

The Reindeer Support Scheme

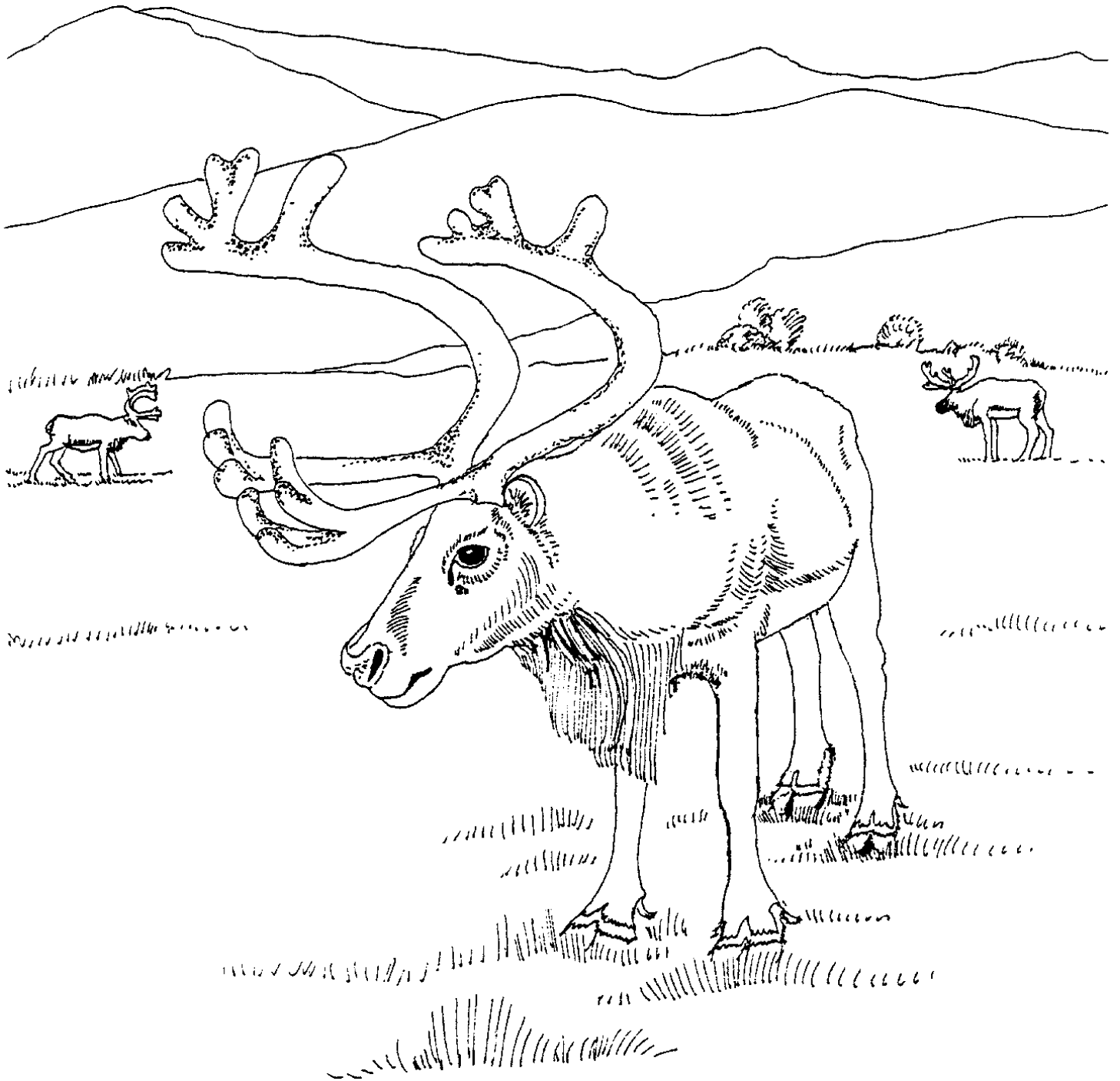
Student Information Pack

Section 1

INTRODUCTION

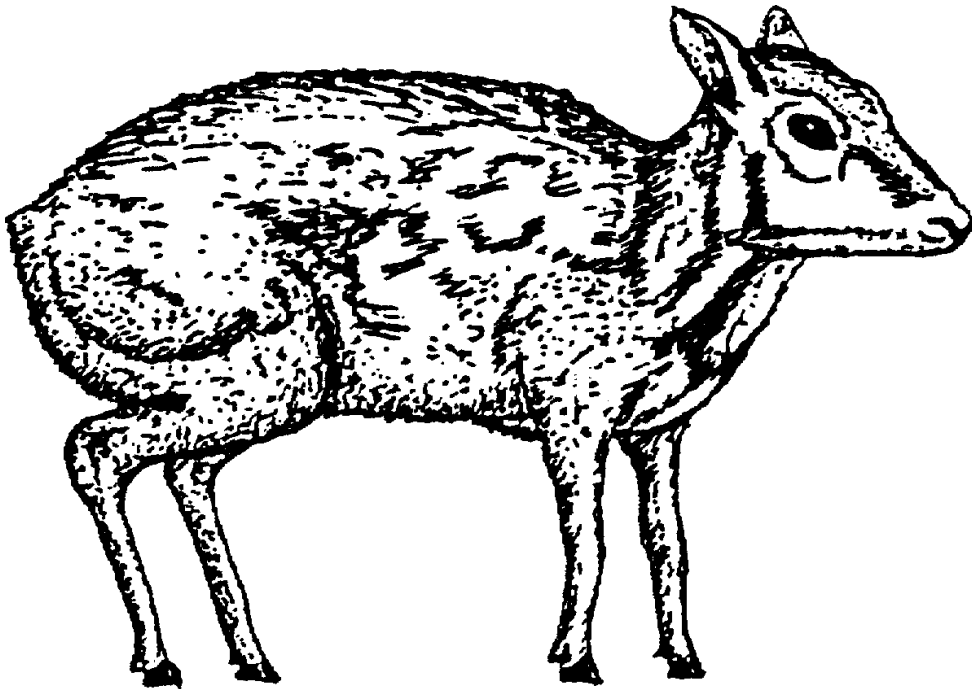
REINDEER

In the past, man depended on reindeer in order to survive in arctic regions. Now, in the face of radiation, oil exploration, and even climate warming, the reindeer increasingly depend on man.



THE DEER FAMILY (CERVIDAE)

Reindeer are one of approximately 40 species of deer which are alive today. The deer family are thought to have evolved from an animal similar to the Chevrotain of today.



LESSER MALAYAN CHEVROTAIN

Since that early ancestor, deer have evolved in divergent ecological niches, ranging from Tropical rain forests to Arctic Tundra. Some species are thriving, while others are under threat.

Reindeer, or to give them their scientific name "*Rangifer tarandus*", are distributed naturally in the Northern Hemisphere, particularly within Arctic Regions.

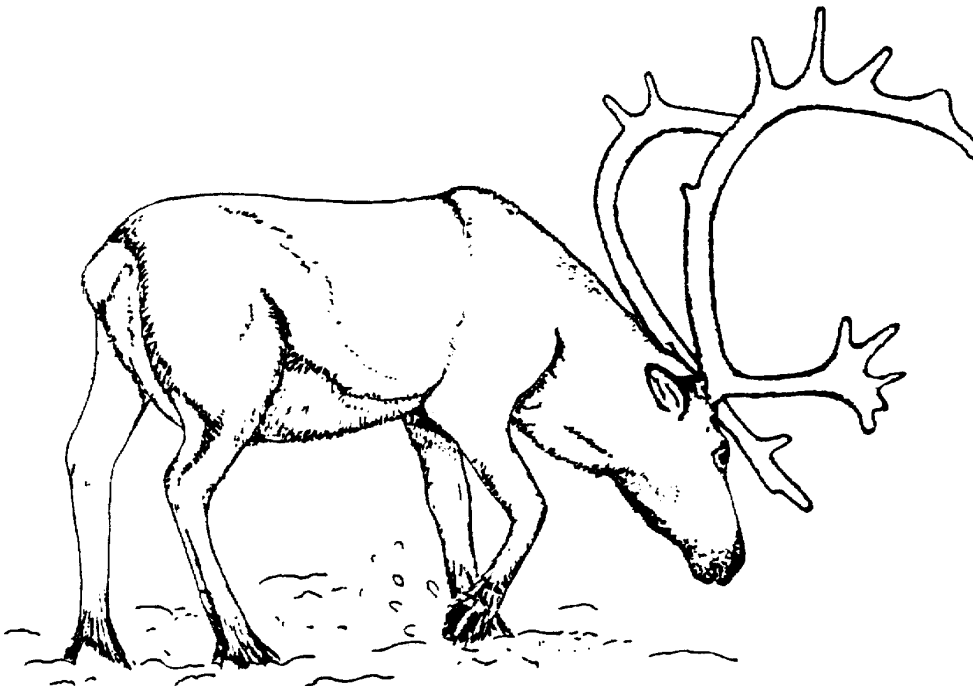
REINDEER OR CARIBOU

In Scandinavia and Russia the term 'Reindeer' is used. This comes from the Lappish word '*REINO*', which means a reindeer calf.



Laplander with a reindeer calf

The term 'Caribou' is used in North America. It is derived from the Micmac Indians and implies the animal's habit of digging and scraping through the snow for food.



