

*A*original Innovations

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# Lakehead

U N I V E R S I T Y

## **Mission Statement**

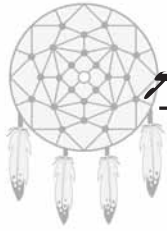
Lakehead University is committed to excellence and innovation in undergraduate and graduate teaching, service, research and other scholarly activity. As part of this commitment, Lakehead University is dedicated to a student-centred learning environment. Lakehead University values its people and the diversity of their ideas, contributions and achievements. Lakehead University is dedicated to working with Aboriginal peoples in furthering their educational aspirations. Building on its past accomplishments and recognizing its role in Northwestern Ontario, Lakehead University reaches out regionally, nationally and internationally.

Lakehead University is committed to educating students who are recognized for leadership and independent critical thinking and who are aware of social and environmental responsibilities.

## **Dedication**

*The Lakehead University Aboriginal Innovations in Arts, Science and Technology Handbook is respectfully dedicated to Aboriginal innovators of the past and the future and to all Aboriginal peoples of Turtle Island.*

*Kitchi meegwetch for your perseverance and ingenuity to make this world one within which we can all grow and prosper.*



## A Message from

**Dr. Frederick Gilbert**  
**President, Lakehead University**

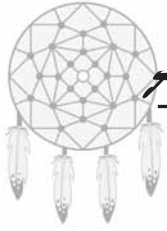
Lakehead University wishes to thank the Department of Indian and Northern Affairs Canada for its support to help make this initiative a reality. I would also like to extend my congratulations to the Lakehead University Native Students Association and Ms. Buffy Sainte-Marie for their collaborative efforts to develop this ***Aboriginal Innovations in Arts, Science and Technology Handbook***.



The contributions of Aboriginal peoples to Canada and the rest of the Western world have been significant. Many Aboriginal ideas and developments have helped to shape our society in ways that should be shared among both the Aboriginal and mainstream communities. This handbook features some of these innovations, as well as the varied contributions of Aboriginal peoples to arts, science and technology.

Many of the breakthroughs by Aboriginal innovators in areas like medicine and education remain today, in one form or another. An understanding of these innovations will help students, educators and others gain insight into, and a deeper appreciation of, the contributions that Aboriginal peoples have made to Canada and the Western world.

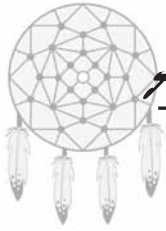
I encourage schools, libraries, governments, cultural centres and organizations to use this handbook as a tool for educating students and the wider community both in and out of the classroom setting. I also encourage all youth to use these past innovations as incentives to pursue education and careers in the arts, science and technology professions.



This project would not have been possible without the work of the partners who have the Aboriginal people's history and futures in mind. I extend congratulations to the Aboriginal Innovations Project Team for its efforts in developing this useful tool. It not only showcases Aboriginal innovations, it is also one of the many ways in which Lakehead University advances its mission to help further the educational aspirations of the Aboriginal community. I am confident that this handbook will inspire in members of the Aboriginal community a deep sense of pride and dignity in their ancestral roots, heritage and culture.

With very best wishes,

Frederick Gilbert



**A Message from**

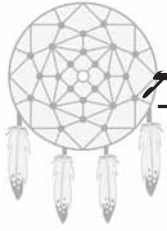
**Ms. Buffy Sainte-Marie**

If you wonder how the words Aboriginal and Science can go together, you might be surprised to learn that there are many Aboriginal scientists who have been pioneers in contemporary space research, design, patenting, and implementation. And that pivotal discoveries - like rubber, tar, fertilizer, and the world's most accurate calendar - were discovered and built by Native American peoples. Inventions - like hammocks, toboggans, kayaks, the screw top jar, cradleboards, the mouth bow and the marimba - all originated on Turtle Island.



Agricultural development - like the hybridizing, cultivation, and distribution of more than two-thirds of the world's favorite foods - was accomplished by Indigenous American agriculturists; and inventive ways of doing things, like using huge bellows for smelting silver and other metals; and amazing raft gardens that traveled North America's rivers and brought the crops along; and procedures in medicine - like the formula for aspirin, quinine, ipecac, anesthetic, successful cranial surgery, the rubber bulb syringe, and the silver crowns used in dental work - are all credited specifically to Aboriginal peoples.

Celebrate the Mayans whose astronomical calculations have only recently been matched by computers. Be proud of the Quechuan (Inca) doctors who did successful cranial surgery with crystal and metal instruments a thousand years ago, and who also invented the silver crown dental procedure. Before anybody had "astronomy" our Aboriginal "science leaders" used 3,000 years of observations and



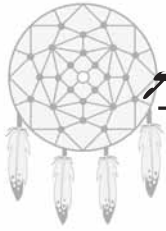
experience and oral record keeping to accomplish celestial navigation, which is now acknowledged as absolutely accurate even by the scientists at NASA.

Aboriginal achievements continue today in the contemporary sciences. Albert Rock, an Aboriginal self-taught engineer from Whitehorse Yukon, invented data loggers that are used in space technology and also have changed Formula One car racing forever. Mary Ross, a Cherokee woman, formulated a concept for a manned orbital space system and a manned lunar landing. Kenneth Amie, a Laguna Pueblo Indian, is known for his work as section chief in the Design Engineering Office for NASA at the Kennedy Space Center. Dr. Gregory Cahete from Santa Clara Pueblo, a scholar in the field of Ethno-Botany and Medical Practices, is also on our team to help build *SCIENCE: Through Native American Eyes* for high school grade subjects.

When you see rockets reaching for the stars, think about Don Ridley, a Western Shoshone, who is famous for designing and building test equipment for advanced satellites; and Dr. Al Qoyawayma, a Hopi Indian, who holds several patents for his inertial guidance systems and airborne star trackers (He is also an artist in the Hopi pottery tradition). Jerry Elliott High Eagle (Osage/Cherokee) has been involved in space flight since 1966, and was on the team that first put a man on the moon. He received America's highest honor, the Presidential Medal of Freedom, for his work on the team that brought the astronauts safely home from space when Apollo 13 had to be aborted. The Nihewan Foundation <http://www.nihewan.org> is researching additional Aboriginal people in science careers and welcomes information.

From the clever practicality of plains tipis to ingenious cities of Central American pyramids; from the development of traditional drums, flutes, rattles and stringed instruments to pioneering in digital music technology; from fire making and grinding tools to high tech rockets and race cars, Aboriginal peoples have a history. Aboriginal peoples have a presence, and Aboriginal peoples have a future.

Buffy Sainte-Marie



## **A Message from**

### **The Lakehead University Native Students Association**



The Lakehead University Native Students Association is delighted to have been a collaborator in the development of *Aboriginal Innovations in Arts, Science and Technology Handbook*. This project depicts the various ways in which Aboriginal peoples of North America, particularly in Canada, have helped build our country and ways of living.

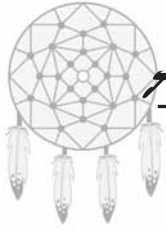
As students, we learned of many fascinating innovations that originated with Aboriginal peoples, which without this involvement, we might otherwise not have known. Our knowledge base was enhanced through work on this project, and it is for this reason that we encourage students and others to explore and share these innovations further.

We invite all students to take an active interest in the fields of arts, science and technology and to learn how developments in these areas impact our worlds. Without the expertise profiled in this handbook, our evolution as societies might have been much different. We are confident that you will appreciate the contributions of Aboriginal peoples to Canada and the global community just as much as we have and still do.

We are grateful to Ms. Buffy Sainte-Marie for helping us to increase our awareness of Aboriginal innovations. Much appreciation is extended to Lakehead University and the Department of Indian and Northern Affairs Canada for their support and encouragement to become involved in such an important educational project.

Meegwetch,

Michael Poulin, Cultural Coordinator



## **Acknowledgements**

Lakehead University gratefully acknowledges the following for their support and generous contributions to this project:



Indian and Northern  
Affairs Canada

Affaires indiennes  
et du Nord Canada

**Ms. Buffy Sainte-Marie**

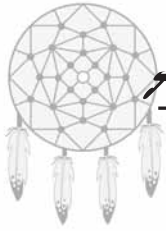
## **Project Team Members**

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Lisa Steels, Assistant Researcher





***Aboriginal Innovations in Arts, Science and Technology: A Public Education Initiative of Lakehead University, the Lakehead University Native Students Association and the Indian and Northern Affairs Canada***

**Background:**

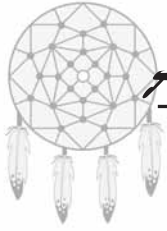
At the 2000 Lakehead University Convocation, Ms. Buffy Sainte-Marie was conferred with an Honorary Doctorate of Letters Degree. During her convocational address, Ms. Sainte-Marie mentioned some of the breakthroughs of Aboriginal peoples in science and technology such as the formula for aspirin and the screw-top jar. For many people sitting in the audience (Aboriginal and non-Aboriginal), her words were inspiring and fascinating as people were not aware of the Aboriginal innovations of which she spoke.

Soon after Convocation, Lakehead University proposed to the Department of Indian and Northern Affairs Canada that an Aboriginal innovations handbook be developed, which would serve to:

- profile, and educate about, many Aboriginal innovations and their impacts on Canada and, in some cases, the global community;
- promote a greater appreciation of Aboriginal contributions to society among youth, educators and the wider community;
- increase awareness among Aboriginal youth and the Aboriginal community about Aboriginal innovations and promote a deeper sense of pride in their ancestral roots, heritage and culture; and
- encourage youth to explore their educational and career options in the fields of arts, science and technology.

When completed, the handbook would be provided to schools, libraries, First Nations' schools and organizations, and governments for educational and informational purposes.





## **Project Description:**

In the summer of 2000, a project team was established to conduct research, review and select innovations, and to produce an *Aboriginal Innovations in Arts, Science and Technology Handbook*.

This handbook is a compilation of historical information on existing innovations that was researched from the Internet, museums, libraries, companies, organizations, encyclopedias, cultural centres and books. An extensive list of innovations was compiled by the researchers and presented to the project team for their consideration for inclusion in the handbook.

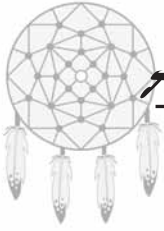
The list was categorized into the selected themes of arts, science and technology. Innovations selected for presentation were based on factors such as authenticity, origin and purpose, and ease of access to sources of information. It should be noted that extensive research could be conducted for nearly all of the innovations presented herein. Because one of the goals of this project is to raise awareness of Aboriginal innovations, many of the innovation descriptions are brief.

The user-friendly layout of the handbook was designed primarily for students and youth, with two key objectives. The first is to provide the reader with a brief overview of the innovation to stimulate interest, and the second is to encourage the reader to further explore these innovations, either individually or as part of a group (in a school project, for example).

The write-up for each innovation cites the source(s) of information; and in some instances, original research is quoted and credit given. Page numbers were deliberately omitted to encourage readers to peruse each section.

As all researched innovations could not be included in this volume, Lakehead University is open to the possibility of developing another edition in the future. In this regard, your comments, ideas and suggestions would be greatly appreciated. Please forward your ideas to the address below:

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Aboriginal Initiatives	807.346.7757 - fax
Lakehead University	
955 Oliver Road	nova.lawson@lakeheadu.ca
Thunder Bay, ON P7B 5E1	www.lakeheadu.ca



## Name: Inuit Blanket Tossing Game

### Description:

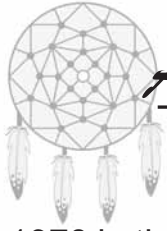
The Inuit Blanket Tossing Game uses an apparatus similar to a trampoline. The difference is that the traditional Inuit “blanket” is not free-standing. The blanket is typically made from seal or walrus skins, which are very strong, and can endure the bouncing and landing of players who are tossed into the air.



While forming a circle, people hold the blanket tightly at the edges to create a taut surface for bouncing on. The goal of the game is to see who can be tossed the highest. This game is usually played or performed at community gatherings or special events.

The sketch above, which illustrates how a bouncing surface is made, was drawn by *Sorosilutoo*, and is entitled *Qumuaqataijut*. The artist is from Cape Dorset on Baffin Island.

Another version of this tossing game is shown in a more recent photo taken in



1978 in the Northwest Territories on Holman Island. In this region, the tossing game is called “*Nalukauq*,” which means “blanket” in the Inuit language.

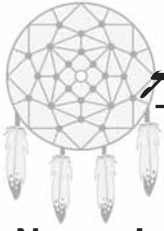
This tossing game continues to be played today in the Arctic region. It is not known whether the idea for the modern-day trampoline originated from the Inuit Tossing Game.

Innovator(s): Inuit peoples of the Arctic and sub-Arctic, Canada

Date of Innovation: Pre-European Contact

Source: University of Waterloo

Image source: used with permission of the Museum and Archives of Games, University of Waterloo  
[www.ahs.uwaterloo.ca/~museum/vexhibit/inuit/english/blanket.htm](http://www.ahs.uwaterloo.ca/~museum/vexhibit/inuit/english/blanket.htm)



## Name: Inuit Wrestling

### Description:

Wrestling is a sport that is widely known around the globe. In Canada's Arctic region, wrestling has long been of interest and challenge to Inuit peoples. There are a variety of Inuit wrestling styles. On Holman Island, one style is known as "*Una Tar Tuq.*" This style calls for two opponents to face each other with their arms wrapped around each other and feet flat on the ground. The goal of the game is to lift an opponent off the ground. An example of how the game is played is seen in the sketch below, which was drawn by *Sorosilutoo*, an artist from Cape Dorset on Baffin Island. He called the sketches "*Panguatut.*"



*Leg Twist Wrestling* is another style that calls for two players to lay on their sides, face-to-face with their feet touching. One foot of each player is kept against the other player's opposite foot, while the other foot is hooked around the

opponent's other foot. The players place their hands under their knees and while using only the hooked foot, one player tries to turn the other player over. The person who does this first is the winner.

Wrestling has become more popular across the land and has evolved into a competitive sport featured in the Arctic Winter Games.

