	Decoction
Loco-weed	<i>Astragalus canadensis</i>	Decoction
Common hop	<i>Cannabinaceae</i>	Decoction
Willow	<i>Salix</i>	Decoction

TABLE II
Antiblenorrhagic

Common Name	Scientific Name	How Used
Hard pine, Pitch pine	<i>Pinus</i>	Decoction
White pine	<i>Strobus</i>	Decoction
Cembra pine	<i>Alpinus</i>	Decoction
Larch Tamarack	<i>Larix</i>	Decoction
Fir Balsam	<i>Abies</i>	Decoction
Hemlock	<i>Tsuga</i>	Decoction
Spruce	<i>Picea</i>	Decoction
Smooth sumac	<i>Rhus glabra</i>	Decoction
Redroot	<i>Ceanothus ovatus</i>	Decoction
Dogwood	<i>Svida alternifolia</i>	Decoction
Bearberry	<i>Arctostaphylos uva- ursi</i>	Decoction
Cranberry tree	<i>Viburnum prunifolium</i>	Decoction
Seneca snake root	<i>Polygala senega</i>	Decoction

TABLE III
Expectorant

Common Name	Scientific Name	How Used
Sassafras Ague tree	<i>Sassafras variifolium</i>	Decoction
Cembra pine	<i>Alpinus</i>	Decoction
Fir Balsam	<i>Abies</i>	Decoction
Hard pine Pitch pine	<i>Pinus</i>	Decoction
Hemlock	<i>Tsuga</i>	Decoction
Larch Tamarack	<i>Larix</i>	Decoction
Spruce	<i>Picea</i>	Decoction
White pine	<i>Strobus</i>	Decoction
Skunk cabbage	<i>Symplocarpus</i>	Decoction

TABLE IV
Antidysentric

Common Name	Scientific Name	How Used
Red oak	<i>Quercus maxima</i>	Decoction
Black raspberry Blackberry	<i>Rubus occidentalis</i>	Decoction
Plane-tree	<i>Plantanus</i>	Decoction

TABLE V
Antiluetic

Common Name	Scientific Name	How Used
American Hazelnut	<i>Corylus americana</i>	Powder form

TABLE VI
Vermifuges

Common Name	Scientific Name	How Used
Wild four-o'clock	<i>Mirabilis nyctaginea</i>	Decoction

TABLE VII
Diuretic

Common Name	Scientific Name	How Used
Prince's pine	<i>Chimaphila Maculata</i>	Decoction
Dwarf elder	<i>Saaparilla</i>	Decoction
Wintergreen	<i>Gaultheria procumben</i>	Oil from leaves taken internally
Smooth sumach	<i>Rhus glabra</i>	Decoction

TABLE VIII
Stimulant

Common Name	Scientific Name	How Used
Horse mint	<i>Monarda punctata</i>	Tea
Wintergreen	<i>Gaultheria procumben</i>	Oil from leaves taken internally

TABLE IX
Tonic

Common Name	Scientific Name	How Used
Gentian	<i>Dasystephana puberula</i>	Decoction

TABLE X
Emetic

Common Name	Scientific Name	How Used
Pleurisy root Butterfly weed	<i>Asclepias tuberosa</i>	Decoction

TABLE XI
Laxatives and Purges

Common Name	Scientific Name	How Used
Kentucky coffee tree	<i>Gymnocladus dioica</i>	Liquid form
Spurge	<i>Euphorbia</i>	Direct application

TABLE XII
Carminatives

Common Name	Scientific Name	How Used
Wild mint	<i>Mentha canadensis</i>	Decoction
Sweet flag Calamus root	<i>Acorus calamus</i>	Decoction

TABLE XIII
Respiratory and Pulmonary Affections

Common Name	Scientific Name	How Used
Flax	<i>Linum usitatissimum</i>	Infusion
Skunk cabbage	<i>Symplocarpus foetidus</i>	Decoction
Sunflower	<i>Helianthus annuus</i>	Decoction
Sassafras Ague tree	<i>Sassafras variifolium</i>	Decoction