A Reindeer searching for food

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Section 2

ARCTIC ADAPTATIONS

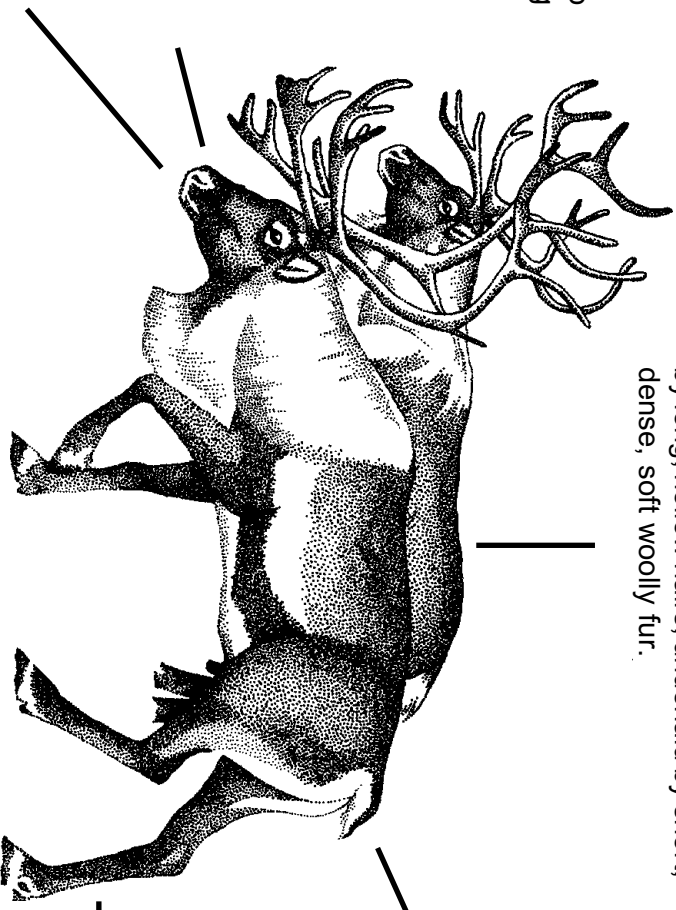
Reindeer have adapted to live in the harsh conditions associated with the arctic climate.

WIND DIRECTION

Unlike many animals, reindeer will face into a blizzard. This keeps their fur flat, trapping a layer of air which increases insulation.

Nasal passages 'heat exchange system':
Air is warmed entering the lungs and cooled on the way out to prevent heat loss.

Nose: Completely hairy - keeps this extremely warm while eating down through snow, and warm, moist air being exhaled does not freeze on the nose.



Winter Coat: Gives very high insulation by long, hollow hairs, underlaid by short, dense, soft woolly fur.

Internal Body Temperature
38°C (100°F)

Dual temperature levels are achieved by a simple heat exchange system of entwined arteries and veins.

Leg Temperature
9°C (48°F)

Hairs at the base of the legs grow long over and between each cleft hoof to prevent the reindeer slipping on ice.

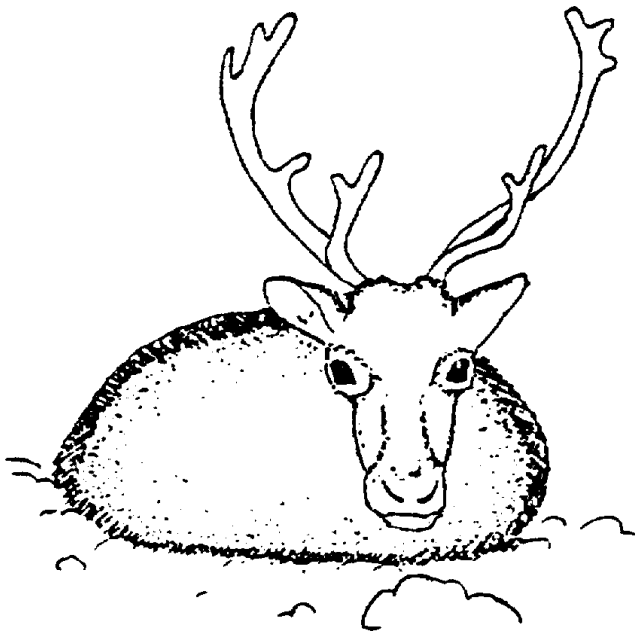
Large splayed hooves: Broad, flat and deeply cleft, aid walking on soft ground or snow. They are also well designed for pawing down through the snow to the lichens beneath.



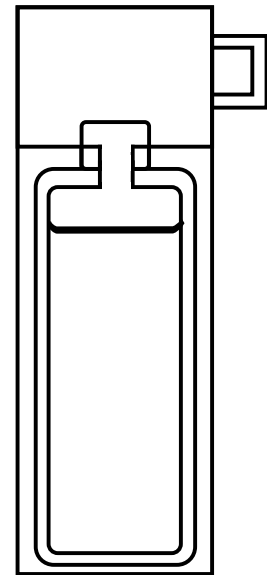
EFFECTIVE INSULATION

Like a thermos flask, the cold cannot enter the body and the warmth is not released.

When reindeer lie on snow, they are so well insulated that their warm bodies do not melt the snow they are lying on. A layer of snow is a comfortable bed for a reindeer.



Insulated body retains heat



Vacuum flask retains heat

HEAT EXCHANGE SYSTEM

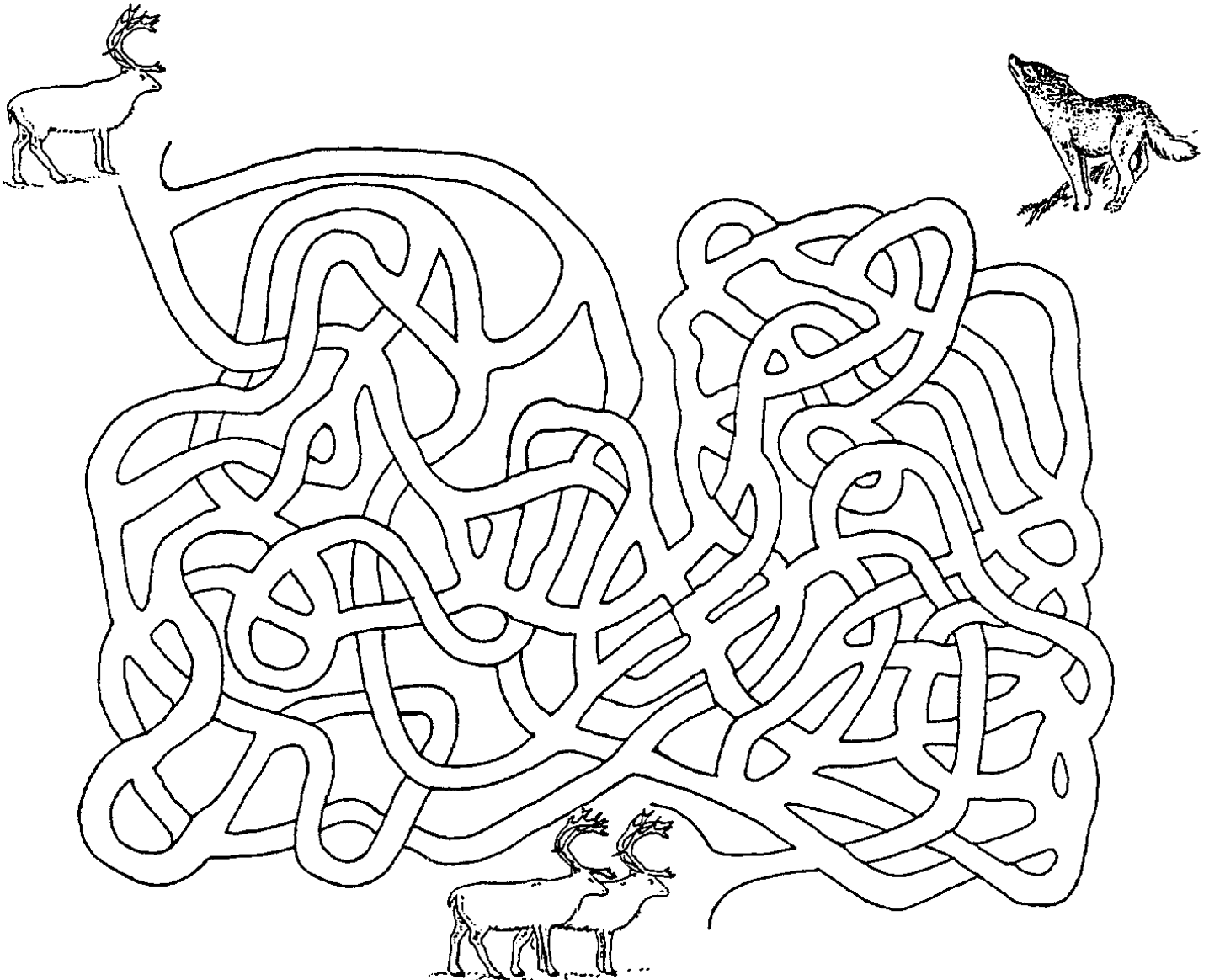
Warm blood flows from the heart and heats the cold blood returning from the extremities. At the same time, this cools the temperature of the blood flowing to the exposed parts of the body. The desired effect is that the heat generated is kept within the bulk of the reindeer's body.