Innovator(s): Inuit Peoples of Canada

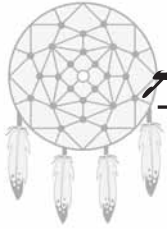
Date of Innovation: Pre-European Contact

Origin: Arctic regions of Canada

Source: University of Waterloo

Image source: used with permission of the Museum and Archive of Games, University of Waterloo

[www.ahs.uwaterloo.ca/~museum/vexhibit/inuit/english/wrestle](http://www.ahs.uwaterloo.ca/~museum/vexhibit/inuit/english/wrestle)



## Name: Inuit Dart Game

### Description:



The darts used in sport are believed to have evolved from arrows similar to those used with a bow. The Inuit dart is believed to have evolved from hunting tools that were used to make holes in ice and joints or bindings of a kayak frame. The Inuit darts game is considered a game of skill and talent and is played differently than the traditional form of darts.

The dart, called the *Niortut*, is constructed from a caribou antler. The point is made from the bone of a caribou or polar bear. The *Niortut* was usually 16.5 cm long, 3.1 cm wide and 1.5 cm thick.

Unlike today's game of darts, the Inuit version required that a target (a selected object) be laid on the ground or snow. While the player's head was tilted backward, the *Niortut* was balanced on the forehead with the point facing forward, aimed in the direction of the target. When the head was tipped forward, the *Niortut* fell toward the target. The player who landed the *Niortut* closest to the target won the game.

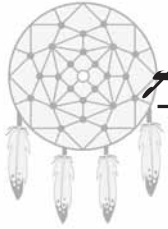
Innovator(s): Inuit peoples of Canada

Date of Innovation: Pre European contact

Origin: Arctic regions of Canada

Source: University of Waterloo

Image source: used with the permission of the Museum and Archive of Games, University of Waterloo  
[www.ahs.uwaterloo.ca/~museum/vexhibit/inuit/english/darts.html](http://www.ahs.uwaterloo.ca/~museum/vexhibit/inuit/english/darts.html)



## Name: Lacrosse

### Description:

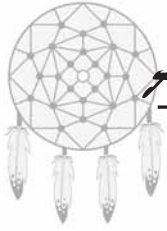
Lacrosse was a name given by the French to the North American Indians for their stickball game that used netted racquets to catch or pass a hair-filled deer-skin ball or to score goals. The game was played by American



Indians prior to European contact, dating back to pre-14<sup>th</sup> century. Then, teams of one hundred or more players were made up of men, who played on fields that were over five hundred yards long and one-half mile apart. Women had their own brand of the sport, and sometimes they played the male teams for fun.

The Cherokees called the sport “the little brother of war” because it was viewed as a good way to train for the military. The Six Tribes of the Iroquois, in what is now Southern Ontario and upstate New York, called their version of the game “*baggataway*” or “*tewaraathon*.” Historically, it was reported that the first Europeans to watch *baggataway* were French explorers who thought the stick game resembled their form of field hockey, called “*jeu de la crosse*.” It is from these origins that the game of lacrosse is believed to have received its name.

Early in the 19<sup>th</sup> century, Europeans in Canada took up the game of lacrosse. Montreal’s Olympic Club organized a team in 1844, primarily to play a match against a North American Indian team. Meets such as these continued between 1848 and 1851. In 1867, George Beers, known as the “father of lacrosse,” rewrote the rules for the game. The size of the team was reduced to twelve players, who were assigned specific positions. Beers also replaced the traditional hair-stuffed deerskin ball with a hard rubber ball, and he designed a stick that was better for catching and throwing the ball.



Canada's National Lacrosse Association, established in 1867, adopted Beer's new rules and assembled a team of Caughnawage Indians who went to England to play a match for Queen Victoria. The sport became very popular in Bristol, Cheshire, Lancashire, London, Manchester and Yorkshire. Soon after, in 1892, the English Lacrosse Union was formed.

Innovator(s): North American Aboriginal Peoples

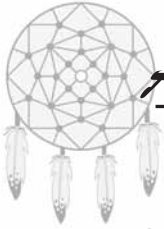
Date of Innovation: Pre-European Contact; Formalized in 19<sup>th</sup> century

Origin: North America, Southern Ontario and Upstate New York

Source: Hickoksports, Laxhistory

Image source: Lakehead University Archives

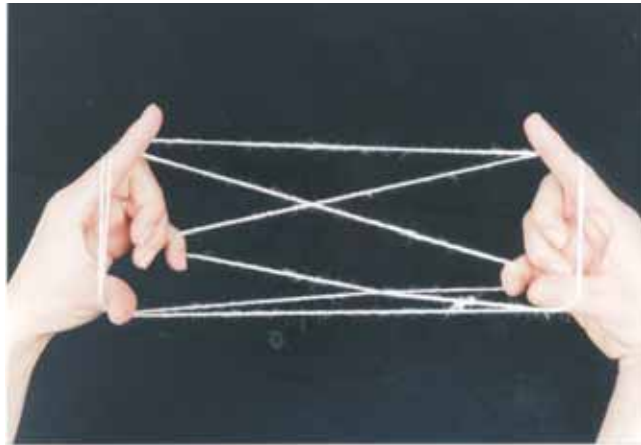




## Name: Cat's Cradle

### Description:

The cat's cradle is a string game played by Aboriginal children of all ages across Canada. Prior to European contact, Aboriginal peoples used sinew, string and thread that were made from the bellies of animals, to invent hand games that could be played individually



or with two players. When such games were played individually, the sinew was criss-crossed around the fingers. A player would try to remove the sinew without entangling the string in his or her fingers.

When two people played, one player would strategically wrap the sinew around the fingers and another would try to transfer the sinew to his/her hand, without entangling the sinew. The object of the game was to try to re-create the original wrap on the other player's hand.

Today, string games are played by children around the world.

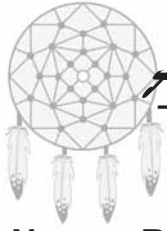
Invention: Aboriginal Canadian Peoples

Date of Innovation: Pre European Contact

Origin: North America

Source: David Morrison and Georges-Hebert Germain,  
*Inuit Glimpses of an Arctic Past*, 1995, pp. 150-151

Image source: Lakehead University



## Name: Ring and Pin Games

### Description:

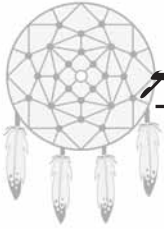


There is much debate about the origins of the ring and pin game. Some historians believe that it evolved from the French game of Bilboquet as early as the 16<sup>th</sup> century. Others are convinced that the ring and pin game originated with the Inuit who called the game *Ajagak*, or the Algonquins who tried to pierce as many rings as possible on the pin.

The ring and pin game involves one player who throws a tethered object or objects into the air and tries to catch it/them on a peg or pin. Prior to European contact, the ring and pin game was played by the Pommawanga, Chippewayan and Inuit peoples, using a ring and pin that were made from animal bones, as seen in the photo above.

The Inuit drilled holes into one end of a bearded seal humerus (upper arm bone). At the other end, a bone or antler pin was attached with sinew. The object of the game was to swing the humerus up while holding the pin, and to catch the pin in a hole, ten times in a row.





Newer versions of this game sometimes include a ball and paddle or ball and basket, in place of the ring and pin. Today, these toys are seldom made with traditional animal bones and are commercially manufactured for recreational use.

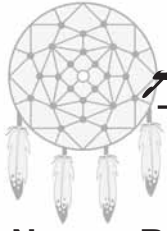
Innovator(s): Inuit, Algonquian and French (Bilboquet)

Date of Innovation: First recorded (and debated) exhibit dates back to the 16<sup>th</sup> and 18<sup>th</sup> centuries.

Origins: Inuit, Ojibwa of Parry Island, Ontario; Naskapi of Nain, Labrador, Naskapi-Montagnais, Labrador.

Source: University of Waterloo; Canadian Museum of Civilization

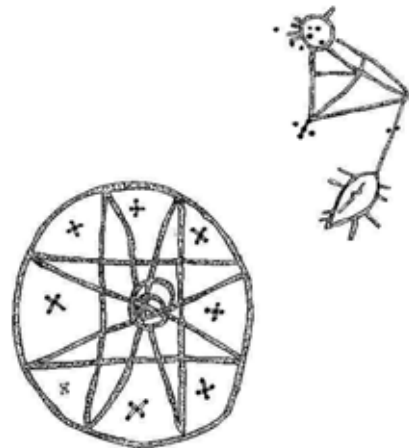
Image source: Lakehead University Archives  
Old Fort William (photo of girl)



**Name: Rock Art/Carving**

**Description:**

Rock art/carving dates back thousands of years and is found around the world. In Canada, rock art/carving was practised before 1,500 A.D., by Indigenous groups such as the Mi'kmaq, Ojibwe and Cree. Rock art is also known as petroglyph drawings, which often include sun and star motifs, anthropomorphic figures, and fertility symbols. Rock art/carving was used primarily to record events and tell stories.



The Mi'kmaq petroglyph, illustrated here, was likely carved with stone equipment; it likely pre-dates the arrival of European-made metal tools, beginning about 1,500 A.D. This petroglyph reveals an original human or human-like figure. As is reported to be the Mi'kmaq way in hieroglyphic writing, the sun is represented by an eight-pointed star.

Rock art/carving can be found across Canada, including in most Northern provinces and in the Territory regions. Anthropologists and researchers from around the world have explored Canada in search of authentic Aboriginal rock art.

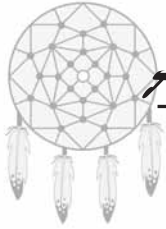
Innovator(s): Indigenous Peoples

Date of Innovation: est. 200 A.D.

Origin: unknown

Source: Nova Scotia Museum

Image source: used with permission of the history section, Nova Scotia Museum, [www.museum.gov.ns.ca/mikmaq/images/mp0001.jpg](http://www.museum.gov.ns.ca/mikmaq/images/mp0001.jpg)



**Name: Moccasins**

**Description:**

Indigenous to Aboriginal peoples in North America, moccasins are soft leather-type footwear that have been worn for centuries by Aboriginal men, women and children. Moccasins were typically made from animal hides such as buffalo, elk, moose and deer. After cows were imported via the Mayflower, and when wild game was scarce, cowhides were also used to make moccasins.



Moccasins were traditionally made from one piece of hide that was folded on the side to create an edge. Because the soles of these moccasins were very soft, they wore out quickly. As Aboriginal peoples became more mobile, and their footwear more fatigued, moccasins were designed in two pieces to allow the soles to be easily replaced. This new style did not waste the decorated upper half.

Before the introduction of beads, moccasins were decorated with dyed porcupine quills by specially trained women. Quilled moccasins were very delicate and were only worn on special occasions. Sometimes, the soles of moccasins were decorated with quills.

Decorations on moccasins often reflected the culture of different tribal groups. Symbols and colours varied from region to region. Flower designs evolved after the arrival of Europeans.

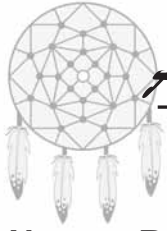
Innovator(s): North American Aboriginal Peoples

Date of Innovation: Pre-European Contact

Origin: North America

Source: Museum of Civilization

Image source: Lakehead University Archives



**Name: Boots, Mukluks**

**Description:**

Aboriginal boots, or mukluks as referred to by the Inuit, were originally hand sewn and made of seal, caribou or moose skins. Mukluks originated in the Arctic and Subarctic regions of Canada, including the MacKenzie River and Great Slave Lake areas.

Sealskin mukluks were practical for winter because they were water resistant and when lined with fur, protected the feet in extreme cold.



Mukluks were sometimes decorated on the outside with caribou hair through a technique called hair tufting. Dyed quills were sewn onto the mukluks to give the boots a colorful look and were worn for special events and ceremonies.

Today, mukluks are either handsewn or commercially produced, using leather or suede.

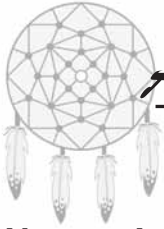
Innovator(s): Northern Aboriginal Peoples of Canada

Date of Innovation: Pre European contact

Origins: Arctic and sub-Arctic regions of Canada

Source: Royal Ontario Museum

Image source: Lakehead University Archives



**Name: Leggings**

**Description:**



Leggings were worn in the forest by most Aboriginal peoples (Plains Cree, Blackfoot and Algonquin), including men, women and children, to protect their legs. Leggings were handsewn from a single piece of deer hide and stitched up the back on the outside edge to fit the leg.

Leggings were decorated with red ochre dyed porcupine quills, sewn with sinew and long fringes. After the arrival of Europeans in North America, leggings were made from wool or other synthetic products.

Decorated leggings were also used as part of the ceremonial dress at powwow gatherings and special ceremonies. Today, leggings continue to be made of leather or fabric and remain an important part of both men's and women's traditional powwow regalia.

Innovator(s): various styles - North American Aboriginal Peoples

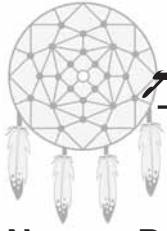
Date of Innovation: Pre-European contact

Origins: North America

Source: Royal Ontario Museum

Image source: Lakehead University Archives





**Name: Dress**

**Description:**



Leather or hide dresses were traditionally worn by Canadian and American Aboriginal women. Women and female children from the Plains — Alberta, Saskatchewan, Manitoba, Dakotas, and the Algonquin regions — wore hand-sewn dresses made of hide, which were usually decorated to symbolize their cultures and regions.

Dresses were made from panels of soft hide for the front and back, which were folded at the neckline to form a collar. The collar was decorated with strips of hide that were wrapped in dyed porcupine quills. Shapes of squares, circles, diamonds, and eventually flowers were used to decorate the dresses. Decorations were coloured with dyes (red, blue, pink, turquoise and white). Long fringes usually hung from the arms and across the breast of the dress, with short fringes around the bottom of the skirt and arms. The dress was held together with sinew that was laced-up on the sides or back.

Today, leather dresses are both hand and commercially constructed out of deer (soft), moose and cow hides. Traditional dresses are still worn by women for special occasions such as weddings or powwows and continue to be decorated with beads, porcupine quills and fringes.