TABLE XIV
Snake Bites and Insect Stings

Common Name	Scientific Name	How Used
Black root Culvers root	<i>Veronicastrum virginicum</i>	Poultice
Seneca snakeroot	<i>Polygala seega</i>	Poultice
White ash	<i>Fraxinus</i>	Decoction
Mad-dog weed Water plantain	<i>Alisma plantago</i>	Poultice
Yellow dock Sour dock	<i>Rumex crispus</i>	Poultice
Narrow-leaved purple cone flower	<i>Echinacea angustifolia</i>	Decoction

TABLE XV
Coughs and Colds

Common Name	Scientific Name	How Used
Slippery elm	<i>Ulmus fulva</i>	Emollient
Red cedar	<i>Juniperus virginiana</i>	Decoction Inhaled smoke
Sweet flag Calamus root	<i>Acorus calamus</i>	Chewed
Pennyroyal	<i>Hedeoma hispida</i>	Infusion
Purple poppy- mallow	<i>Callirrhoe involucrata</i>	Inhaled smoke

TABLE XVI
Rheumatism

Common Name	Scientific Name	How Used
Pasque flower Twin flower	<i>Pulsatilla patens</i>	Direct application
Puccoon Bloodroot	<i>Sanguinaria canadensis</i>	Direct application
Squaw root Black cohosh	<i>Cimicifuga racemosa</i>	Decoction

TABLE XVII
Toothache

Common Name	Scientific Name	How Used
Narrow-leaved purple cone flower	<i>Echinacea angustifolia</i>	Direct application
Sweet flag Calamus root	<i>Acorus calamus</i>	Chewed
Wild licorice	<i>Glycyrrhiza lepidota</i>	Poultice

TABLE XVIII
Earache

Common Name	Scientific Name	How Used
Wild licorice	<i>Glycyrrhiza lepidota</i>	Poultice

TABLE XIX
Colic

Common Name	Scientific Name	How Used
Sweet flag Calamus root	<i>Acorus calamus</i>	Decoction
Gum plant	<i>Grindela squarrosa</i>	Decoction

TABLE XX
Abdominal and Intestinal Pains

Common Name	Scientific Name	How Used
Wild mint	<i>Mentha canadensis</i>	Liquid of stem
Purple-poppy mallow	<i>Callirrhoe involucrata</i>	Decoction
Common hop	<i>Humulus americana</i>	Decoction

TABLE XXI
Menstrual Disorders

Common Name	Scientific Name	How Used
Squaw root Black cohosh	<i>Cimicifuga racemosa</i>	Decoction
Little wild sage Wormwood	<i>Artemisia frigida</i>	Decoction

TABLE XXII
Contagious Diseases

Common Name	Scientific Name	How Used
Red cedar	<i>Juniperus virginiana</i>	Decoction
Narrow-leaved purple cone flower	<i>Echinacea angustifolia</i>	Direct application

TABLE XXIII

Wounds, Fractures, Dislocations, and Inflammations

Common Name	Scientific Name	How Used
Puffball	<i>Lycoperdon bovista</i>	Direct application
Slippery elm Red elm	<i>Ulmus fulva</i>	Decoction
Prickly pear Cactus	<i>Opuntia humifusa</i>	Direct application
Elder	<i>Sambucus canadensis</i>	Poultice
Wild four-o'clock	<i>Mirabilis nyctaginea</i>	Decoction
Scarlet mallow	<i>Sphaeralcea coccineum</i>	Salve

GLOSSARY OF PLANT NAMES

Scientific Name	Common English Name
<i>Abies</i>	Fir, balsam
<i>Acorus calamus</i>	Sweet flag, calamus root
<i>Alisma plantago</i>	Mad-dog weed water plantain
<i>Allium</i>	Wild onion, Garlic
<i>Alpinus</i>	Cembra pine
<i>Aralia hispida</i>	Dwarf elder, Sarsaparilla
<i>Arctostaphylos uva-ursi</i>	Bearberry
<i>Artemisia frigida</i>	Little wild sage Wormwood
<i>Artemisia gnaphalodes</i>	Wild sage
<i>Asclepias tuberosa</i>	Pleurisy root Butterfly weed
<i>Astragalus canadensis</i>	Loco-weed, Milk vetch
<i>Boebera papposa</i>	Fetid marigold
<i>Callirrhoe involucrata</i>	Purple poppy-mallow
<i>Caenothus ovatus</i>	Redroot
<i>Chimaphila maculata</i>	Prince's pine Spotted wintergreen
<i>Cimicifuga racemosa</i>	Squaw root, Black cohosh
<i>Corylus americana</i>	American hazelnut