SPREADING THE WEIGHT

Having large splayed hooves provides a means of spreading the load. Each reindeer hoof transmits a smaller pressure per square centimetre on the surface relative to the reindeer's body weight than most other hoofed animals. This helps prevent the reindeer sinking in too deeply when walking over deep snow or boggy ground.

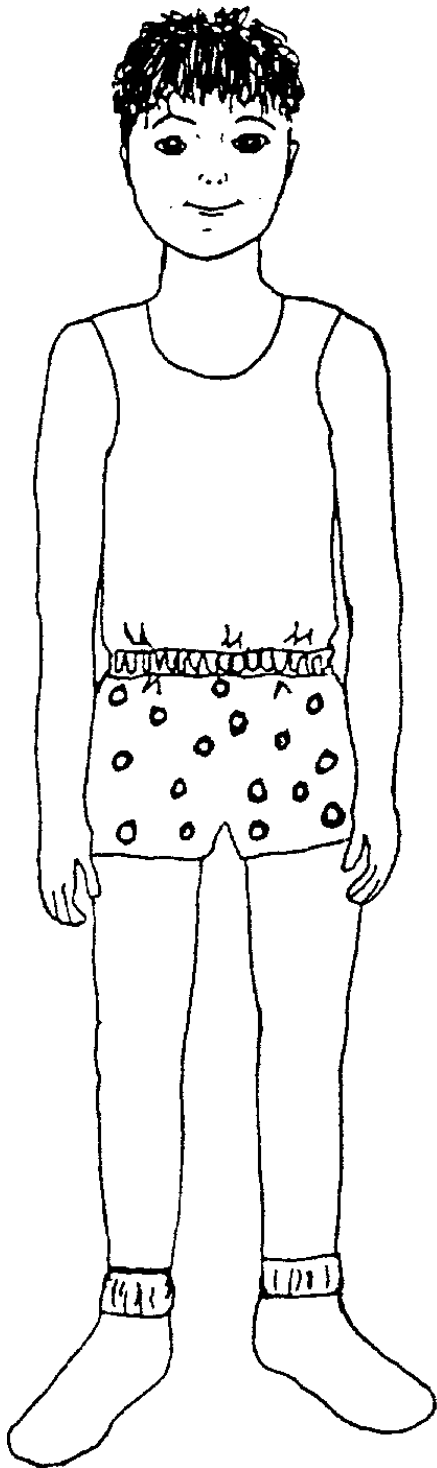
MAZE GAME RUDOLPH'S PLIGHT

It is winter time. The snow is deep and Rudolph has become isolated from the herd. Can you help him get back to the herd, avoiding the wolf packs on the way ?



SURVIVAL OF HUMANS

If you wished to live where reindeer live, many adjustments, to dress in particular, would be necessary, because the cold would be very like the temperature in a deep freeze compartment. Therefore, by using the drawing of the boy, together with the notes for your guidance, describe how you would dress this boy.



INSIDE LAYERS

Many thin layers trap more air which means extra insulation.

75% of all heat escapes from the head !

OUTER LAYERS

These must be windproof and waterproof.

Remember, we do not have hairy hands !

SPREADING THE WEIGHT

Describe the means by which you would clothe the feet, and prevent them from sinking into the snow.

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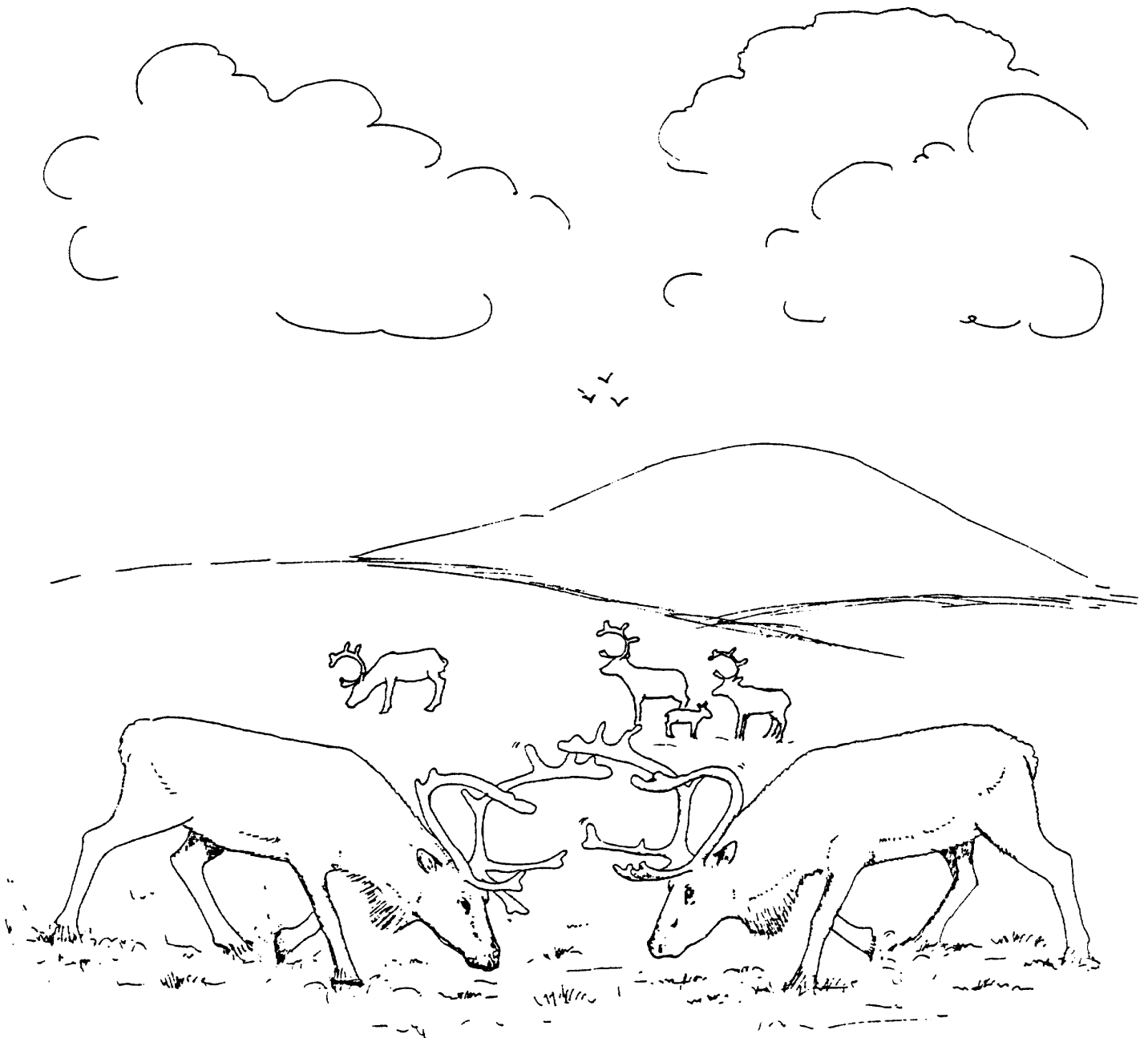
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Section 3