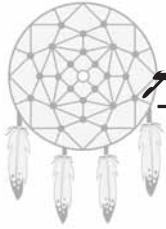
Innovator(s): North American Indians

Date of Innovation: Pre-European Contact

Origin: Plains, North America

Source: Royal Ontario Museum

Image source: Lakehead University Archives



## **Name: Buckskin Shirt**

### **Description:**



Buckskin shirts were worn by men for reasons that vary from practical (to keep warm) to ceremonial or spiritual.

Traditional shirts were usually made from the hides of caribou and deer. Some hides were smoked or tanned, while others were not. Historically, some shirts were decorated with strands of horse hair that were tied to the collar in the front and back with sinew, which was later replaced by wool. The design of the shirt depended on its purpose.

Today, leather shirts are worn by many people. They are usually worn by traditional dancers at powwows and special gatherings. Leather vests are worn with or without shirts for practical and ceremonial purposes.

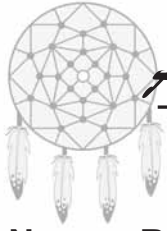
Innovator(s): Tribal groups across the Plains

Date of Innovation: Pre-European Contact

Origin: Kootenay culture around the Rocky Mountains of British Columbia and Alberta

Source: Royal Ontario Museum

Image source: Thunder Bay Historical Museum Society



**Name: Robe**

**Description:**

Historically, a robe or “button blanket” was used to express family histories, rights and privileges. It was made of buffalo, deer, caribou or moose hides, lined with fur. Some blankets were used for ceremonial purposes or were given as gifts to elders and chiefs.



With the European influence, fur designs were replaced with fabric such as flannel, which was easy to use to transfer designs onto the blanket. The image on the robe above is of a double-headed eagle, belonging to the Tsimshian, Nisga’a groups.

As shown in the above image, this style of robe was worn among the Northwest Coast peoples from Vancouver Island to Alaska. It was widely used during the 19<sup>th</sup> and 20<sup>th</sup> centuries.

The traditional button blanket or robe is still used in traditional wedding ceremonies and symbolizes the uniting of a couple. Another use of the robe today is in the installation of a new National Chief of the Assembly of First Nations (Ottawa).

When a National Chief is elected, the new chief is cloaked in a robe to protect him during his tenure as chief. He is also presented with a headdress. Both articles represent leadership and are presented by, and on behalf of, First Nations peoples from across Canada.

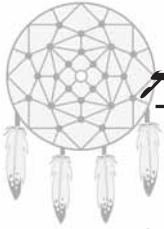
Innovator(s): North America Aboriginal Peoples

Date of Innovation: Pre-European Contact

Origin: British Columbia; Nass River region

Source: Royal Ontario Museum

Image source: [www.xist.ca/ROM-MCQ/E/records/12000040.htm](http://www.xist.ca/ROM-MCQ/E/records/12000040.htm); courtesy of Royal Ontario Museum



**Name: Coat**

**Description:**



Traditionally, coats were made for warmth. Some were also made for ceremonial and hunting purposes. Coats for these uses date back to the 17<sup>th</sup> and 18<sup>th</sup> centuries and were made of tanned, unsmoked skin, usually de-haired caribou. Sometimes, coats were painted or decorated with designs.

Coats usually opened in the front and flared below the waist. They were sewn with sinew, and decorated with images seen in dreams.

Coats were made by tribal groups across the country, including the Eastern sub-Arctic, Innu, and Montagnais-Naskpi.

While the style has changed somewhat, leather coats remain popular among men and women. Traditional hide coats, decorated with beads or paintings, are still handcrafted by many Aboriginal peoples today.

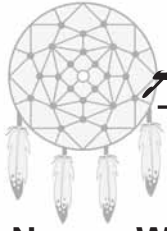
Innovator(s): Tribal groups from across Canada

Date of Innovation: Pre-European Contact

Origin: North America

Source: Royal Ontario Museum

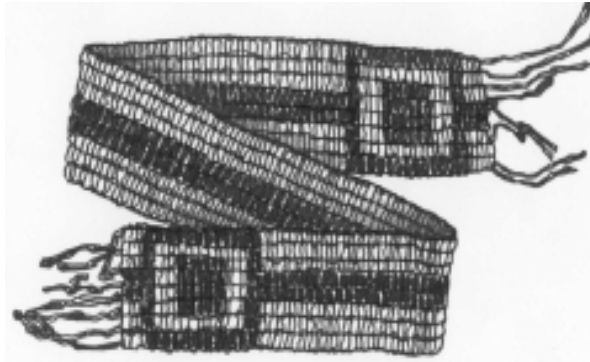
Image source: Thunder Bay Historical Museum Society



## Name: Wampum Belt

### Description:

Wampum comes from the Algonquin word *Wampumpeg*, which means a white string of beads. Prior to the advent of pen and paper, the Wampum was used to tell a story and represented the highest



honour when held or worn. The belt was associated with statesmen, political records, business and treaties, and accounts of other important events and trading. No political occasion was recognized until it had been validated by the exchange of a wampum.

The wampum consists of two beaded rows, woven together using techniques of both hand-held and loom-woven beadwork. A simple loom, made from a curved stick resembling an archer's bow, was used to achieve the woven appearance.

The wampum is still revered among Aboriginal groups as it represents recorded history. Much like Aboriginal peoples, many officials and diplomats in Canada wear symbolic necklaces and chest sashes. For example, municipal mayors typically wear metal necklaces, while higher level officials sometimes wear chest sashes to symbolize stature, order and rank.

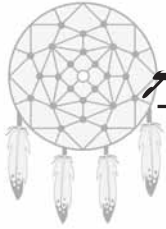
Innovator(s): Middle to late Woodland cultures

Date of Innovation: Beginning around 200 A.D.

Origin: Eastern North America

Source: University of Pennsylvania

Image source: Lakehead University, Ben Kaminski



**Name: Drum**

**Description:**

The drum is sacred among Aboriginal peoples. It is a form of communication between spiritual powers and humans seeking spiritual guidance and strength.

Drums were also used to warn of danger in times of war and to celebrate successful hunts, peace-making and special ceremonies such as unions of marriage. There are typically two types of drums: the powwow and the hand-held drum.



The privilege of owning and playing a drum is a high honour in many Aboriginal cultures that is usually bestowed on a Drum Keeper, who cares for the drum and makes it available at powwows, ceremonies or special gatherings. Being a Drum Keeper is a serious responsibility that must be passed down to the next generation.

While drums can vary in size, the average powwow drum is about sixty-seven centimetres in diameter. The head of the drum is made from animal hides. In the past, buffalo or deer hide covered a hollowed-out segment of a tree. Among the Arctic Inuit, drums are round and flat and are constructed of seal or caribou skins. Some drums were played for specific ceremonies by either women or men, who were responsible for special songs.

Innovator(s): North American Aboriginal and Inuit peoples

Date of Innovation: 200 A.D.

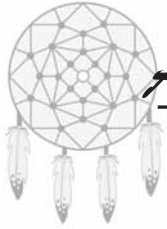
Origin: North America

Source: Saskatchewan Indian Cultural Centre

Image Source: Powwow Drum; photo courtesy of Saskatchewan Indian Cultural Centre, [www.sicc.sk.ca/keepinghouse/artifacts/drum.htm](http://www.sicc.sk.ca/keepinghouse/artifacts/drum.htm),

Handdrum: Lakehead University Archives





**Name: Headdress**

**Description:**

The headdress was usually worn by men as part of their ceremonial regalia. It symbolized leadership and status in the community. Historically, a headdress was made from decorated animal skulls, and later it evolved to buffalo skin and horns. Patterns were painted onto horns that were decorated with animal hair. Chin straps were made from hide to hold the headdress in place.

Headdresses were culturally styled and served communication and ceremonial purposes. At times, headdresses also featured “masks,” as was the practice among the Tlingit of Alaska and Haida of British Columbia.



Headdresses continue to be sacred and still symbolize leadership. They are typically worn by leaders and special powwow dancers.

Innovator(s): North American Aboriginal cultural groups

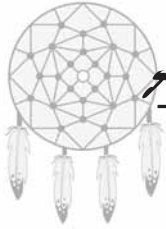
Date of Innovation: Pre-European contact

Origin: North America

Source: Museum of Civilization

Image source: Lakehead University Archives





**Name: Powwow**

**Description:**



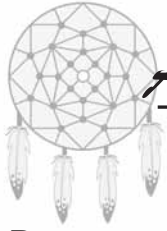
The word powwow comes from the *Narragansett Algonquin* word “*pauau*” that originally meant “a gathering of medicine men for a curing ceremony.” Gradually, the word came to mean a celebration gathering to mark important events. The dancing circle of the powwow, around which dancers

travel in the direction of the East, is called an arena. The circle represents all living kingdoms: plants, animals, man and spirit.

Drummers and singers are integral to a powwow. The music and dance emphasize repetition and unison that strengthens the unity among powwow participants. A powwow starts with a Grand Entry that is led by an Eagle Staff Keeper, elders, and veterans who carry flags. Male dancers -- traditional, feather, and fancy-- are followed by women dancers-- traditional, jingle and shawl. Indian princesses and braves follow the dancers. All dancers must be in regalia to participate in the Grand Entry and travel in the direction of the East while the Grand Entry and Honour Songs are sung-- after which, an Invocation is delivered by an elder.



Special songs may be sung for healing and wellness and/or as a prayer for an individual, family or community that needs support or recognition.



Powwow gatherings usually last four days and include a community feast of both traditional and non-traditional foods. Elders, drummers and singers, and all dancers are served first, followed by all other powwow attendees.

Powwow gatherings continue to be held across the land today. The preferred environment is the outdoors, but they are sometimes held indoors.

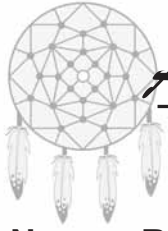
Invention: North American Aboriginal peoples

Date of Innovation: Pre European Contact

Origin: North America

Source: Saskatchewan Indian Cultural Centre

Image source: Powwow, Lakehead University Archives  
Dancer, Old Fort William, Thunder Bay, Ontario



**Name: Rattle**

**Description:**

Rattles were used for communication, music, healing rituals performed by medicine men, protection, ceremonies, and as toys for children.

Rattles were typically made of animal skin or wood and were filled with bones or stones to create noise when shaken. A rattle's decoration was based on its purpose and cultural identity.

Today, traditional rattles are revered as very sacred and are used in special ceremonies when special songs or blessings are performed.

Over time, non-traditional rattles became more elaborate and have evolved into wooden and plastic objects. More contemporary rattles are musical instruments or children's toys.



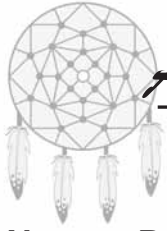
Innovator(s): North American Aboriginal Peoples

Date of Innovation: Pre European Contact

Origin: North America

Source: Canadian Museum of Civilization

Image source: Lakehead University Archives



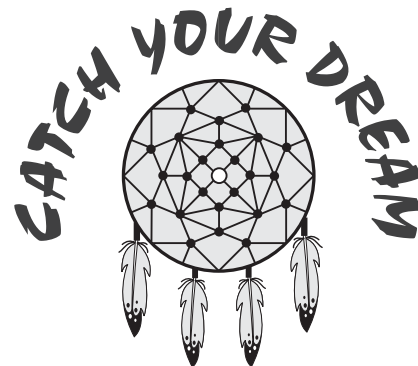
**Name: Dream Catcher**

**Description:**



Aboriginal peoples traditionally made dream catchers from thin red willow sticks that were tied in a circle with sinew. Sinew was woven around the inside circle to create a web. Stones or beads were also woven into the webbing, leaving enough room for an opening at the core of the circle. Feathered fringes were attached to the sides of the dream catcher.

A dream catcher was hung



over a child's bed to prevent bad dreams from reaching the child's restful mind. During the night, bad dreams were caught in the webbing, while good dreams were allowed to flow through the centre of the web. The morning sun warmed the stones or beads, melting bad dreams that flowed off the feathers.

Dream catchers are still made and used today by people of all ages.

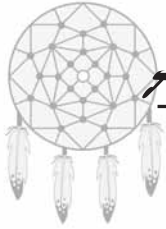
Innovator(s): Ojibwe, Cree, Algonquin, Inuit

Date of Innovation: Pre European Contact

Origin: Canadian Aboriginal groups

Source: Saskatchewan Indian Cultural Centre

Image source: Aboriginal Initiatives, Lakehead University Archives



**Name: Moss Bag**

**Description:**

Aboriginal groups used different types of moss for various purposes. Some types of moss were used for bedding cushions for cradle boards, pillows, and mattresses while others were used for diapers and by women on their moon time.

Women and men would search for the “right” type of moss and transport it back to the village for use in moss bags. The mossbag shown was attached to a cradle board, and was made of leather or fabric with lace. The moss was placed inside the bag to absorb moisture from babies, who, as a consequence, seldom experienced diaper rash.

As society progressed, the use of moss was replaced with new innovations such as diapers, menstrual pads, and modern baby carriers such as bassinets, strollers and snuggly bags.



Innovator(s): North American Indians

Date of Innovation: Pre European Contact

Origin: North America

Source: Royal Ontario Museum

Image source: Lakehead University Archives





**Name: Pouch - Bag**

**Description:**



Specially made bags or pouches were used by men and women to hold tobacco and firemaking tools. The pouch was made from various colours of cloth and/or animal skins. An inner panel divided the pouch into two compartments. Pouches or bags were decorated with woven dyed quills and then stitched into various shapes and colours. Decorated straps were attached to the pouch so that it could be carried.

Quilled pouches were found in the central sub-Arctic, prairies and as far east as Ontario.

Today, pouches are made of leather and cloth and are used for a variety of purposes such as carrying tobacco or other medicines, pipes and sacred bundles. In everyday life, pouches are also known as knapsacks or purses.

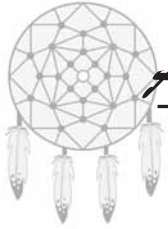
Innovator(s): Western Woods Cree

Date of Innovation: Pre-European Contact; 19<sup>th</sup> century – second quarter

Origin: Western Canada

Source: Royal Ontario Museum

Image source: Thunder Bay Historical Society, Lakehead University Archives



**Name: Bitten-bark patterning**

**Description:**

Bitten-bark patterning was the Aboriginal version of embroidery. Designs were bitten into birch bark, usually in floral patterns. The depth of the pattern depended on the strength of the bite. The bitten-bark technique was performed primarily by the Western Woods Cree and sub-Arctic peoples. An example is pictured below.