<i>Dasystephana puberula</i>	Gentian
<i>Echinacea angustifolia</i>	Narrow-leaved purple Cone flower
<i>Euphorbia</i>	Spurge
<i>Fraxinus americana</i>	White ash
<i>Gaultheria procumbens</i>	Wintergreen
<i>Glycyrrhiza lepidota</i>	Wild licorice
<i>Grindelia squarrosa</i>	Gum plant
<i>Gutierrezia sarthrae</i>	Brown weed
<i>Gymnocladus dioica</i>	Kentucky coffee-tree
<i>Hedeoma hispida</i>	Pennyroyal
<i>Helianthus annuus</i>	Sunflower
<i>Humulus americana</i>	Common hop
<i>Juniperus virginiana</i>	Red cedar
<i>Larix</i>	Larch, Tamarack
<i>Lilium umbellatum</i>	Prairie-lily
<i>Linum usitatissimum</i>	Flax
<i>Lycoperdon bovista</i>	Puffball
<i>Mentha canadensis</i>	Wild mint
<i>Mentzelia decapetala</i>	Sand lily
<i>Mirabilis nyctaginea</i>	Wild four-o'clock
<i>Monarda fistulosa</i>	Horse mint, Oswego
<i>Monarda punctata</i>	Horse mint
<i>Opuntia humifusa</i>	Prickly pear, Cactus
<i>Pasoslea aurea</i>	

<i>Pepo foetidissima</i>	Wild gourd
<i>Picea</i>	Spruce
<i>Pinus</i>	Hard pine, Pitch pine
<i>Plantanus occidentalis</i>	Plane-tree
<i>Polygala senega</i>	Seneca snakeroot
<i>Populus tremuloides</i>	Aspen
<i>Prunus americana</i>	Wild plum
<i>Psoralea tenuiflorum</i>	
<i>Pulsatilla patens</i>	Pasque flower, Twin flower
<i>Quercus maxima</i>	Red oak
<i>Rhus glabra</i>	Smooth sumach
<i>Rubus occidentalis</i>	Black raspberry, Blackberry
<i>Rumex crispus</i>	Yellow dock, Sour dock
<i>Salix</i>	Willow
<i>Sambucus canadensis</i>	Elder
<i>Sanguinaria canadensis</i>	Puccoon, Bloodroot
<i>Sassafras variifolium</i>	Sassafras, ague tree
<i>Silphium laciniatum</i>	Pilot weed, Compass
<i>Sphaeralcea coccineum</i>	Scarlet mallow
<i>Strobilus</i>	White pine
<i>Svidia alternifolia</i>	Dogwood
<i>Symphoricarpos</i>	Coral-berry, Buck brush
<i>Symplocarpus foetidus</i>	Skunk cabbage
<i>Tsuga</i>	Hemlock
<i>Typha latifolia</i>	Cat-tail
<i>Ulmus fulva</i>	Slippery-elm, Red elm