THE REINDEER YEAR

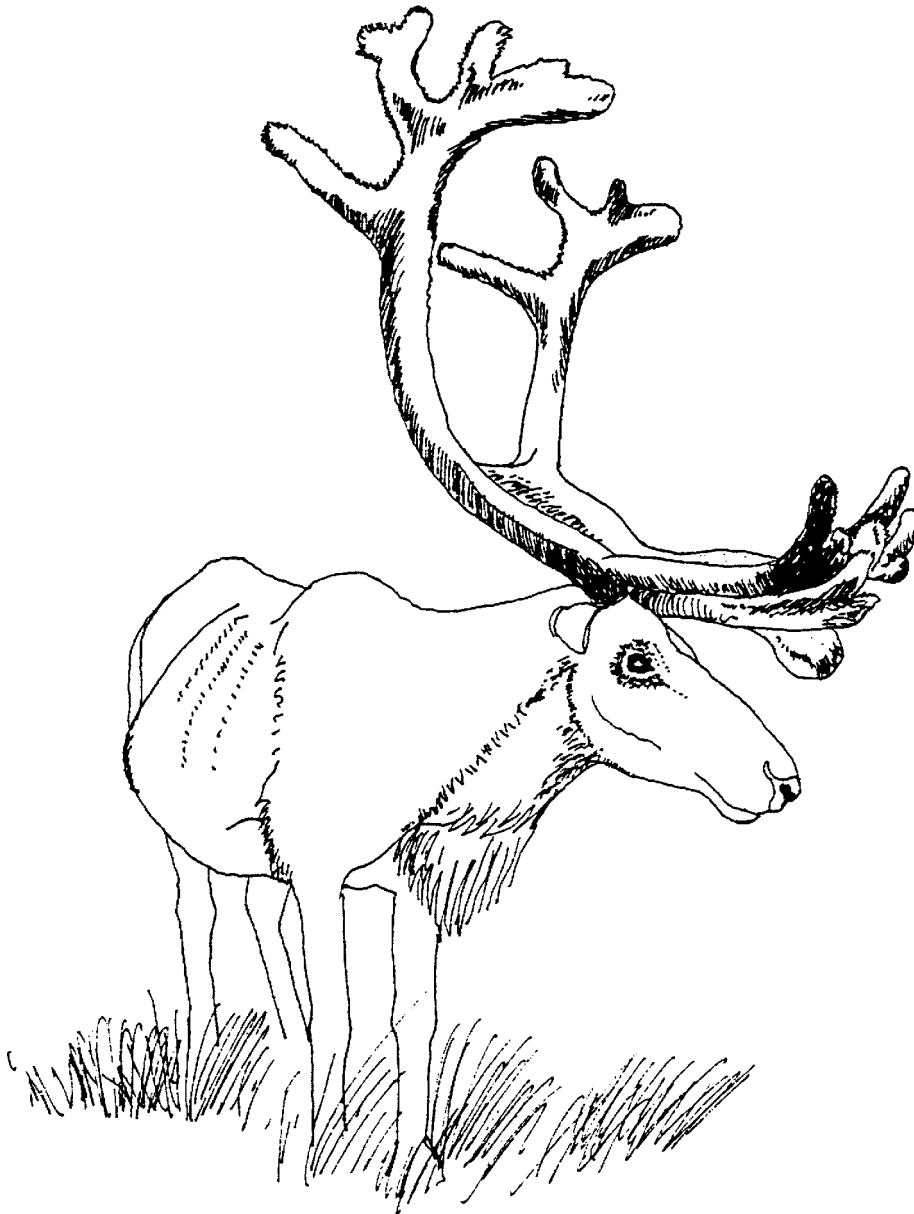
AUTUMN

The cleaning of the velvet from the antlers heralds the rutting season when the bulls use their antlers for display and to fight for supremacy. Dominant bulls will hold harems of cows. Both the cows and calves have also finished growing their antlers; they too will now clean off the velvet in which the antlers have grown. The lighter winter coat begins to show through the dark summer coat. Mushrooms are an added bonus to their diet at this time of year.



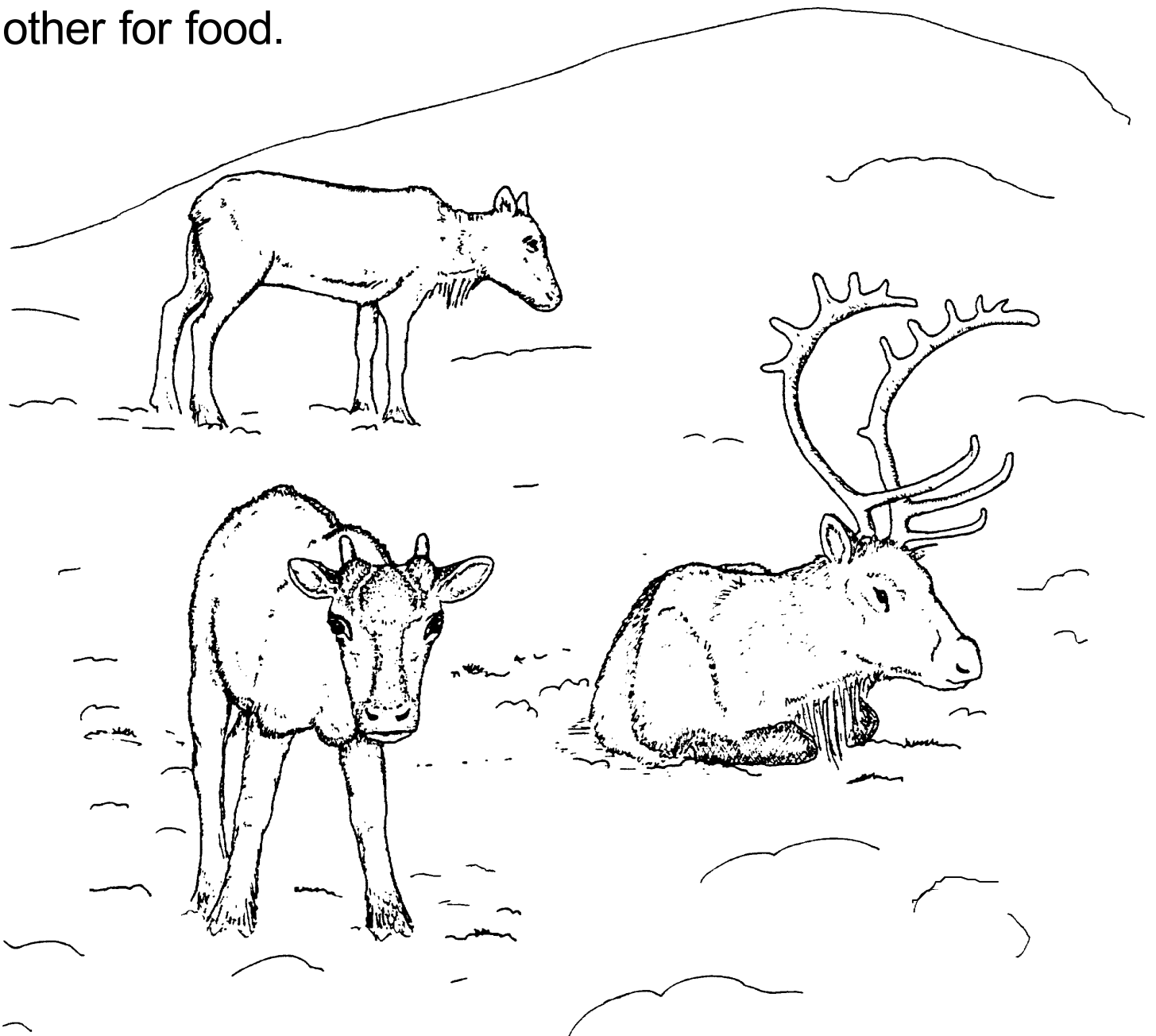
SUMMER

The reindeer have long velvet covered antlers and their coats look sleek with short, dark fur. Even the calves, born in May, have started to grow their first set of antlers. During the hot, sunny days, flies and mosquitoes torment the reindeer. The combination of biting insects and hot, windless days drive the reindeer on to snow patches still lingering from the previous winter. The lichen is dry and unpalatable now, so the reindeer are feeding on woody plants, grasses, sedges and rushes.



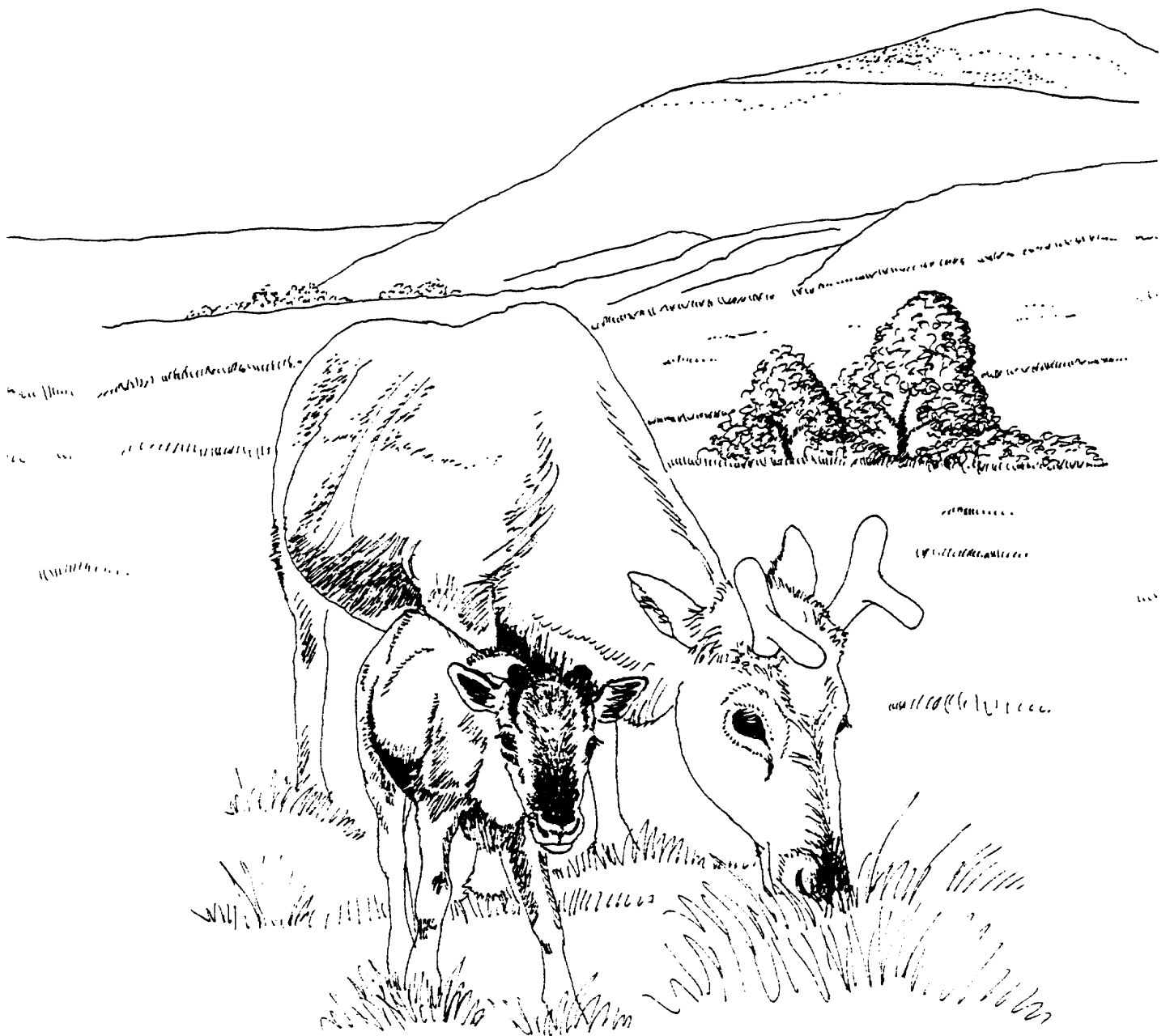
WINTER

The large, mature, breeding bulls are the first to lose their antlers, casting them in November at the end of the rutting season. When snow is lying on the ground, reindeer use their hooves to dig down to the lichens below. Their thick winter coats, which are very much lighter in colour, are fine insulation against the harsh climate. The reindeer cows, and the young, keep their antlers throughout the winter months, using them effectively to compete against each other for food.