Bitten-bark embroidery is still practised today in the sub-Arctic, Western British Columbia and the plains regions of Canada.

Innovator(s): Western Woods Cree, Inuit

Date of Innovation: First discovered in the 20<sup>th</sup> century.

Origin: Central sub-Arctic, Saskatchewan – Amisk Lake

Source: Royal Ontario Museum

Image source: Lakehead University Archives





**Name: Doll**

**Description:**

Doll making was popular among Aboriginal groups in Canada. Doll bodies were made from the husk of corn and heads were carved from wood. Dolls were decorated with materials such as skins. Following the European influence, various other materials were also used. Elaborate dolls were made for trading with Europeans.



The origins of doll making are not known; however, this craft probably began with the Seneca and Woodlands tribes of Ontario.

Traditional dolls were believed to be the prototype used for commercially manufactured Indian dolls, as in the photo above. Traditional dolls are still made today by many Aboriginal groups in Canada.

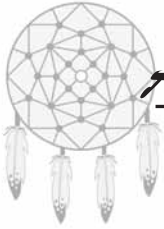
Innovator(s): Seneca – unconfirmed

Date of Innovation: 19<sup>th</sup> Century

Origin: Ontario Woodlands

Source: Royal Ontario Museum

Image source: Lakehead University Archives



## Name: Totem Pole

### Description:

Events or family characteristics, or a totem, are symbolized on the totem pole. A totem is an ancestral being or guardian who is respected and revered.

Mythological or real animal carvings on a totem pole signify an identification of the head of the household's lineage. The totem animal is similar to a family crest.

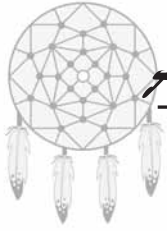


Totem poles may be divided into seven categories: memorial; heraldic totem poles that identify past and present home owners; burial markers; house posts or roof supports; poles placed at portal holes or entrances to houses; welcoming poles that identify waterfront owners at the water's edge; mortuary poles that house deceaseds' remains that are buried inside; and, finally, ridicule poles that are used when significant people are mocked for mistakes and represented in an upside-down likeness of themselves.

Totem poles were typically made of cedar and bore carvings that displayed Aboriginal family and clan histories. Alaskan Panhandle groups such as Tsimshiam, Haida and Tlingit used totem poles for this purpose.

Totem poles were also symbols of great wealth as artists were expensive to commission.

West Coast Aboriginal peoples considered that the first totem pole was a gift from the Raven. It was named Kalakuyuwish, "the pole that holds up the sky."



Totem poles of the Northwest Coast tribes were actually family crests rather than religious icons, denoting the owner's legendary descent from an animal such as the bear, raven, wolf, salmon or killer whale. Totem poles are synonymous with the culture of West Coast peoples. Today, they are also symbols that are identified with Canada worldwide.

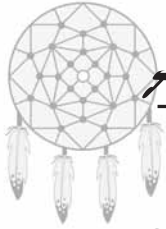
Innovator(s): Northwest Coastal Aboriginal peoples of Canada and U.S.

Date of Innovation: Pre-European Contact/Prehistoric

Origin: A symbolic Wood Carving

Source: Encyclopedia Britannica.com

Image Source: Lakehead University, Ben Kaminski



**Name: Silver Jewellery**

**Description:**

Engraved pieces of silver were designed with animal motifs such as sea lions. They were primarily reproduced for trading.

Designs were hammered by a skilled silversmith onto objects worn as fashion pieces.

Silver carved jewellery pieces are still very popular among the Westcoast peoples and are revered as valued art pieces worldwide.



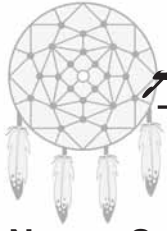
Innovator(s): Northwest Coast Tribal Peoples

Date of Origin: mid-20<sup>th</sup> century

Origin: Queen Charlotte Islands, British Columbia

Source: Royal Ontario Museum

Image source: Lakehead University Archives



## Name: Soapstone Sculpting

**Description:** Soapstone is a metamorphic mineral that has been found at prehistoric archaeological sites throughout the Arctic, Hudson's Bay (Nunavut), Newfoundland and Labrador. Remnants of ovens, cooking ware and lamps found at prehistoric sites demonstrate how vital soapstone was to Aboriginal peoples for their survival, and in some instances, for spiritual purposes.

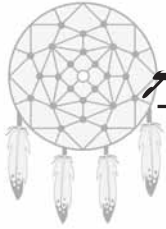


The name "soapstone" was derived from its soapy characteristics and "oily" feel, and the stone is more dense than limestone. A high concentration of mineral talc in soapstone is the cause of the oily feel, making it soft for carving. While soapstone appears indestructible, carvings need to be handled with care because of the high concentration of mineral talc.



Soapstone was very soft when first removed from a quarry, which was usually where artisans began to work on a sculpture. After the stone was exposed to open air, it dried out and became harder, which made sculpting more difficult. This was often the case in prehistoric quarries located in Newfoundland and Labrador.

Large crude stone tools were used to pry, chisel and scrape soapstone from the face of a soapstone quarry. Historically, other forms of rock such as quartzite, a very hard rock, were used as carving tools.



Another type of soapstone is argillite, which is found around the Hudson's Bay, Nunavut region. This stone is composed mainly of clay materials that have been heated and pressured to form a fine, uniform and easy-to-use material.

Aboriginal peoples have sculpted soapstone for centuries, an art that is practised today, using many traditional techniques. Soapstone sculptures were used to honour or commemorate special events or gatherings and were often created in the shape of animals, particularly mammals. They were also used as a commodity for trading.

Today, soapstone continues to be used for carvings, fireplaces, decorative hearths, facings and mantles. It is ideal for under-floor heating and other commercial uses.

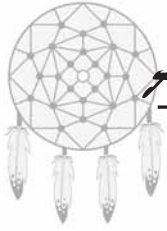
Innovator(s): Canadian Inuit peoples

Date of Innovation: Pre-historic

Origin: Northern Canada (Arctic, Hudson's Bay, Newfoundland and Labrador)

Source: Stonetrade, Newfoundland and Labrador Heritage

Image: Lakehead University Archives



**Name: Pipe Bowl**

**Description:**



Carved pipes were used for ceremonial purposes, for acknowledging peace with other tribal groups or non-tribal cultures and for offering to traders and other dignitaries who were outside the tribal community.

Pipe bowls would often be carved out of stone, slate, bone, beads or ivory into shapes that resembled human heads or

animals. Some pipe bowls would be affixed to wooden shafts, which would be decorated with beads or quills.

Pipes are still used today by many Aboriginal groups across the country. The bowls are still carved from various materials such as soapstone or ivory; and the stems or shafts are decorated with beads, quills, and ribbons.

Innovator(s): North American Aboriginal Peoples

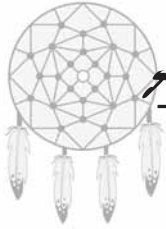
Date of Innovation: Pre-European Contact

Origin: North America

Source: Royal Ontario Museum

Image source: Lakehead University Archives





## Name: North American and Canadian Aboriginal Languages

### Description:

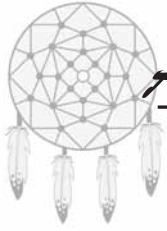


North, Middle and South American languages are indigenous to Aboriginal peoples of the Americas. Prior to European contact, an untold number of languages existed among Aboriginal groups across North and South America. After European contact, around the 15<sup>th</sup> century, about 300 languages were in use. Today, roughly half remain.

The languages that are used in North America today include the Navajo, Cree, Inuit and/or Dene, Ojibwe, Algonquian, Central Alaskan Yupik, Sioux, Creek, Tohono O'odham and Choctaw.

The Nahuatl language has given the names Guatemala, Mexico and Nicaragua. Inuit words with a similar impact include kayak and igloo. Tipi (teepee) is a Sioux word for "dwelling." Middle American Nahuatl words are chocolate, cacao, avocado, coyote, tomato, tamale, and chili/chile. South American words from Tupinamba are cashew, toucan, tapioca, and jaguar. The Quechua language gave jerky, puma, llama, alpaca and quinine. Maipurean or Arawakan words are guava, iguana, hurricane, barbecue, hammock, papaya, maize, potato, and canoe.

European vocabularies have been influenced by the North American Aboriginal languages: Canada is Laurentian Iroquois for kançttall: "settlement." In the Ojibwe or Cree (Algonquian) language, Mississippi is from mitsi (big) and sitpi (river). In the Aluet language, Alaska means Alaskan Peninsula: alakshkhakh. In Sioux, Minnesota is mni (water) and sota (clear).



The Algonquian languages have provided the highest number of English nouns with Native American origins, such as toboggan, totem, chipmunk, caribou, papoose, powwow, squash, moccasin, tomahawk, opossum, moose, skunk, and hickory.

The syllabic writing system was invented in the 1850s by James Evans, a methodist missionary, and became the written form of many Aboriginal languages. Since then, many groups have adopted and modified the system to fit their languages.

Source: "Native American Languages" Microsoft® Encarta Online encyclopedia 2000

<http://encarta.msn.com> © 1997-2000 Microsoft Corporation. All rights reserved

Image source: Thunder Bay Historical Museum

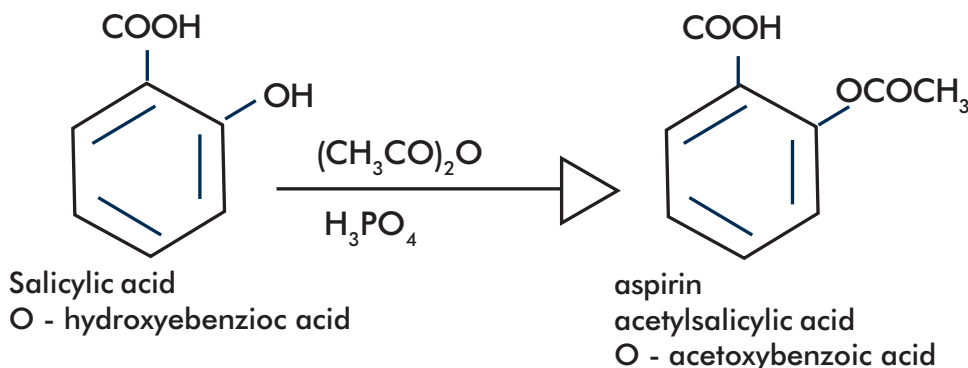


**Name: Willow Bark (active ingredient in pain relievers such as aspirin)**

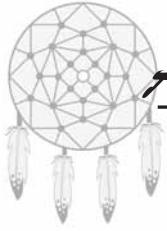
**Description:**

The active ingredient in pain relievers such as aspirin was known to Aboriginal peoples for centuries, as well as Hippocrates in Greece, 5<sup>th</sup> Century B.C. This ingredient is found in species of the willow tree and was used to treat ailments among Aboriginal peoples.

The derivative that the Aboriginal peoples were extracting from willow bark was called salicin, the pharmacological relative of a family of drugs called salicylates or in scientific terms, acetylsalicylic acid. The pharmacological formula for aspirin was developed by German industrial chemist Felix Hoffman in the 19<sup>th</sup> century.



A formula that was less acidic, and easier to tolerate internally, was synthesized acetylsalicylic acid or ASA. This drug reduced fever, relieved moderate pain, and at substantially higher doses, alleviated rheumatic and arthritic conditions. It is an analgesic that is effective both as a pain reliever and anti-inflammatory agent, relieves swelling associated with arthritis and minor injuries, and reduces fever.



Aspirin is the principal active ingredient in an excess of 50 over-the-counter drugs. Over 40 million pounds of aspirin are produced annually in the United States alone, which equates to about 300 tablets per year for every person. Americans consume approximately 80 billion aspirins per year.

Innovator(s): Aboriginal peoples across Canada and the Americas

Date of Innovation: Pre-European Contact

Origins: North America (Willow Trees)

Source: Imbris Inc.

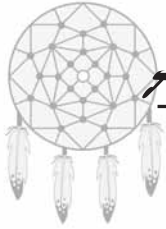
Ken Flieger, Aspirin: A New Look at an Old Drug.

Department of Indian and Northern Affairs Canada

Mayo Health

Food and Drug Association of Ontario

Image source: Lakehead University



**Name: Aboriginal Medicines**

**Descriptions:**

Aboriginal peoples have treated health problems and ailments naturally for centuries. Although books could be written on this topic alone, some major medicine highlights are presented here:

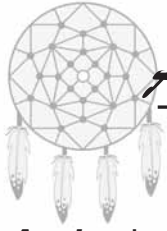
***Medicinal Teas, Tonics and Procedures:***

***Sassafras Tea, Sassparilla Tea*** mixed with sugar, spices, and carbonated water to make “Indian root beers,” was sold as a curative drink.

***Cephalaelis ipecacuanha and C. acuminata roots (three to four years old) cured with ipecac*** were used by the Amazon Indians of the Amazon to cure amoebic dysentery, a deadly disease that exists today. This medicine induced vomiting and was a cure for amoebic dysentery as it killed amoebas. Poison clinics worldwide use ipecac for this reason. Emetic was used to expel poisons or for ritual purification. In 1688, *Cephalaelis ipecacuanha and C. acuminata roots (three to four years old) cured with ipecac* were introduced to France by Dr. Schweitzer (Jean Adrien Helvetius).

***Annedda*** was a tonic made by the Hurons from the bark and needles of hemlock or pine trees. It was used to cure scurvy. In 1535, many of Jacques Cartier’s crew members died of scurvy while waiting for the ice to melt so the three ships (Grande Hermyne, Petite Hermyne and Emerillon), trapped in the St. Lawrence River (Montreal), would be free. Local Huron Indians gave Cartier their cure for scurvy. Cartier’s experience motivated the British Admiralty to order a supply of lime juice on all naval ships to prevent scurvy. In 1716-1794, James Lind was credited with discovering the cause and cure of scurvy. His effort lead to the discovery of vitamins and improved nutrition.