Verbena hastata

Wild verbena

Veronicastrum virginicum

Black root, Culvers root

Viburnum prunifolium

Cranberry tree

Common English Name Scientific Name

Ague tree	<i>Sassafras variifolium</i>
American hazelnut	<i>Corylus americana</i>
Aspen	<i>Populus tremuloides</i>
Balsam	<i>Abies</i>
Bearberry	<i>Arctostaphylos uva-ursi</i>
Black cohosh	<i>Cimicifuga racemosa</i>
Blackberry	<i>Rubus occidentalis</i>
Black raspberry	<i>Rubus occidentalis</i>
Black root	<i>Veronicastrum virginicum</i>
Bloodroot	<i>Sanguinaria canadensis</i>
Brown weed	<i>Gutierrezia sarthrae</i>
Buck brush	<i>Symphoricarpos</i>
Butterfly weed	<i>Asclepias tuberosa</i>
Cactus	<i>Opuntia humifusa</i>
Calamus root	<i>Acorus calamus</i>
Cat-tail	<i>Typha latifolia</i>
Cembra pine	<i>Alpinus</i>
Common hop	<i>Humulus americana</i>
Compass plant	<i>Silphium laciniatum</i>
Coral-berry	<i>Symphoricarpos</i>
Cranberry tree	<i>Viburnum prunifolium</i>
Culvers root	<i>Veronicastrum virginicum</i>
Dogwood	<i>Sida alternifolia</i>

Dwarf elder	<i>Aralia hispida</i>
Elder	<i>Sambucus canadensis</i>
Fetid marigold	<i>Boebera papposa</i>
Flax	<i>Linum usitatissimum</i>
Fir	<i>Abies</i>
Garlic	<i>Alium</i>
Gentain	<i>Dasystephana puberula</i>
Gum plant	<i>Grindela squarrosa</i>
Hard pine	<i>Pinus</i>
Hemlock	<i>Tsunga</i>
Horse mint	<i>Monarda punctata</i> <i>Monarda fistulosa</i>
Kentucky coffee-tree	<i>Gymnocladus dioica</i>
Larch	<i>Larix</i>
Little wild sage	<i>Artemisia frigida</i>
Loco-weed	<i>Astragalus canadensis</i>
Mad-dog weed	<i>Alisma</i>
Milk vetch	<i>Astragalus canadensis</i>
Narrow-leaved purple cone flower	<i>Echinacea angustifolia</i>
Oswego	<i>Monarda fistulosa</i>
Pasque flower	<i>Pulsatilla patens</i>
Pennyroyal	<i>Hedeoma hispida</i>
Pilot weed	<i>Silphium laciniatum</i>
Pitch pine	<i>Pinus</i>
Plane-tree	<i>Platanus occidentalis</i>

Pleurisy root	<i>Asclepias tuberosa</i>
Prairie-lily	<i>Lilium umbellatum</i>
Prickly pear	<i>Opuntia humifusa</i>
Prince's pine	<i>Chimaphila maculata</i>
Puccoon bloodroot	<i>Sanguinaria canadensis</i>
Puffball	<i>Lycoperdon bovista</i>
Purple poppy-mallow	<i>Callirrhoe involucrata</i>
Red cedar	<i>Juniperus virginiana</i>
Red elm	<i>Ulmus fulva</i>
Red oak	<i>Quercus maxima</i>
Redroot	<i>Ceanothus ovatus</i>
Sand lily	<i>Mentzelia decapetala</i>
Sarsaparilla	<i>Aralia hispida</i>
Sassafras	<i>Sassafras variifolium</i>
Scarlet mallow	<i>Sphaeralcea coccineum</i>
Seneca snakeroot	<i>Polygala senega</i>
Slippery elm	<i>Ulmus fulva</i>
Skunk cabbage	<i>Symplocarpus foetidus</i>
Smooth sumach	<i>Rhus glabra</i>
Sour dock	<i>Rumex crispus</i>
Spotted wintergreen	<i>Chimaphila maculata</i>
Spurge	<i>Euphorbia</i>
Spruce	<i>Picea</i>
Squaw root	<i>Cimicifuga racemosa</i>
Sunflower	<i>Helianthus annuus</i>

Sweet flag	<i>Acorus calamus</i>
Tamarack	<i>Larix</i>
Twin flower	<i>Pulstilla patens</i>
Water plantain	<i>Alisma plantago</i>
White ash	<i>Fraxinus americana</i>
White pine	<i>Strobus</i>
Wild four-o'clock	<i>Mirabilis nyctaginea</i>
wild gourd	<i>Pepo foetidissima</i>
Wild licorice	<i>Glycyrrhiza lepidota</i>
Wild mint	<i>Mentha canadensis</i>
Wild onion	<i>Allium</i>
Wild plum	<i>Prunus americana</i>
Wild Sage	<i>Artemisia gnaphalodes</i>
Wild verbena	<i>Verbena hastata</i>
Willow	<i>Salix</i>
Wintergreen	<i>Artemisia frigida</i>
Wormwood	<i>Artemisia frigida</i>
Yellow dock	<i>Rumex crispus</i>

BIBLIOGRAPHY

(* refers to references cited in this paper. The other sources contributed data but were not cited.)