SPRING

Reindeer calves are born in May. They are able to walk and follow their mothers as soon as they are born. Cows and calves call each other with low grunting noises. The reindeer's antlers are growing fast now, with the abundance of newly growing leaves, grass shoots and shrubs. As the daylight hours lengthen to mid-summer, the reindeer begin to lose their winter coats.



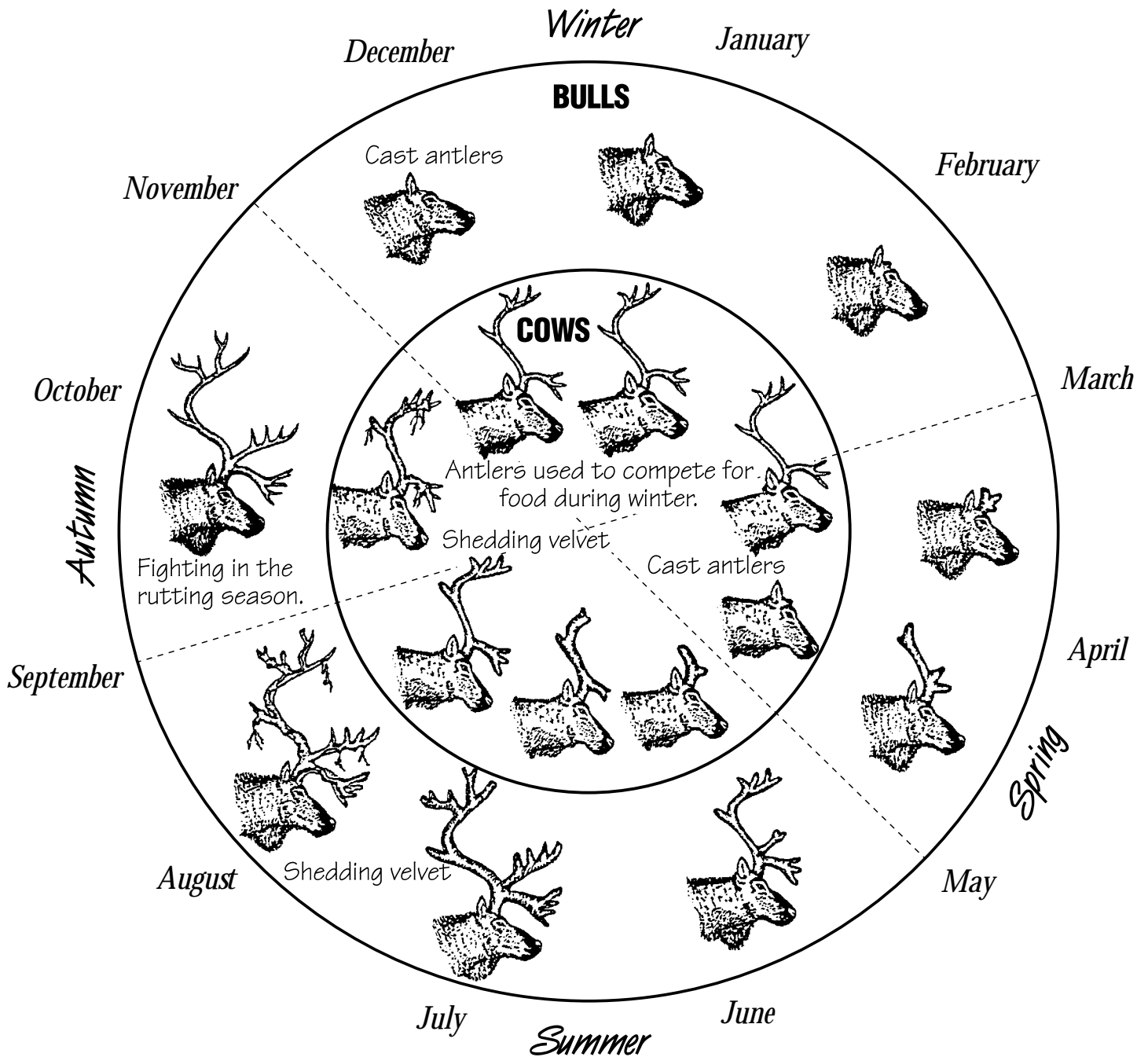
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Section 4

ALL ABOUT ANTLERS

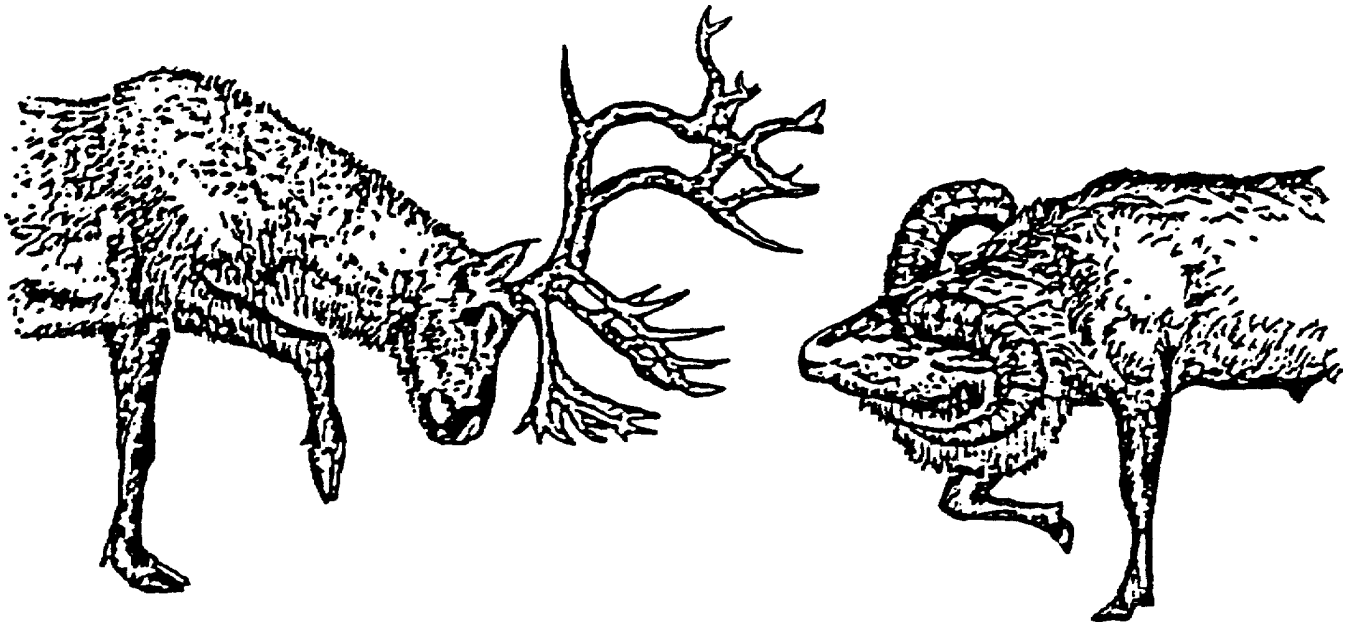
THE ANTLER CYCLE



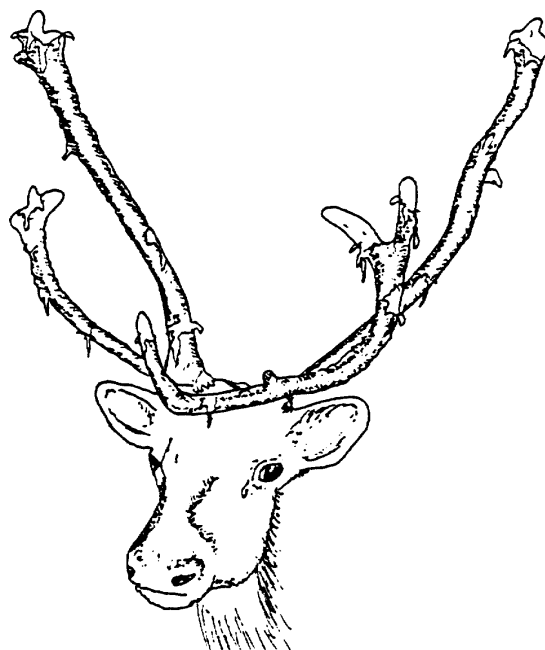
Reindeer are the exception in the deer family because they are the only members in which both males and females grow antlers.

Above is a typical yearly cycle of antlers in the male or "bull" and the female "cow" reindeer.