***Witch Hazel (Hamamelis virginiana)*** is an astringent that relieves tired and sore muscles. It is derived from the wild geranium (*heuchera americana*).



**Arnica** is a tincture made from dried Arnica genus plants that alleviates bruising, swelling, and pain.

**Oil of Wintergreen** was originally used to soothe sore muscles and became a flavouring for medicines and candies.

**Vermifuge Pinkroot (*Spigelia marilandica*)** with red and yellow flowers, was used by Northeastern United States Indians to cure intestinal worms.

**Bloodroot (*Sanguinaria Canadensis*) — also called puccoon or lobelia** — was used as an emetic by North American Indians.

**Boneset (*Eupatorium perfoliatum*)** is a stimulant.

**Blue Cohosh or Squaw Root (*Caulophyllum thalictroides*)**, an antispasmodic derived from a parasitic plant growing on oak tree roots called blue cohosh or squaw root, is an antispasmodic that helped induce menstruation.

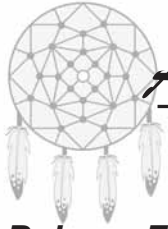
**Bitter Root (*Trillium erectum*)** is a pain reliever derived from bitter root to relieve labour pains. Pioneers later called bitter root “birthroot.”

**Papiani** is used in emetics, febrifuges, purges, skin ointments and underarm deodorants, breath fresheners and toothpaste.

**Balsam (*Balsamorhiza*)** – roots of the genus *Balsamorhiza*, particularly (*B. sagittata*) — have yellow flowers and aromatic root . It was used by Western United States Indians to make ointments and balms, which they also gave to the pioneers.

**Balsam of Tolu (*Myroxylon toluiferum*)** is a tropical tree with an aromatic resin that is used in pharmaceuticals and toiletries worldwide.

**Tacamahac or Balsam of Poplar (*Populus balsamifera*)** was made from aromatic buds that were coated in resin and used to produce ointments by North American Indians.



**Balsam Fir (*Abies balsamea*)** has very small cones and needles that were used to make ointments. Canadian balsam was also used to make ointments.

**Balsam of Peru (*Myroxylon pereirae*)**, a fragrant tree resin, was used to make balsam, toiletries, and perfumes.

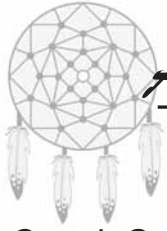
**Trephining — brain surgery** was practised in the Andes. A hole was drilled in the right parietal bone of the skull by the “surgeon,” relieving pressure that resulted from cranial trauma such as blows to the head in warfare. Archaeological excavations have shown skulls with up to five healed trephinations. The Aztecs were advanced medically, and developed obsidian scalpels that were very sharp and minimized the loss of blood and scarification. The Aztec people were medically organized in performing both diagnosis and treatment, and in creating drugs. The Aztecs understood human anatomy best in the world in the 16<sup>th</sup> century. They understood the heart’s role and blood circulation before William Harvey later presented his blood circulation theory (English; 1578-1657).

**Coca** is an Andean plant from which cocaine is derived. Procaine is a synthetic anaesthetic derived from cocaine. Both products were originally used to soothe the body and relieve pain, hunger, fatigue, itching and thirst. In 1565, Nicolas Monardes of Seville made note of the coca plant. In the 1850s, German scientists singled out cocaine as an active ingredient; and in the 1880s, it was used as anaesthesia in eye surgery and then in dental and other surgeries. At the same time, Mariani’s Coco Wine, made by chemist Argelo Mariani, was enjoyed by Pope Leo XIII, Queen Victoria, Thomas Edison, Sarah Bernhardt, and William McKinley.

Procaine, the synthetic of cocaine, is trademarked as “Novocain,” an important anaesthetic worldwide.

A United States pharmacist, John Styth Pemberton, made medicines using Native American and foreign ingredients. These included Flower



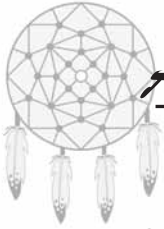


Cough Syrup, Triplex Liver Pills and French Wine Coca (“the Ideal Nerve and Tonic Stimulant”), imitating Mariani’s Coco Wine. People wanted the stimulant, not the wine. Coca-Cola was created as a syrup flavouring for water drinks, and it was initially marketed to drugstores. In 1886, carbonated water was mixed with the Coca-Cola syrup and, ultimately, sold to Asa Griggs Candler, a pharmacist.

**Facial lacerations** were sutured with human hair threaded on bone needles.

**Bulb Syringe and Rubber Hoses** were used to clean ears and give enemas. European doctors adopted the use of the syringe and hose tools, which continue to be used today.

Source: Weatherford, Jack, *Indian Givers: How the Indians of the Americas Transformed the World* (Fawcett Columbine: New York, 1988; Pages. 181, 183, 185-186, 188); Cedarlane Natural Foods Inc. [Native Culture.Com](http://NativeCulture.Com)



**Name: Cotton – *Gossypium hirsutum* (upland cotton); *Gossypium barbadense* (sea island cotton)**

**Description:**



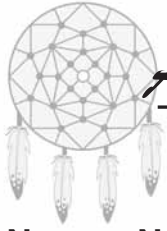
“It is almost impossible to determine the original habitats of the various species of cotton. Scientists have determined fiber and boll garments from the Tehuacán Valley of Mexico to be about 7,000 years old. The plant has certainly been grown and used in India for at least 5,000 years, and probably much longer. Cotton was used also by the ancient Chinese, Egyptians, and North and South Americans. It was one of the earliest crops grown by European settlers, having been planted at the Jamestown colony in 1607.”

The 16<sup>th</sup> century introduction of the American cotton fiber to Europe radically changed the textile industry and led to the industrial revolution. Sheep’s wool was an inefficient source of fiber for clothing and other textiles when the cost of production (time, labour, number of sheep and grazing land) to clothe people was calculated. Rich and colourful cotton textiles were a vibrant aspect of South American culture for thousands of years before Europeans colonized the Americas. The long fiber of the American Indian cotton surpassed the length and quality of the Old World cotton, and “cotton cloth” was recorded as woven in England in the mid-16<sup>th</sup> century. In addition, the processing of cotton fibers into cloth necessitated the mechanization of the removal of the seeds from the cotton, and this was accomplished by the invention of the mechanical cotton gin by Eli Whitney in 1793, Westborough, Massachusetts; and the parallel development of increased efficiency of spinning and weaving. It would have an explosive effect on the world economy and precipitated the industrial revolution.

Source: Weatherford, Jack, *Indian Givers: How the Indians of the Americas Transformed the World* (Fawcett Colubine: New York, 1988; Pages 42-44)

Microsoft Corporation; Straw.com

Image source: Lakehead University Archives

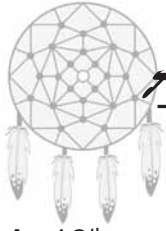


## Name: Natural Dye – Cochineal

### Description:

The Mexican Indian female scale insect (*Dactylopius coccus*) with its intense red pigment yielded one of the most valuable dyes ever produced, and certainly one of the most significant of the North American Indian dyes. In a highly specialized process, female insects were harvested from the cactus plants (*Nopalea coccinellifera*) on which they fed and lived. The insects were dried and processed to colour thread and cloth. The processing of as many as seventy thousand insects was required for every pound of cochineal dye. The popularity of the expensive dye was so great that the Spanish took over the plantations, and expanded them to other areas of Mexico. “15<sup>th</sup> century Aztecs, under Montezuma, conquered the Mayans. Eleven Mayan cities paid an annual tribute of 2,000 decorated cotton blankets and 40 bags of cochineal each.” In 1519, Pizarro and Cortez found that there was cotton in Central and South America. They sent back brightly printed fabrics, showing that the Indians knew about block printing prior to the Conquest, after which cochineal was shipped to Spain from Mexico and Peru. By the mid-16<sup>th</sup> century, Europeans began demanding huge quantities of cochineal for make-up, food colouring, and the scarlet British army uniforms that led to the nickname “Red Coats.”

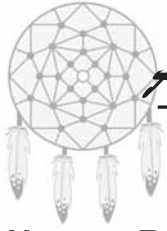
Production of cochineal was highest in the 1870s (MSN article), with over seven million pounds of cochineal dye produced annually. Synthetic *aniline* dyes nearly stopped the cochineal production and cultivation of prickly pear cacti. Today, a small cochineal industry exists in the Canary Islands, Peru and Mexico. It is believed that some synthetic red dyes may be carcinogenic, and this belief is generating a renewed interest in producing cochineal, particularly because of its appeal as a natural colouring agent in processed foods.



An 18<sup>th</sup> century English dyehouse was awarded a contract to dye the Buckingham Palace Guards coats with cochineal. This contract continued into the 20<sup>th</sup> century still using cochineal. In 1878, Biebrich Scarlet invented a very pure, red acid dye, rivaling cochineal in brightness.” [www.straw.com/sig/dyehist/html](http://www.straw.com/sig/dyehist/html)

***Annatto and Achitoe (Bixa orellana)*** was cultivated by the Aztecs. The annatto tree’s red and pink blossoms imparted a flavouring to food, and the seeds (achiote) from the tree are a source of yellow or reddish yellow textile or food dye in modern day margarine.

Source: Weatherford, Jack. Indian Givers: How the Indians of the Americas Transformed the World (Fawcett Columbine: New York, 1988; Pages 44-46)  
Straw.com; Microsoft Corporation



**Name: Rubber – Caoutchouc**

**Description:**

The sap of the *Hevea brasiliensis* tree was harvested and cured by heating it over a fire. It was then combined with sulfur to increase its strength and reduce the odour and stickiness. This process was termed “vulcanization” and in 1839, it was similarly discovered by Charles Goodyear.



The rubber was originally used for raincoats, shoes, bottles for carrying liquids, ropes for transporting materials and tying-up items, and game balls.

Rubber exploded onto the scene from the mid-19<sup>th</sup> century in the form of tennis shoes, running shoes and other shoes for sports, boots, air mattresses, knapsacks, canteens, gloves, life preservers and many more items. Exploration of all global climatic regions was now possible through the weatherproofing and insulating qualities of rubber. Bicycle and automobile tires could now be made with rubber, popularizing the use of these modes of now-comfortable transportation. Factories also made use of flexible rubber machine parts like hoses and rollers; and with the late 19<sup>th</sup> century development of rubber insulated electrical wire, the electrical age proceeded forward. It was in 1888 that the first mill produced electrical fuses in Kahl, Germany.

Innovator(s): Incas: Quechua Indians and others

Date of Innovation: Pre European Contact

Origin: North and South America

Source: Weatherford, Jack, *Indian Givers: How the Indians of the Americas Transformed the World* (Fawcett Columbine: New York, 1988; pp. 46-49)

Image source: Lakehead University Archives



**Name: Petroleum Jelly – Olefin hydrocarbons and Methane gelatinous ointment**

**Description:**



North American Indians used olefin hydrocarbons and methane gelatinous ointment to aid wound healing, and to protect and moisturize human or animal wounds.

Petroleum jelly is known around the world for its healing properties and qualities. As a moisture barrier, it is useful for diaper rash and wound dressings; it prevents skin chapping and wind burn. In the desert, it is used to protect hair and skin from the drying and burning effects of the sun's rays. Wherever fat was traditionally used, petroleum jelly was substituted due to its odourless qualities.

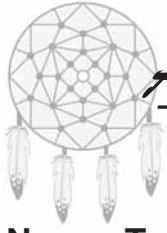
Innovator(s): North American Indians

Date of Innovation: Unknown

Origin: North and South Americas

Source: Weatherford, Jack How the Indians of the Americas Transformed the World (Fawcett Columbine: New York, 1988; pages 186-187); Britannica Encyclopedia Online (Britannia.Com Inc)

Image source: Lakehead University Archives



## Name: Tar and Asphalt

### Description:

In 1719 the “black mud” (or residue) that seeped from the Athabaskan sand banks intrigued Wa-pa-su, of the Cree Nations. He decided to take a sample to the Hudson Bay Post at Fort Churchill. The black mud was discovered to be oil from the now famous Athabaskan oil sands, and this was the first time in Canadian history that this substance was found.



Following this discovery, in 1778, Peter Pond became the first non-Aboriginal person to enter the rich Athabasca fur-trading region via the Methe Portage and Clearwater River. Mr. Pond noted the thick oil material along the river, and that the Aboriginal peoples used the tarry substance to waterproof their canoes

The first recorded description of the Athabasca tar sands as “bituminous fountains”, which were up to 20 feet, deep, was by explorer Alexander McKenzie in 1790.





In 1870, Henry John Moberly set up a Hudson's Bay Company post at the junction of the Clearwater and Athabasca Rivers. The post was named Fort McMurray, after Chief Factor William McMurray.

A Geological Survey of Canada expedition in 1875 examined the rivers streaming into Lake Athabasca. A botanist, John Macoun, recorded that he saw water naturally extracting oil from the oil sands. His thoughts were that the "tar" was not mixed with mineral matter, but that the tar flowed through the water. This process is the essence of today's technology for extracting bitumen from oil sands.

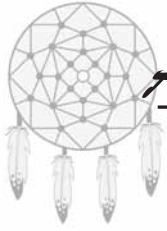
This discovery attracted Dr. Robert Bell of the Geological Survey of Canada to the Athabasca area in 1882. Dr. Bell also reported on the oil sands.

The use of water to separate bitumen from the oil sands was first attempted by G.C. Hoffman of the Geological Survey of Canada in 1883. Hoffman reported that water easily removed the bitumen from the sand.

In 1906, Count Alfred von Hammerstein started an oil and asphalt company in the Fort McMurray area. He set out to drill for oil, but he found salt deposits at the mouth of the Horse River.

During the period between 1913 and 1914, the Northern Alberta Exploration Company drilled six shallow wells at the junction of the Horse and Athabasca Rivers. Even though the Exploration Company drilled through tar sand layers, salt was found below and the company determined that this product was best for commercial purposes.