- *Ackerknecht, Erwin H.
1946 Primitve Medicine: A Contrast with Modern Practice. The Merk Report July 4-8.
- Adams, J.
1915 Medicinal Plants and Their Cultivation in Canada. Division of Botany, Bulletin No. 23. Ottawa: Government Printing Bureau.
- Allen, Durward
1967 The Medicine and Surgery of the Winnebago and Dakota Indians. Journal of the American Medical Association 1(4, August 4):116-18 and (13, October 6).
- *Andros, F.
1883 The Medicine and Surgery of the Winnebago and Dakota Indians. Journal of the American Medical Association 1(4, August 4):116-18 and (13, October 6):402.
- Babcock, Willoughby M.
1962 Minnesota's Indian War. Minnesota History 38(3).
- Benson, Lyman
1957 Plant Classification. Boston: D. C. Heath and Co.
- *Belden, George P.
1875 The White Chief or Twelve Years Among the Wild Indians of the Plains. Cincinnati: E. W. Starr and Company.
- Bergen, Fanny D.
1894 Popular American Plant Names. Journal of American Folklore 7(25)pt.1:89-104.
1896 Popular American Plant Names. Journal of American Folklore 9(39)pt.4:179-93.

- *Blegen, Theodore C.
1938 Building Minnesota. Boston:D. C. Heath and Co.
- Britton, Nathaniel Lord and Addison Brown
1970 An Illustrated Flora of the United States and Canada. 3 volumes. New York:Dover Publication Inc.
- Brooks, Harlow
1929 The Medicine of the American Indian. Bulletin of the New York Academy of Medicine, 2nd Ser., 6(6):509-37.
- *Brower, J. U. and D. I. Bashnell
1900 Mille Lac. In Memoirs of Explorations in the Basin of the Mississippi, Vol. 3. Minnesota Historical Society. St. Paul:H. L. Collins Co.
- *Brown, Dee
1970 Bury My Heart at Wounded Knee. New York:Holt Rinehart and Winston, Inc.
- *Carley, Kenneth
1962 The Sioux Uprising of 1862. St. Paul:Minnesota Historical Society.
- Coon, Nelson
1963 An American Herbal: Using Plants for Healing. New York:Heathside Press Inc.
- *Corlett, William Thomas
1935 The Medicine Man of the American Indian. Springfield:Charles C. Thomas.
- Darling, Dr.
1846 Indian Diseases and Remedies. Boston Medical and Surgical Journal 34:9-11.
- Debo, Angie
1970 A History of the Indians of the United States. Norman:University of Oklahoma Press.
- *Densmore, Frances
1948 Indian Notes and Monographs. Museum of the American Indian, Heye Foundation. Lancaster:Lancaster Press Inc.

- Dixon, Roland B.
1908 Some Aspects of the American Shaman. Journal
of American Folklore 21:1-12.
- Dorsey, J. Owen
1897 Siouan Sociology. BAE 15th Annual Report,
pp. 205-214.
- *Douglas, Frederic H.
1932 The Sioux or Dakota Nation: Divisions, His-
tory and Numbers. Department of Indian Art,
Leaflet 41. Denver: Denver Art Museum.
- *Fernald, Merritt Lyndon
1917 Gray's Manual of Botany. Eighth Edition.
New York: American Book Co.
- Fernald, Merritt Lyndon and
Alfred Charles Kinsey
1958 Edible Wild Plants. New York: Harper and Row.
- *Fiske, Frank
1917 The Taming of the Sioux. Bismarck: Bismarck
Tribune.
- *Folwell, William Watts
1921 A History of Minnesota. St. Paul: Minnesota
Historical Society.
- *Gilmore, Melvin Randolph
1919 Uses of Plants by the Indians of the Missouri
River Region. BAE 33rd Annual Report, pp. 43-
154.
- *Goldfrank, Esther S.
1943 Historic Change and Social Character: A Study
of the Teton Dakota. American Anthropologist
45:67-83.
- *Grieve, M.
1967 A Modern Herbal. 2 volumes. New York: Hafner
Publishing Co.
- *Hammond, Peter B.
1964 Cultural and Social Anthropology. New York:
Macmillan.
- Harrington, H. D.
1967 Edible Native Plants of the Rocky Mountains.
Albuquerque: University of New Mexico Press.