ANTLERS vs HORNS

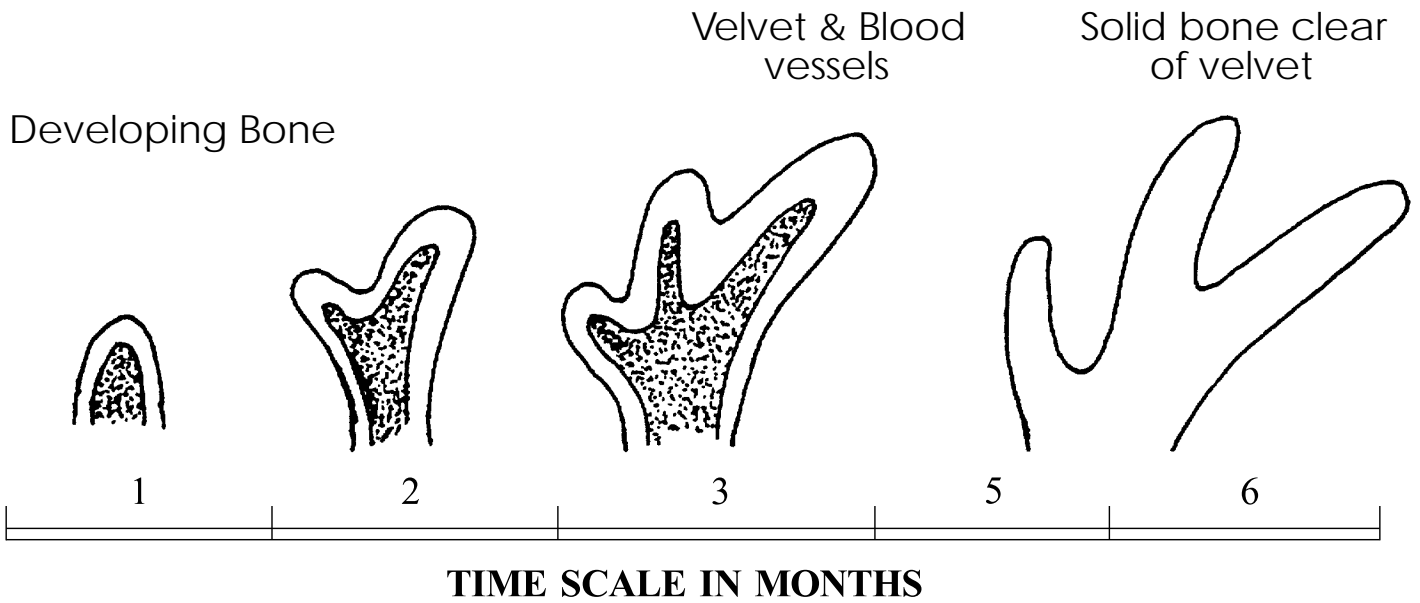


Only members of the deer family grow antlers. Antlers are composed entirely of bone. Every year they fall off and new ones grow. While antlers are growing, the developing bone is covered in a thick velvet skin. The skin protecting the growing antlers carries blood vessels out to the growing tips. When the antlers are fully grown, the velvet is shed and the solid bone underneath is revealed.



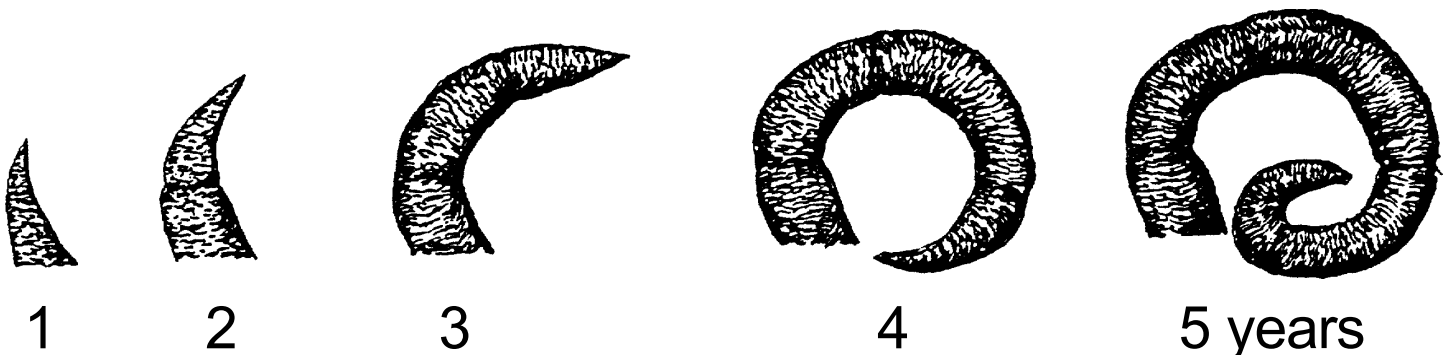
Shedding
Velvet

ANTLERS



HORNS

By comparison, horns are another structure which grow from the skull. Horn however, is composed of a protein called Keratin. This is the substance of which our finger nails are composed and, as with our finger nails, they grow continuously from the base. Unlike antlers, horns are not shed, so growth is constant throughout the animal's life. Cattle, Goats, Sheep and Antelope are examples of horned animals. Horns can be aged by counting the growth rings. For example :-



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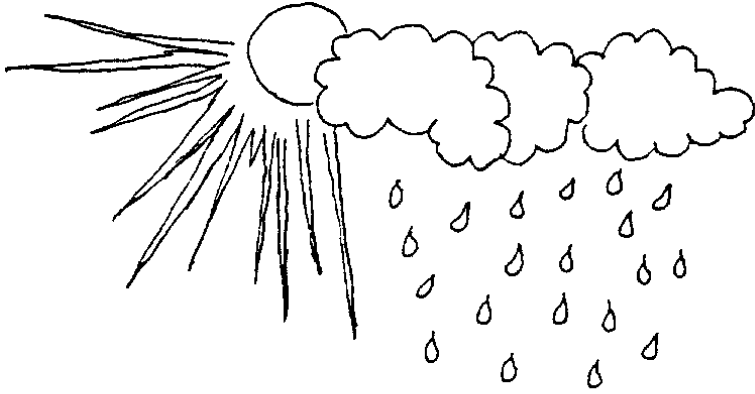
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Section 5

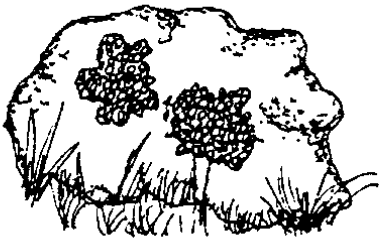
FOOD CHAINS CONSUMERS AND PREDATORS

FOOD CHAINS, CONSUMERS AND PREDATORS

Reindeer, like all herbivores (plant eating animals), are primary consumers. A simple example of a food chain could be as follows, with the wolf being the main predator, or secondary consumer.



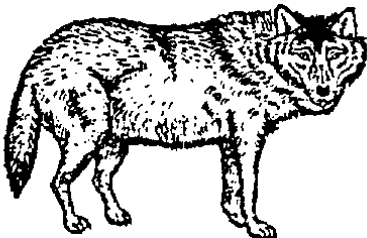
Sunlight and Precipitation
(rain or snow)



Lichen



Reindeer
(primary consumer)

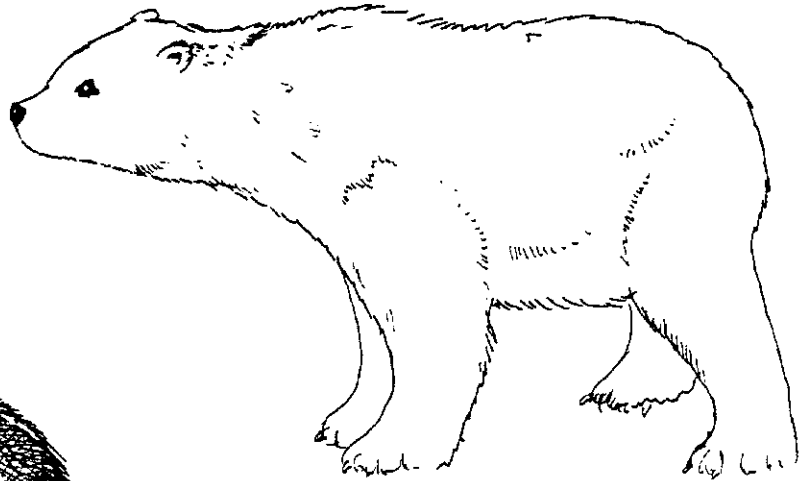


Wolf
(secondary consumer)

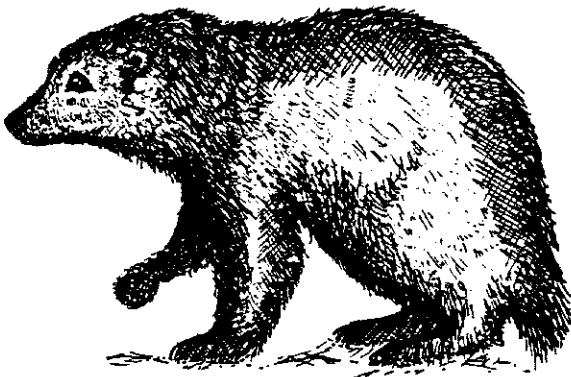
During the winter months, when very little is growing, the reindeer particularly feed on lichens. However, their diet varies with the seasons (see reindeer year). In autumn, mushrooms are a great delicacy and the reindeer forage eagerly for them.

As well as the wolf, bears and wolverines are also predators of the reindeer.