Sydney C. Ells of the Mines Branch conducted a survey of the Athabasca country in 1913. He witnessed the potential for utilizing asphalt reserves as road-surfacing material. To explore this potential further, Ells toured 10 asphalt sites in the United States. There he discovered a site that used hot water to separate the bitumen from the sand.



The first oil well to reach a depth of 304.8 metres in the Athabasca area was drilled by J.D. Tait of Vancouver in 1915.

From Pennsylvania to California, asphalt coating was used for waterproofing items such as baskets to carry water. These types of baskets were light and unbreakable, unlike pottery.

Cloth was also waterproofed with asphalt coating. These garments were used as rain-proof “tarpaulins” (“Tar” was the term applied to the oily, dark-coloured bituminous products obtained by the destructive distillation of peat, wood, coal, bones and other materials of natural origin. Typical tars are rich in natural/organic compounds that are related to benzene.)

Early oil wells used by United States Aboriginal peoples (Pennsylvania) were holes in the ground. They provided examples for the subsequent establishment of the American oil industry.

Deposits of asphalt can be found in pits or lakes as crude petroleum residue that has seeped up through the cracks or “fissures” in the earth.

In 1870, asphalt was used to pave streets in the United States. By 1903, more than 35 million square metres of United States streets were paved with asphalt. Today, about 90% of roads in the United States and Canada are surfaced with asphalt derived from petroleum.

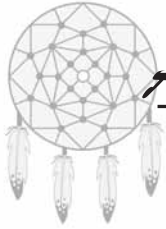
Innovator(s): North American Aboriginal Peoples

Date of Innovation: Pre-European Contact

Origin: Water-proofing

Source: Jack Weatherford, *Indian Givers: How the Indians of the Americas Transformed the World* (Ballantine Books: New York, 1988, pp. 48-49)  
The Athabasca Oil Sands Web Site, SchoolNet Digital Collections Program, Industry Canada; Alberta Provincial Archives; Microsoft Corporation

Provincial Archives of Alberta Image A3399 <http://www.collections.ic.gc.ca/oil/phog5.htm>



## Name: Chewing Gum

### Description:

It is believed that the ancient Greeks of 50 A.D. chewed mastiche, a residue from the Mastic tree. Researchers discovered that the Mayan Indians of 2<sup>nd</sup> century Central America liked chewing chicle, which is believed to have been a natural resin from the latex of the Sapodilla tree. This resin later became the main ingredient in chewing gum.

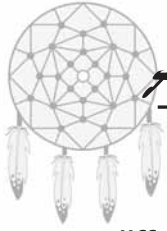


American Indians discovered another natural form of gum-like resin by cutting the bark of spruce trees. They introduced the custom of chewing spruce gum to the early North American settlers. These savvy New Englanders marketed the first commercial chewing gum by selling and trading lumps of spruce. Spruce gum continued to be sold in 19<sup>th</sup> century America until the 1850s, when paraffin wax became the new popular base for chewing gum.



Modern chewing gum producers appeared in 1869. Mexican General, Antonio Lopez de Santa Anna, hired New York innovator Thomas Adams to develop a new form of rubber using chicle. Chicle is the same gummy substance people in Mexico had been chewing for centuries. Adams was unsuccessful in developing rubber, but he did succeed in producing the first modern chewing gum, which he called "Adams New York No. 1."

Gum made with chicle and similar latexes soon became more popular than spruce gum or paraffin gum. Chicle-base chewing gum was smoother, softer and held its flavour better than any previous type of chewing gum. By the 1900s, chewing gum was manufactured in



many different shapes and sizes (long, pencil-shaped sticks, ball form, flat sticks and blocks) and flavours (peppermint, fruit and spearmint).

In 1928, Walter Diemer, a cost analyst for the Flee Company, invented bubble gum. Many people had tried for years to develop a gum that could be blown into bubbles, but it was Mr. Diemer, a young man who knew nothing about chemistry, who found the right combination of ingredients and created a gum that was strong enough to be stretched when filled with air.

Today, synthetic materials replace natural gum ingredients to create a chewing gum with better quality, texture and taste. There are more than 1,000 varieties of gum manufactured and sold in the United States and Canada. One can find gum filled with liquid or speckled with crystals; gum that won't stick or is made without sugar; gum with wild flavor combinations like mango and watermelon or gum in crazy shapes like long rolls of tape.

North American children spend approximately half a billion dollars on bubble gum every year.

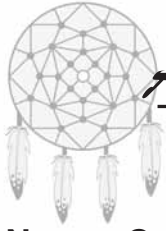
Innovator(s): North and South American Aboriginal Peoples

Date of Innovation: Pre-European Contact

Origin: North and South America

Source: Jack Weatherford, *Indian Givers: How the Indians of the Americas Transformed the World* (Ballantine Books: New York, 1988, pp. 48-49); National Association of Chewing Gum Manufacturers; Wrigley's Department of Indian and Northern Affairs Canada

Image source: used with permission of Concorde Confectionaries, [www.dubblebubble.com](http://www.dubblebubble.com), logo used with permission from Mexitrade Internacionale, Terra Com, 10 kilo block of chickle [www.chide.com.mx/eng.html](http://www.chide.com.mx/eng.html)



## Name: Crop Domestication



### Description:

The American Aboriginal peoples are credited with agricultural innovations from Mexico City to Honduras. In a central area of Mesoamerica, corn, beans, squash, avocado, agave, cacao, cotton, tomato (*Physalis*), jicama, sweet potato, and possibly the American yam and the papaya were integral food sources.

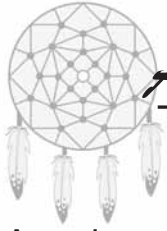
Maize (corn) diffused to South America from Mesoamerica by 1,800 B.C. The Mesoamerican complex included a minimum of three species of squash and one species of capsicum pepper.

Within this complex, the corn-bean-squash or “three sisters” along with the sunflower, dispersal gradually moved north to Canada and produced the foundation for North American Eastern Woodlands agriculture.

Maize originated from teosinite and is recognized as a significant domesticate of the American Aboriginal peoples. Corn has evolved from the first maize; it has since replaced other cereal crops and has become a lucrative agricultural commodity.

The potato, lima bean and peanut were found in Mexico and South America in the 1st century A.D. The tomato originated in Mexico and Guatemala and was domesticated in Europe, mainly by the Italians, as early as the 16th century. Six of the fifteen crucial world crops originate with the American Indians: maize, potato, manioc, sweet potato, common bean and peanut. Similarly, American upland cotton is the cotton of the global economy.





American fibers such as sisal (a popular fiber among upper scale décor stores) and henquen are important materials.

*Cinchona* is a source of quinine for curing malaria. Other cultigens that have been dispersed throughout the world include pineapple, capsicum peppers, papaya, avocado, cashew nut, custard apple (paw paw), guava, tomato and squash. In Eastern Europe and Russia, the North American Aboriginal sunflower is a very important source of edible oil.

While several types of rubber were harvested from wild trees by the American Aboriginal peoples, hevea rubber became an important plantation domesticate in Southeast Asia and Africa.

Tobacco, originally an Aboriginal ritual plant, has become a hugely lucrative agricultural domesticate.

It was mainly the American highland Indians that used the potato as an important food source in the Americas until it was disseminated to Europe where it had an enormous impact on life.

As an export crop for African countries and domestic crop for China, the peanut is extremely important. The sweet potato is also a prominent food staple in China and New Guinea, where its impact is astounding. In the highlands of New Guinea, the sweet potato was embraced in the 16<sup>th</sup> century for its ability to thrive at a higher elevation (above the malarial mosquito range) than the region of taros and yams. The greater food supply, and possibly less malaria, led to population growths, and now some highland New Guinea tribes derive ninety percent of their caloric intake from the sweet potato.

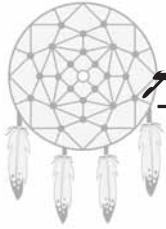
Innovator(s): Aboriginal Peoples

Date of Innovation: 5,000 B.C. to 1st Century A.D.

Origin: North and South Americas

Source: Harlan, Jack R., *Crops and Man.*, 1975, (pp. 231-234; 243-244)  
American Society of Agronomy, Inc. and The Crop Science of America Inc.,  
Madison, WI.; Royal Ontario Museum

Image source: David Quinn



**Name: Freezing Food**

**Description:**

In 1912 to 1916, a fellow by the name of Colonel Clarence Birdseye was fur-trapping in Labrador, he witnessed the Inuit preserving their food by fast freezing it. This process prevented ice crystals from forming on the food and causing spoilage by puncturing the cells. By 1929, Birdseye had produced packages of frozen vegetables, meat and other items that were sold at grocery stores.



Colonel Clarence Birdseye

In 1929, Dr. Archibald G. Huntsman (1883-1973), a marine specialist with the then Biological Board of Canada (later called the Fisheries Research Board), developed “Ice Fillets” and introduced frozen fish to Toronto and elsewhere in Canada.

Preserving foods by freezing allows for the availability of all types of food all year long, not just when seasonally available. The food freezing process was convenient and prolonged the nutritional value of food.

Innovator(s): Labrador Inuit, Colonel Clarence Birdseye

Date of Innovation: Pre-European Contact; 1929 (Birdseye)

Origin: Labrador Inuit

Source: Ralph Nader, Nadia Milleron and Duff Conacher. *Canada Firsts*. McClelland & Stewart Inc. The Canadian Publishers: Toronto, and published in the U.S. simultaneously by Center for Study of Responsive Law: Washington. Copyright 1992 page 94.

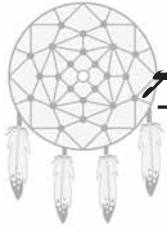
PBS Technology Timeline: 1752-1990

[www.pbs.org/wgbh/amex/telephone/timeline/timeline\\_text.html](http://www.pbs.org/wgbh/amex/telephone/timeline/timeline_text.html)

Wyatt, Valerie, *Invention: An Amazing Investigation*. 1987. Owl Books, Toronto: Greey de Pencier Books. Page 37.

Photo courtesy of Agrilink Foods, Inc.





**Name: Maple Sugar**

**Description:**

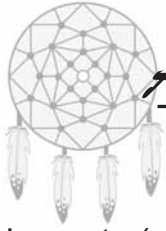
European newcomers to Canada found that Aboriginal peoples were processing maple tree sap into maple sugar. Aboriginal peoples tapped the maple trees in early spring. A giant slanted gash was made in the trunk of the maple tree, a wood chip was placed under the gash in the bark, and the sap was collected in birch bark buckets or wooden troughs. Maple



sugar was made when a hollowed-out log of basswood was filled with the sap and hot stones were added to cook the moisture/water in the sap, leaving a high concentration of sugar.

Maple sugar was the first sugar made in Eastern North America. European settlers used the maple sugar as a sweetener until 1875, when cane sugar replaced maple sugar as the standard sweetener.

The maple industry is estimated to generate an economic impact of \$15 million per year in Ontario, which has approximately 2,000 maple syrup producers.



Innovator(s): Eastern Canadian Aboriginal Peoples

Date of Innovation: Pre-European Contact

Origin: Eastern Canada, North America

Source: Chapeskie, David, RPF, Agroforestry Specialist, The Maple Syrup Industry in Ontario: Answers to Commonly Asked Questions and Reference, March 1997, OMAFRA Alan D. McMillan. Native Peoples and Cultures of Canada: An Anthropological Overview. Douglas and McIntyre: Vancouver and Toronto, 1995. (Pages 105-106, 114)

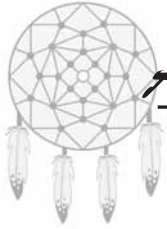
Image source: with permission of Government of Ontario, Ministry of Agriculture, Food and Rural Affairs

Figure : Early Sap Collection Through By Aboriginal People

[www.gov.on.ca/OMAFRA/english/crops/facts/](http://www.gov.on.ca/OMAFRA/english/crops/facts/maple.htm#mapleS:dfka;'vjka;ka;g)

[maple.htm#mapleS:dfka;'vjka;ka;g](http://www.gov.on.ca/OMAFRA/english/crops/facts/maple.htm#mapleS:dfka;'vjka;ka;g)

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;a;gkasrt;ulkbvIk;ckhdIELOhkyl;l;gfdkzs dramksea'vksf'ersd



**Name: Science: Through Native American Eyes**  
(Buffy Sainte-Marie's web site - [www.cradleboard.org](http://www.cradleboard.org))

**Description:**

Students and teachers now can learn unexpected things about America's first culture at the same time as doing their required science lessons, applying their computer skills, and having fun.

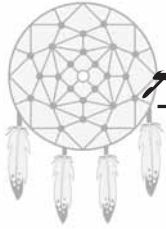
**Science: *Through Native American Eyes*** is the first interactive multimedia CD-ROM that meets American National Content Standards for middle school science while addressing scientific concepts from within Native American culture. The CD is recommended for grades five through adult levels.

Students are tested and automatically graded, and they are apprised of their own progress throughout the CD, seeing at any point what they have left to do. There are Entry and Exit tests, true-false and multiple choice quizzes, and writing activities.

Automatic teacher tracking, help pages, printable PDF files, activities, lessons, experiments, and vocabulary words appropriate to teach each section help teachers to grade and evaluate each student's work as he/she goes through the CD.

The first of Cradelboard's planned fifteen core curriculum CDs addressing the scientific principles underlying **sound, friction, and lodge construction**, which are presented as interactive media via video, audio, text and animation.

**"Principles of Sound"** includes multimedia lessons-videos, animation, audio and interactive text to help students to understand how instruments work. Students study Native American flutes, drums, rattles, mouth blows, and Apache violins -- live and interactive in multisensory ways that print alone cannot cover.



To reinforce the lessons they learn in the “Principles of Sound” section, students listen to some of Native America’s best traditional powwow, instrumental, and contemporary artists by way of the built-in Cradleboard Juke Box.

This year, students can study SOUND — frequency, amplitude, decibels, and wave lengths etc. — by using interactive sliders like recording studios use.

“**Native American Lodges**” teaches how and why different Tribal groups have made various styles of homes and the benefits and constraints of the materials they use.

“**Principles of Friction**” uses video, slide show, narration, and text to teach students how friction is at work in making fire, in grinding things, and when using sleds and toboggans.