- *Hassrick, Royal B.
1967 Life and Customs of a Warrior Society. Norman:
University of Oklahoma Press.
- *Henkel, Alice
1906 Wild Medicinal Plants of the United States.
USDA, Bur. Pl. Ind. Bull.89.
1907 American Root Drugs. USDA, Bur. Pl. Ind. Bull.
107.
1909 American Medicinal Barks. USDA. Bur. Pl. Ind.
Bull.139.
1911 American Medicinal Flowers, Fruits and Seeds.
USDA, Bur. Pl. Ind. Bull.36.
1913 American Medicinal Leaves and Herbs. USDA,
Bur. Pl. Ind. Bull.219.
- *Henshaw, Henry W.
1905 Fallacies Respecting the Indians. American
Anthropologist 7(1):104-13.
- Herbert, Lester G.
1926 What Did the Indians Know About Medicines and
Healing Treatment. Medical Journal and Record
123(1):22-24 and (2):117-19.
- *Hoebel, E. A.
1965 Anthropology: The Study of Man. Third Edition.
New York:McGraw-Hill Book Co.
- *Hollinshead, Ellen Rice
1966 A Sioux Medicine Dance and a Perilous Journey.
3(2). St. Paul:Ramsey County Historical Society.
- Howard, James H.
1966 Dakota or Sioux Tribes. Museum News 27(5-6).
Pierre:University of South Dakota.
- *Hrdlicka, Ales
1932 Disease, Medicine and Surgery Among the Amer-
ican Aborigines. Journal of the American Med-
ical Association 99(20):1661-66.
- *Hubbard Milling Co.
1926 The Treaty of Traverse Des Sioux with the Sioux
Indians on the Minnesota River. Mankato:
Hubbard Milling Co.

- *Hubiak, William J.
1970 Great Lakes Indians: A Pictorial Guide. Grand Rapids:Baker Book House.
- Jackson, B. D.
1928 A Glossary of Botonic Terms. Fourth Edition. Philadelphia:J. B. Lippincott Co.
- Jacques, H. E.
1948 Plant Families: How to Know Them. Dubuque: William C. Brown Co.
- *Jordan, Philip D.
1953 The People's Health. St. Paul: Minnesota Historical Society.
- Krogman, Wilton Marion
1939 Medical Practices and Diseases of the Aboriginal American Indians. Ciba Symposia 1(1): 11-18.
- *Landes, Ruth
1968 The Mystic Lake Sioux: Sociology of the Mdewakantonwan Santee. Madison:University of Wisconsin Press.
- *Laviolette, Gontran
1944 The Sioux Indians in Canada. Regina:Marian Press.
- *Luce, Edward S. and Evelyn S.
1949 Custer Battlefield. National Park Service Historical Handbook Ser. 1.
- *Lynd, James W.
1889 The Religion of the Dakotas. Minnesota Historical Society Collections 2:150-174.
- *Meyer, Roy W.
1967 History of the Santee Sioux. Lincoln:University of Nebraska Press.
- Mooney, James
1894 The Sioux Tribes of the East. Bureau of Ethnology Smithsonian Institution Bulletin 22.
- *Neihardt, John G.
1961 Black Elk Speaks. Lincoln:University of Nebraska Press.