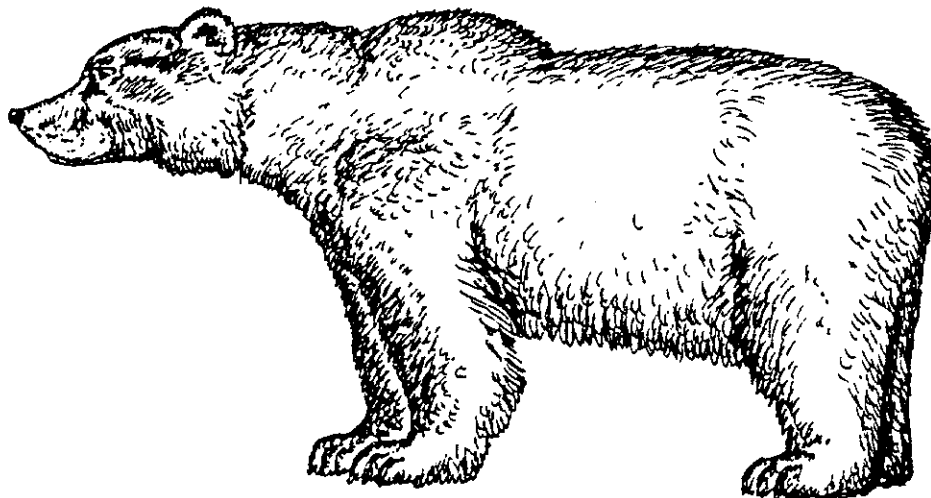
Try to make up a different food chain for reindeer to the one already illustrated.



Polar bear



Wolverine



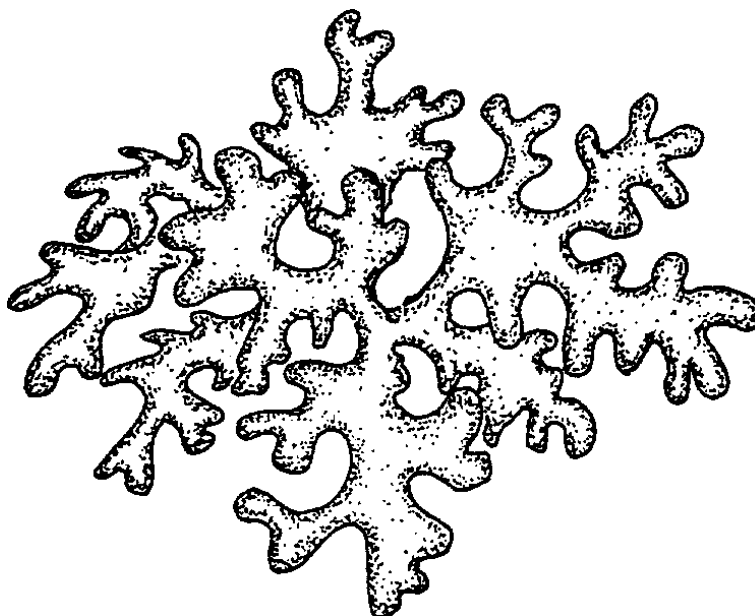
Brown bear
or grizzly

LICHENS

Lichen (pronounced li - ken or lit - chen) is a very special type of plant. It is called a “symbiont” because it is composed of two different organisms which are mutually beneficial to each other. The main structure is a fungus. Inside the fungus live many microscopic green plants (algae). The fungus receives all its nutrients from rain, snow, atmospheric moisture and food manufactured by the algae. The algae photosynthesize, like all green plants, obtaining their nutrition by capturing sunlight and using the energy to combine carbon dioxide with water.



Lichens are very slow growing. Where reindeer depend on them, during the winter, large areas of available grazing are required to prevent over-grazing and trampling.



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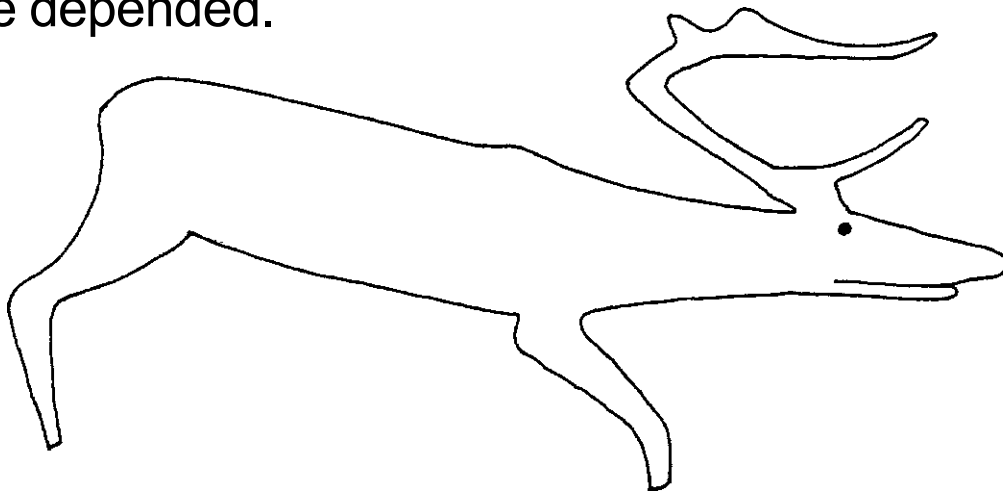
Section 6

REINDEER AND MAN

REINDEER AND EARLY MAN

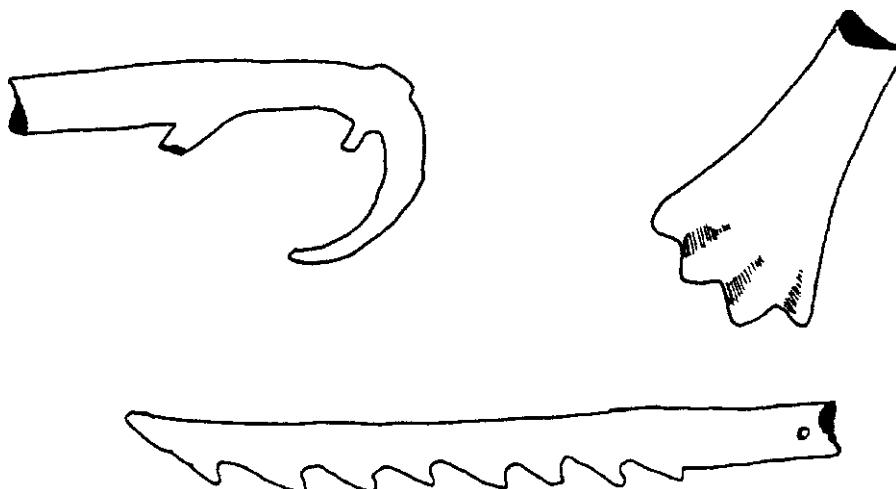
The last ice age in Europe lasted from about 400,000 to 10,000 years ago. There is plenty of evidence that the association of reindeer with man goes back to the latter period of the ice age. Food litter, discovered in caves used by man, was found to consist mainly of reindeer.

These human cultures gave us further information in the form of rock paintings depicting reindeer, the animal upon which their way of life depended.



This copy of a stone/bronze age rock carving dates from 2,000 - 500 BC and was found in Sagelva, Norway.

Tools made from antlers have also been found; similar tools are in everyday use, even today.

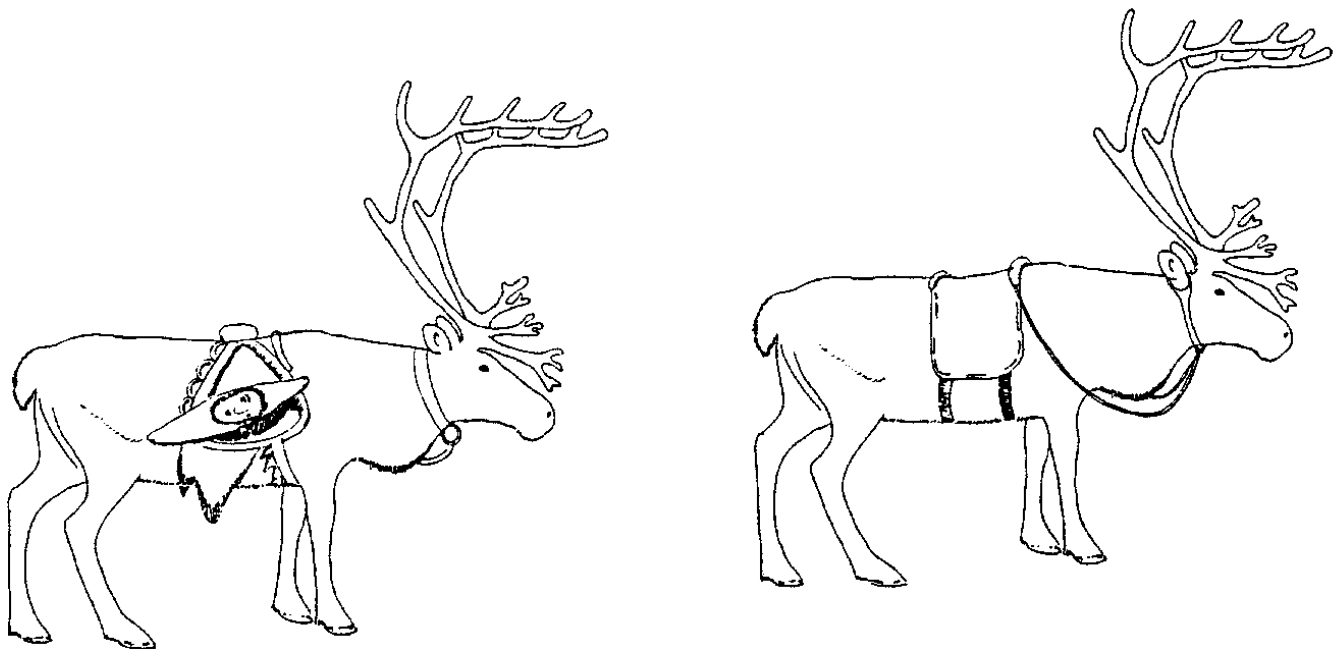
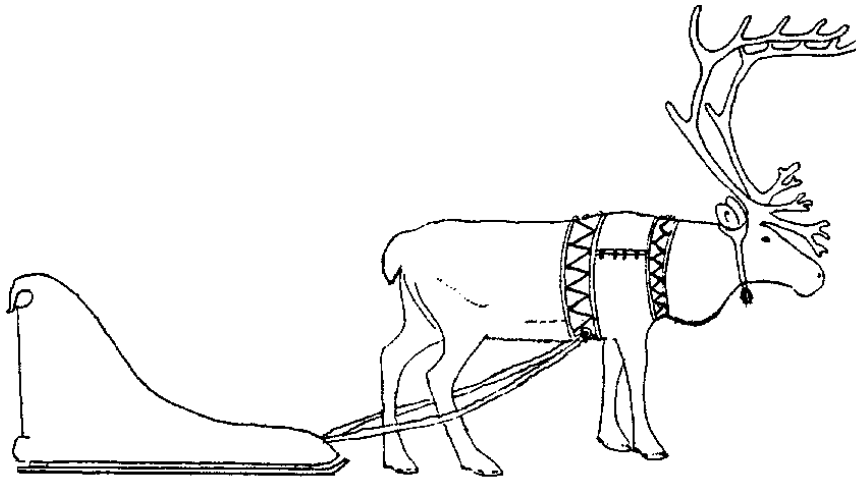