Students can play a simple interactive animated game, based on the traditional Native American sport of Snow Snake, to reinforce what they have just studied about friction and speed.”

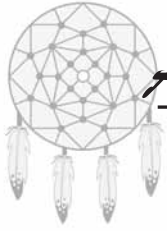
© 1999 Nihewan Foundation

Innovator(s): Ms Buffy Sainte-Marie

Date of Innovation: 1999

Origin: United States

Source: Ms Buffy Sainte-Marie



## Name: Snowshoes

### Description:

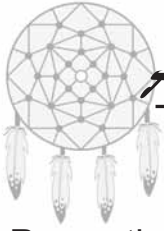
Snowshoes were worn in deep snow by Aboriginal peoples. The snowshoes were, and still are, an adaptation to the North American deep snowfall. When the river systems froze in the winter, toboggans and snowshoes were used as the means of transportation through deep snow.

The Mi'kmaq had two designs for their snowshoes. While both designs were oval in shape and broad in width, one was for fluffy snow and had a square toe; and the other, with a rounded toe, was for snow that had hardened with a frozen crust on top.



The frames were made with ash wood for its flexibility and resilience; and they were laced with caribou, moose and/or deer hide. Light rawhide thongs (babiche) were laced at the tail and toe sections of the snowshoe, and heavy babiche were laced in the centre of the snowshoe for optimal suspension of weight. Moccasins were worn with the snowshoes.

The snowshoe allowed Canada to be opened up, just as the railway, canoe and wagon did in the early historic period. Fur trappers used the snowshoe to access traplines in deep snow.



Recreational snowshoeing became a popular pastime from the 1840s onward with 3.2 kilometre and 1.2 metre hurdles (a decade before summer hurdle races were created). The word “jogged” was originally used to describe snowshoes tramping in a slow run in the early 1870s. Before WWII, the snowshoe was worn by track athletes to train in the winter where indoor training was not available.

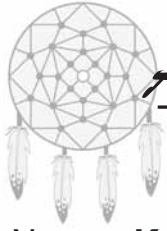
Innovator(s): First Nations Peoples

Date of Innovation: Pre-European Contact

Origin: Northern Canada

Source: Newfoundland and Labrador  
Heritage

Image source: Lakehead University  
Archives, snowshoes Courtesy of the Newfoundland Museum, St. John's,  
Newfoundland  
[www.heritage.nf.ca/aboriginal/micmac\\_culture.html](http://www.heritage.nf.ca/aboriginal/micmac_culture.html), maker of snowshoes

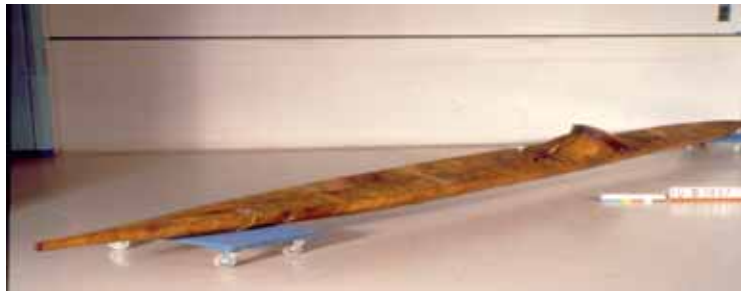


Name: **Kayak**

**Description:**

The kayak was mainly a long and low spruce and sealskin boat, designed to be

wide and stable or narrow and fast for hunters to use either on the sea or on smaller water bodies. Hunting tools were attached to the exterior and interior of the kayak, including a throwing harpoon, lance, bird spear and throwing board. A gut-skin apron was worn to connect the paddler to the kayak, allowing the kayaker, when necessary, to complete a “kayak roll” with the skillful use of his paddle and not take any water inside the sealed kayak. Navigating among blocks of ice was possible with the sleek, light kayak. Kayaking is a popular worldwide recreational sport among amateurs and professionals today.



Innovator(s): Thule (Inuit ancestors)

Date of Innovation: 1000 to 1600 A.D.

Origin: Alaskan Arctic

Source: David Morrison and Georges-Hébert Germain, *Inuit Glimpses of an Arctic Past*. Canadian Museum of Civilization, 1995; pages 130-33.

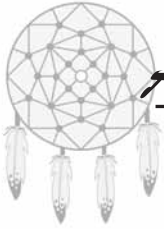
Current Designs; Alan D. McMillan, *Native Peoples and Cultures of Canada: An anthropological Overview*, Second Edition. Douglas and McIntyre: Vancouver, 1995; pages 264-265.

Image source: Copper Inuit kayak Coronation Gulf region, Northwest Territories, 1916CMC IV-D-1057 Kayak

<http://www.civilization.ca/membrs/fph/watercraft/wak04eng.html>

Collection Canadian Museum of Civilization, 916CMCIV-D1057





**Name: Snowknife**

**Description:**

The Inuit peoples developed this tool technology specifically for handling snow. Snow and ice were environmental factors for two-thirds of the year in the

Arctic, and transportation and dwellings were adapted to these conditions. Snow houses were built with specialized tools like the snowknife, snow shovel and snow probe. The Copper Inuit used a copper-bladed, approximately 35 centimetres long, snow knife or pana, to cut rectangular, solid blocks of snow for building a domed snowhouse.



The Copper Inuit snowknife was made with bone or antler for the handle, which was laced with sealskin strips to a copper blade.

The snow shovel was a wooden wedge shape, edged on the bottom with antler or bone and had a handle made of a leather loop.

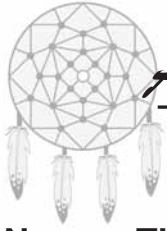
Innovator(s): Inuit of Canada

Date of Innovation: est. 2,500 to 3,000 years ago

Origin: Arctic

Source: David Morrison and Georges-Hebert Germain, *Inuit Glimpses of an Arctic Past*. Canadian Museum of Civilization, 1995, pages 36-37; Museum of Civilization

Image source: <http://www.civilization.ca/membrs/fph/iqqaipaa/culture.html>  
Collection Canadian Museum of Civilization, IVC-342



**Name: Tikanagan or Cradleboard**

**Description:**

*Tikanagan* is a Cree word for cradleboard. This traditional form of infant carrier continues to be used today.

A backboard was shaped from a piece of wood. Initially, most of these were square in shape and were later changed to a more rounded backboard.

A moss-lined bag was made of leather and was decorated with beading or weaving. This bag was strapped to wooden cradleboards, just above a footboard at the base of the backboard.



The board was designed to prevent injury if it fell, by virtue of the hoop at the top of the tikanagan. This hoop also allowed the cradleboard to rest against a tree.

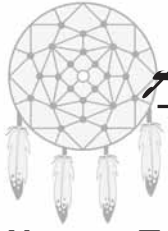
Innovator(s): North American Aboriginal peoples

Date of Innovation: Pre-European Contact

Origin: North America

Source: The Canadian Encyclopedia: 2000 Edition. Copyright 1999, McClelland & Stewart: Toronto. Page 581

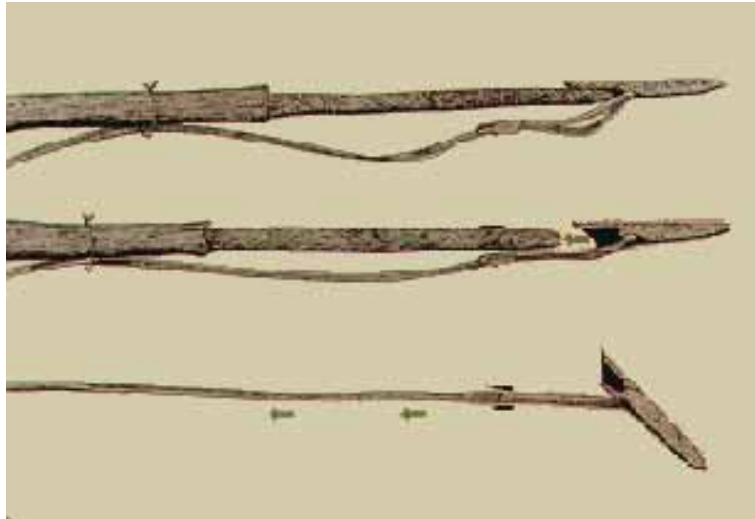
Image Source: Lakehead University Archives



## Name: Toggling Harpoon

### Description:

One of the complex tools created by the Inuit peoples was the composite harpoon. The design incorporated a detachable toggling head made with wood, antler, metal and braided sinew. The head, attached to a narrow shaft, was sharp.



The harpoon was light in weight and fit into a breathing hole made in snow and ice.

Hunters held the braided sinew with one hand and thrust the harpoon with the other hand down into the breathing hole. When a hit was made on an animal such as a seal, the head of the harpoon was anchored, allowing the harpoon to be detached by toggling the head.

Innovator(s): Inuit Peoples

Date of Innovation: 1,000 to 1,600 A.D.

Origin: The Alaskan Thule brought advanced technology to the Canadian Arctic.

Source: David Morrison and Georges-Hebert Germain, *Inuit Glimpses of an Arctic Past*. Canadian Museum of Civilization, 1995, pages 74-77; Alan D. McMillan. *Native Peoples and Cultures of Canada: An Anthropological Overview*. Douglas and McIntyre: Vancouver and Toronto, 1995. Page 264.

Image source: Lakehead University



**Name: Hammock**

**Description:**

After 3,000 B.C., tropical rain forest groups such as the Yanomamo, Makiritar, Mundurucu, Shipibo, Tupinamba and Cayapo lived in villages within the lowlands of Eastern South America. They lived in thatch houses and used “hammocks” for sleeping and resting.

It is believed that materials used to make hammocks were derived from the Hamack tree, which was the source of woven bark of the earliest hammocks. Trading of hammocks spread to other cultures through Central and South America.



Sisal fabric was later used due to its abundance and soft fiber, along with cotton that has been used for hammock fabric, for the last 50 to 60 years.

The original fabric hammock was created in Brazil, along with cord and rope hammocks. Depending on the region, the hammock was adapted to cultural materials and fabrics.

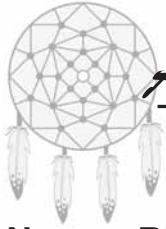
Innovator(s): Eastern and South American Aboriginal Peoples

Date of Innovation: after 3000 B.C.

Origin: Tropical Forest Villages - North and South Americas

Source: Hamacus Online: [info@hamacas.com](mailto:info@hamacas.com)

Image source: Old Fort William



**Name: Birch Bark Canoe**

**Description:**

Birch bark canoes were used by Aboriginal peoples across Canada prior to European contact. The large canoes were important for travel on lakes and rivers, particularly those in the North.



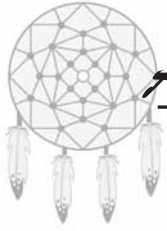
The birch bark canoe had a strong, inner wooden frame and a large holding capacity. The traditional birch bark canoe was light in weight (approximately 22.7 kilos) and was approximately 4.2 metres in length.

Although strong, birch bark canoes were vulnerable to rock damage, but were still capable of transporting heavy loads through shallow water. The quick streams and waters with shoals in the woodlands were traversed easily with the aid of a single-blade paddle.

To make a canoe, birch bark was removed from trees in individual sheets in the early part of summer. The sheets were rolled up for transport to the site where the canoe was to be built.

After the bark was unrolled and laid flat, a canoe frame made of wood was placed on top and weighed down. Soaking, bending and drying the ribs, gunwales and stem pieces were next. The hull was shaped and strengthened by the ribs. The ribs also kept the lining's position in place. Watertight seams were made with pitch or gum caulking.

Some canoes were decorated with a design that was scraped into the birch bark. This also signified ownership.



If a hole or other damage was found on the canoe, the damage was easily repaired with spruce gum and spruce bark root threads.

Modified birch bark canoes could withstand the very turbulent Atlantic coastal waters. The performance qualities of birch bark canoes were soon recognized by early European immigrants, who adopted and copied birch bark canoes for their own purposes such as exploration and expansion of the fur trade. More recently, traditional birch bark canoes have served as prototypes for many of the wood and canvas, woodstrip, fibreglass, aluminum, and other canoes that have largely replaced them in the modern world.

Innovator(s): Eastern Canadian Aboriginal Peoples

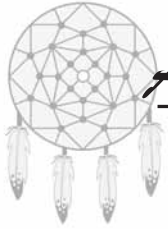
Date of Innovation: at least 2500 years ago

Origin: Woodland Period in the Maritime provinces

Source: Alan D. McMillan. Native Peoples and Cultures of Canada, Second Edition. 1995. Douglas & McIntyre Ltd.:Vancouver. Pages 44-45; The Canadian Canoe Museum

Image source: Old Fort William





**Name: Longhouse**

**Description:**

Around 1,000 A.D., the Iroquois peoples created the “longhouse,” a unique structure that housed many families. Its length normally doubled its width.



In the spring, the wood to be used for the house was cut and brought to the village. This wood would be formed into large and small posts to serve as a frame for the house. The sides of the house were filled with elm bark that was cut into rectangular slabs that were used for roof shingles and wall siding.

Roof holes allowed smoke to escape from the hearth in the longhouse and also provided some lighting. Door openings were made at each end of the longhouse. During the winter, these openings would be covered with animal skins. Longhouses did not have windows.

Iroquoians constructed platforms or benches about five feet in length above the ground along the side walls. Wood was stored underneath the benches in the winter.

Spaces for each family were partitioned off to provide privacy.

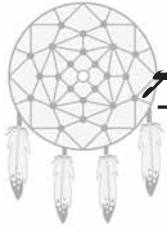
Innovators: Aboriginal Peoples

Origin: North America

Source: Royal Ontario Museum; London Museum of Archaeology

Image source: used with permission of The London Museum of Archaeology  
[www.uwo.ca/museum/lawson\\_site.html](http://www.uwo.ca/museum/lawson_site.html)





**Name: Oil Lamps**

**Description:**

The Dorset peoples are credited with creating the oil lamp, which was made of soapstone. The oil lamp was usually 1 metre in length and



shaped like a “D.” A lit cotton grass wick slowly drew oil from melting blubber. The impact of the oil lamp on Arctic cultures was profound. Stone lamps were important for light and warmth and for cooking.