- *Neill, Edward Duffield
 1858 History of Minnesota. Philadelphia:J. B. Lippincott and Co.
- 1872 Dakota Land and Dakota Life. Minnesota Historical Society Collections 1:254-94.
- Nickerson, Gifford S.
 1966 Some Data on the Plains and Great Basin Indian Uses of Certain Native Drugs. Tebiwa, The Journal of the Idaho State University Museum 9(1):45-51.
- Nurge, Ethel
 1971 The Modern Sioux. Lincoln:University of Nebraska Press.
- *Parr, A. E.
 1963 Form, Function and Purposes of a Museum of Man and Nature. In Manitoba Museum Reports, 1(1):9-16.
- Pitcher, Zina
 1854 Medical Knowledge of the Indians. In Indian Tribes of the United States. Henry R. Schoolcraft, ed. Philadelphia:Lippincott, Grambo and Co. pp. 502-19.
- *Pond, Gideon H.
 1889 Dakota Superstitions. Minnesota Historical Society Collections 2:215-55.
- *Pond, Samuel W.
 1908 The Dakota or Sioux in Minnesota as They Were in 1834. Minnesota Historical Society Collections 12:319-501.
- Rickett, Harold William
 1965 Wild Flowers of the United States, Vol.I. New York:McGraw-Hill Book Co.
- *Robinson, Doane
 1967 A History of the Dakota or Sioux Indians. Minneapolis:Ross and Haines.
- Rogers, Juliet
 1902 Among Green Trees. Chicago:A. W. Mumford.
- Rogers, Spencer L.
 1942a The Methods, Results, and Values of Shamanistic Therapy. Ciba Symposia 10(1):1215-24.

- 1942b Primitive Theories of Disease. Ciba Symposia
4(1): 1190-1200.
- 1942c Shamans and Medicine Men. Ciba Symposia 4(1):
1202-14.
- *Rydberg, Per Axel
1917 Flora of the Prairies and Plains of Central
North America. New York:Hafner Publishing Co.
- *Schoolcraft, Henry Rowe
1851 Indian Tribes of the United States. Vol. I.
Philadelphia:Lipincott, Grambo and Co.
- 1852 Indian Tribes of the United States. Vol. II.
Philadelphia:Lipincott, Grambo and Co.
- *Scoggan, H. J.
1957 Flora of Manitoba. National Museum of Canada.
Bulletin 140, Biological Ser. No. 47. Ottawa:
National Museum of Canada.
- *Smith, Huron H.
1932 Ethnobotany of the Ojibwe. Public Museum of
the City of Milwaukee. Bulletin 4(3).
Milwaukee:Aetna Press Inc.
- *Stone, Eric
1932 Medicine Among the American Indians. New York:
Paul B. Hoeber Inc.
- *Storm, Hyemeyohsts
1972 Seven Arrows. Evanston:Harper and Row.
- Vogel, Virgil L.
1970 American Indian Medicine. Norman:University
of Oklahoma Press.
- *Wax, Murray L.
1971 Indian American: Unity and Diversity. Engle-
wood Cliffs, N. J.:Prentice-Hall Inc.
- *Weiner, Michael A.
1972 Earth Medicine Earth Food. New York:Collier
Books.
- *Whitebread, Charles
1925 The Indian Medical Exhibit of the Division of
Medicine in the United States National Museum.
Pub. 2582, Proceedings of the United States
National Museum 67, Art. 10:1-26.

- *Williamson, Thomas S.
1851 Dacotas of the Mississippi. In Indian Tribes of the United States. Henry R. Schoolcraft, ed. Philadelphia:Lippincott, Grambo and Co., pp. 247-256.
- 1940 Diseases of the Dakota. Minnesota Medicine. 23(11):801-805.
- Winchell, N. H.
1911 The Aborigines of Minnesota. Minnesota Historical Society. St. Paul:The Pioneer Co.
- Wissler, Clark
1940 Indians of the United States. New York: Doubleday, Doran and Co.
- *Yarnell, Richard Asa
1964 Aboriginal Relationships Between Culture and Plant Life in the Upper Great Lakes Region. Anthropological Papers, Museum of Anthropology. Ann Arbor:University of Michigan.