The lamp sat on a cooking platform as a source of light and heat for the soapstone cooking pot. It was carefully tended to by the woman of the household.

Asian iron was being traded for use in making tools nearly 2,000 years ago. A trade network in the Arctic that began with animal and food products and iron nephrite gradually included soapstone lamps, hides and fur. It was an all-Aboriginal trade network that lasted until the mid 19<sup>th</sup> century.

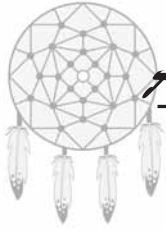
Innovator(s): Dorset Peoples

Date of Innovation: etc. 1000 to 500 B.C.

Origin: Cape Dorset across to Greenland and west, and north to the High Arctic Islands.

Source: David Morrison and Georges-Hébert Germain, *Inuit Glimpses of an Arctic Past*. Canadian Museum of Civilization, 1995. Pages 38, 56, 154-57.

Image source: [www.civilization/membrs/collect/artifact/a5609043.html](http://www.civilization/membrs/collect/artifact/a5609043.html)



**Name: Screw-Top Jar**

**Description:**

John Mason, believed to be of Aboriginal ancestry, patented the screw-neck bottle or the “Mason Jar” on November 30, 1858. Mr. Mason developed and patented a shoulder-seal jar with a zinc screw cap. The unique Mason Jar has a threaded neck, fitting with the metal cap threads to screw down to the jar’s shoulder, creating a seal.



In 1869, a top seal above the threads and under a glass lid was introduced to the jar. The screw cap pressed tightly against an inverted lid with a rubber seal underneath to create a tight fit.

With the increased safety and convenience of commercial canning, rural populations moved to urban areas, and home freezers became popular. The jars were affordable and reusable, allowing for the use of safe containers for preserving garden or farm produce such as tomatoes, pickles, fruits, and relish for use in the winter.

Some glass containers were decorated as artistic expression with woven grass, using a wrapped twining technique. Sometimes, patterns of differing colors and symbols were used to decorate the jars. The basketry-covered jar is a sample of how Aboriginal peoples adapted their Aboriginal art into technology.

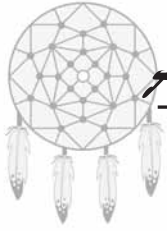
Innovator(s): John Landis Mason

Date of Innovation: Late 19th century

Origin: Mason was believed to be of Aboriginal heritage from Pennsylvania

Source: Ms. Buffy Sainte-Marie; Cradleboard.org; McClung Museum; The Federation of Historical Bottle Collectors

Photo courtesy of Elaine A. Evans, Curator, Frank H. McClung Museum, University of Tennessee, Knoxville



**Name:**  
**Snowhouse**

**Description:**

Building snowhouses and hunting were dependent on snow and ice conditions in the



Arctic; thus the Inuit have many words in their vocabulary to describe the various snow conditions. To begin building a snowhouse, the snow must be selected for specific qualities. A probe was used to test the consistency of the snowdrifts for density, hardness and thickness. When the conditions were suitable, rectangular blocks were cut from the house foundation with the snowknife and arranged in a four-metre diameter circle. From the inside, the blocks were placed in an alternating pattern upward and inward for two metres, in a spiral toward the apex of the domed roof. To prevent collapse, the careful and exact placement of the blocks, particularly the final block on the very top, was crucial. When complete, the door was cut and the builder could exit the house and begin building the entrance tunnel ten or fifteen metres long. The spaces between the snow blocks were chinked with hard snow, and all the joints were mortared with soft snow. The snow shovel was used to flatten the floor inside the front of the snow house and move snow to the rear to form a platform for sleeping. An ice window could be cut and fitted above the door to allow sunlight inside the snowhouse. The snow house could be used for approximately two months before soot, ice and debris would build up, and it was necessary to build a new dwelling.

The snowhouse allowed Inuit living in the Central Arctic to live comfortably for extended periods of time. Used mainly as a temporary dwelling elsewhere in the Canadian Arctic, a snowhouse could be quickly assembled during a blizzard or overnight on long journeys. The snowhouse has become a recognizable, cultural icon of the Inuit throughout the world.



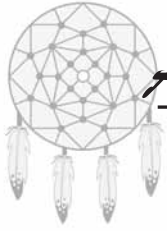
Innovator(s): possibly the Dorset People of Canada and Greenland

Date of Innovation: between 1000 to 500 B.C.

Origin: Mainly used in the Central Arctic due to limited building materials

Source: David Morrison and Georges-Hebert Germain, *Inuit Glimpses of an Arctic Past*. Canadian Museum of Civilization, 1995, pages 34-41.

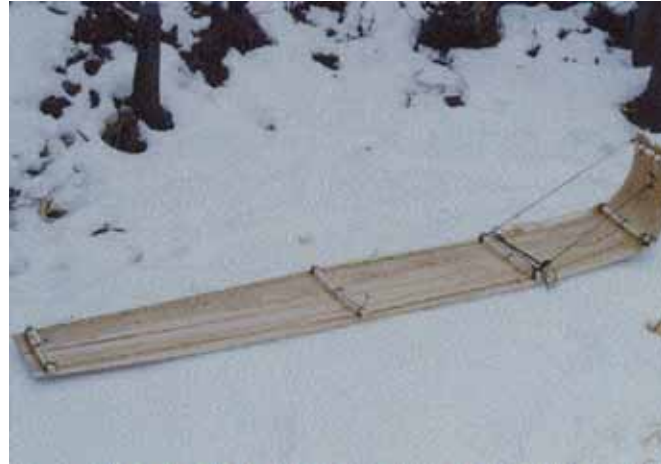
Image source: Lakehead University, Ben Kaminski



**Name: Toboggan**

**Description:**

Toboggan comes from the Algonquin word *odabaggan*. The toboggan is an invention of the Eastern Aboriginal peoples. Aboriginal hunters first built toboggans made of bark to carry game over the snow. The Inuit used to make toboggans of whalebone. The traditional toboggan was made of wood.



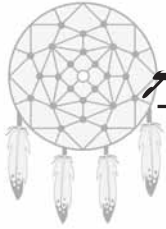
Sub-Arctic Aboriginal peoples made toboggans with two or more slim larch or birch boards, which were used for transporting across snow and ice. A crossbar joined the two boards. At the front, the boards turned up to allow clear passage over bumps.

The boards needed to be green or wet when bent and lashed together into the shape of the toboggan until they were dry. Toboggans were flat-bottomed.

Toboggans were of a length ranging from one to two and one-half metres, and they usually transported up to four people per sled. Because toboggans do not have a steering mechanism, passengers shifted their weight or trailed their feet to influence the speed and direction.

In 1883, tobogganing was introduced as a competitive sport. In the Winter Olympics, the luge medal sport used the modified fiberglass, steel and wooden toboggan. The fiberglass shell is attached to two runners made of steel with tips made of curved wood.

Bobsledding has evolved as a sport from tobogganing, although it is faster and likely began as a sport at Mount Royal in Montreal, Quebec.



Tobogganing (luge) in today's winter sports can reach speeds in excess of 145 kilometres per hour. Tobogganing at the world competition level includes lugeing, bobsledding and skeleton sledding.

Innovator(s): Aboriginal and Inuit Peoples

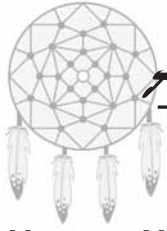
Date of Innovation: Pre-European Contact

Origin: Canada

Source: The Canadian Encyclopedia: Year 2000 Edition. Copyright 1999 McClelland & Stewart: Toronto. Page 2360.

"Tobogganing," Microsoft® Encarta® Online Encyclopedia 2000 (Cresta) Britannica.com web site.

Image source: used with permission of Innu Nations: [www.innu.ca/utapan.html](http://www.innu.ca/utapan.html)



**Name: Ulu - Crescent Shaped Knife**

**Description:**

The ulu, a traditional tool used by Inuit women, is made with a handle of bone, wood or antler, iron or copper, or ground-slate blade.

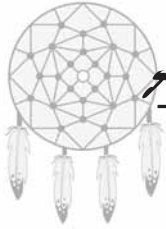


“The ulu . . . is a crescent-shaped knife which is used with either a slicing or a rocking motion, and is the primary tool employed by a woman in cutting out clothing, boots and mittens. It is used for preparing skins . . . for expressing oil, and it serves as a culinary implement. This general purpose cutting tool, which continues...in daily use, has become the chief symbol associated with Inuit women.”

The harsh Arctic environment demanded a specialized wardrobe, leather and tool technology for the Inuit. Clothing and food were essential for survival, and Inuit women were skilled seamstresses who prepared caribou hides and sewed them into warm clothing for their families. The sewing kit was comprised of the ulu, bone needle case, copper needles, sinew threads and thimbles. A Copper Inuit woman’s sewing kit could be kept in a woven willow twig or grass basket. The needle case was a decorated bird bone tube, and needles were stuck into a strip of leather that ran through the tube. Using the half-moon shaped copper and antler ulu knife, an Inuit woman could cut caribou hides into clothing patterns, cut and eat meat, split sinews into threads and scrape the hair from a hide.

Today the Gold Ulu award is awarded to achieving Inuit athletes in Nunavut, and it signifies skilled accomplishments and excellence at the Arctic Winter Games for categories like the one foot high kick, Alaskan high kick, two foot high kick and the Russian triple jump.





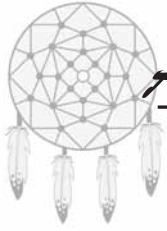
Innovator(s): Inuit peoples

Date of Innovation: 1000 to 1600 A.D.

Origin: Canadian High Arctic

Source: David Morrison and Georges-Hebert Germain, *Inuit Glimpses of an Arctic Past*. Canadian Museum of Civilization, 1995, pages 16-19; Aurora College, N.W.T.; Alan D. McMillan. *Native Peoples and Cultures of Canada: An Anthropological Overview*. Douglas and McIntyre: Vancouver and Toronto, 1995. Page 265.

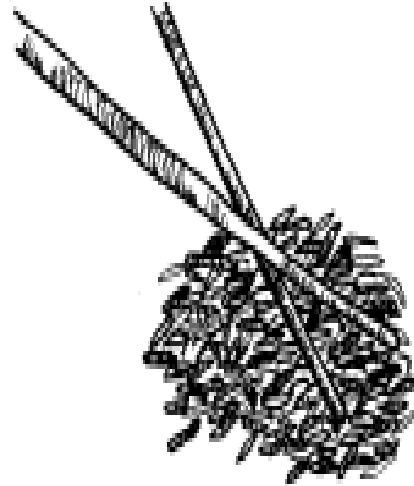
Image source: Lakehead University Archives



**Name: Wild Rice Sticks**

**Description:**

During the harvesting season, Northeast Aboriginal peoples would gather rice, which was an important staple in the diet of the Ojibwe. Two sticks were made of wood and were about 64.8 centimetres in length. They were tapered in design and were used to collect wild rice.



When collecting the rice, one person would navigate the canoe through the rice fields and would use one stick to bend the rice stalks over the canoe. Using the other stick, the second harvester would beat the stalks, causing the rice to fall into the canoe.

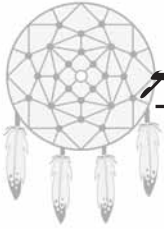
Innovator(s): Northeast Ojibwe (Algonquian)

Date of Innovation: 19<sup>th</sup> and 20<sup>th</sup> centuries

Origin: Woodlands, Minnesota

Source: Royal Ontario Museum

Image Source: Lakehead University, Ben Kaminski



**Name: Comb**

**Description:**

The long comb seen in the photo on the right was made in 1682, and it was believed to have been made by an Alaskan Eskimo. From the picture, it appears that this comb was made from the bone of an animal or from ivory. It is further believed that this comb was used for personal care.



Another example of an Inuit-crafted comb is the rounder one noted below, which is believed to have originated in Northern Quebec, Canada. From the photo, it appears that this comb was also made from bone or ivory.



Combs are still a part of our culture and society, though changed into manufactured, plastic items.

Innovator(s): Alaskan Eskimo and Inuit of Quebec

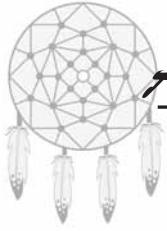
Date of Innovation: Late 17<sup>th</sup> and 19<sup>th</sup> centuries

Origin: Alaska and Quebec

Source: Royal Ontario Museum

Image source: [www.civilization.ca/membris/collect/artifact/a5405052](http://www.civilization.ca/membris/collect/artifact/a5405052) (straight) and [artifact/a4596086](http://www.civilization.ca/membris/collect/artifact/a4596086) (round)

Collection of Canadian Museum of Civilization  
S98-569



**Name: Tipi (Teepee)**

**Description:**

Tipi is a Sioux word for dwelling. The tipi is the final evolution of the conical tent, ever popular in the North. Its shape sheds wind and rain while the smoke flaps allow the owner to adjust for a good smoke draw with the wind from any direction. Although the tipi is a bit harder to transport than smaller tents, the days and nights spent in this shelter are impossible to duplicate and become lasting memories.



Tipis were in use long before the Europeans arrived in North America and Canada. Earlier tipis were small, about 3.7 to 4.25 metres, to facilitate travel with only dogs to transport the poles. With the introduction of the horse, Aboriginal peoples could supply themselves with bison hides for tipi construction and could more easily move longer poles. The larger tipis (about 4.9 to 5.5 metres in diameter) that appeared in photographs of the 19<sup>th</sup> century likely came into being because it was no longer necessary to move them very often. Aboriginal elders believe that the shape of the tipi symbolizes the skirt of woman or the Giver of Life.

Today, the tipi is made of two basic components: the cover stretched over the outside of the poles and a liner suspended from the poles surrounded the inside. (Prior to the use of bison skins, some tribal groups used birch bark to cover the poles.)

Innovator(s): Aboriginal groups from across Canada

Date of Innovation: Pre-European contact

Origin: North America

Source: Royal Ontario Museum, London Museum of Archaeology

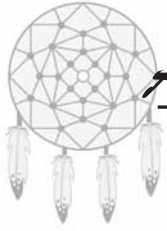
Image source: Old Fort William



## Contributors

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