REINDEER NOMADS OF THE PRESENT DAY

Throughout Arctic Scandinavia and Russia, man has associated himself with reindeer to enable him to live and survive in this very difficult environment.

The reindeer provide man with a source of food; skins are used for clothing and tents, and female reindeer can be milked.

As beasts of burden, reindeer can be used as pack animals or to pull sledges. Some tribes in Siberia even ride their reindeer.



In this environment, traditional domesticated animals like horses, cows and sheep would not survive.

REINDEER NOMADS (continued)

The best known reindeer nomads are the Lapps, or Saami (as they are more correctly known) of North Norway, Sweden, Finland and the Western edge of Russia.

As one travels further east into North Siberia, Tungus, Samodi and Sayan live the complete life of the reindeer nomad.

Man is considered to have domesticated the reindeer, but it must be acknowledged that it is a mutual understanding, because, as the animals must wander freely over large areas, man must follow the reindeer's natural instincts.



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Section 7

MORE FUN AND GAMES

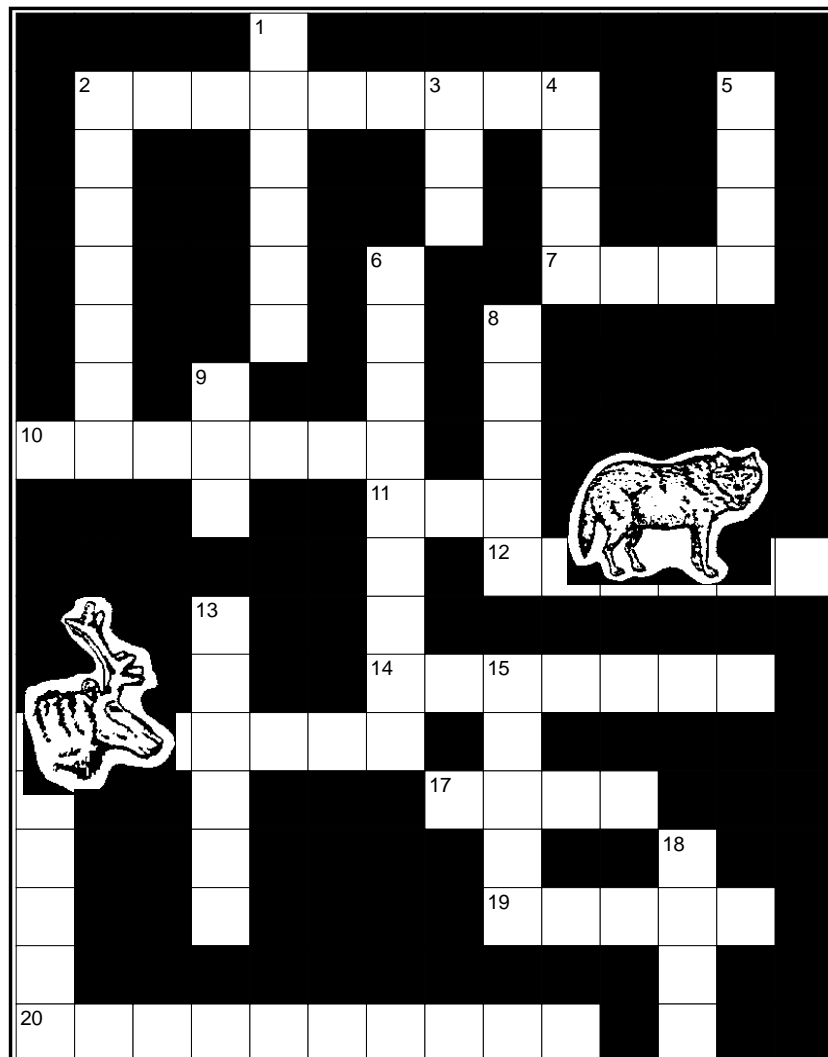
CROSSWORD

ACROSS

- 2 Reindeer's festive season (9)
- 7 The main predator of reindeer (6)
- 10 An obvious reindeer for Comic Relief (7)
- 11 Reindeer breeding season (3)
- 12 What reindeer dig snow with (6)
- 14 What most reindeer do twice a year (7)
- 16 What all reindeer grow (7)
- 17 Male reindeer (4)
- 19 Antler points (5)
- 20 Where you can find reindeer in Scotland (10)

DOWN

- 1 Staple diet in winter (6)
- 2 North American reindeer (7)
- 3 When the young are born (3)
- 4 Frozen rain (3)
- 5 A young reindeer (4)
- 6 Favourite food in Autumn (9)
- 8 Migrating reindeer move in Spring (5)
- 9 Female reindeer (3)
- 13 Covers the growing antlers (6)
- 15 Reindeer call (5)
- 16 Where reindeer are naturally found (6)
- 18 The family reindeer belong to (4)



THE NIGHT BEFORE CHRISTMAS

'Twas the night before Christmas, when all through the house
Not a creature was stirring, not even a mouse.
The stockings were hung by the chimney with care,
In hopes that St. Nicholas soon would be there;

The children were nestled all snug in their beds,
While visions of sugarplums danced in their heads;
And Mama in her kerchief, and I in my cap,
Had just settled our brains for a long winters nap,

When out on the lawn there arose such a clatter,
I sprang from the bed to see what was the matter,
Away to the window I flew like a flash,
Tore open the shutters and threw up the sash,

And, what to my wondering eyes should appear,
But a miniature sleigh, and eight tiny reindeer,
With a little old driver, so lively and quick,
I knew in a moment it must be St. Nick.

More rapid than eagles his reindeer they came,
And he whistled, and shouted, and called them by name:
'Now, Dasher! Now, Dancer! Now, Prancer and Vixen!
On, Comet! On, Cupid! On, Donner and Blitzen!

To the top of the porch! To the top of the wall!
Now dash away! Dash away! Dash away all!
So up to the house-top the reindeer they flew,
With the sleigh full of toys, and St. Nicholas too'



And then, in a twinkling, I heard on the roof
The prancing and pawing of each little hoof.
As I drew in my head, and was turning around,
Down the chimney St. Nicholas came with a bound.

He was dressed all in fur, from his head to his foot,
And his clothes were all tarnished with ashes and soot;
A bundle of toys he had flung on his back,
And he looked like a pedlar just opening his pack.

His eyes - how they twinkled! His dimples - how merry!
His cheeks were like roses, his nose like a cherry!
His droll little mouth was drawn up like a bow,
And the beard of his chin was as white as the snow;

The stump of a pipe he had held in his teeth,
And the smoke it encircled his head like a wreath;
He had a broad face and little round belly,
That shook when he laughed, like a bowl full of jelly,

He was chubby and plump, a right jolly old elf,
And I laughed when I saw him, In spite of my self;
A wink of his eye and a twist of his head
Soon gave me to know I had nothing to dread.

He spoke not a word, but went straight to his work,
And filled all the stockings; then turned with a jerk,
And laying his finger aside of his nose,
And giving a nod, up the chimney he rose;

He sprang to his sleigh, to his team gave a whistle,
And away they all flew like the down of a thistle,
But I heard him exclaim, ere he drove out of sight,
'Happy Christmas to all and to all a goodnight!'



ARCTIC LIFE WORD SEARCH

H	T	L	E	S	K	I	M	O	X	R	M	U	P
R	E	I	N	D	E	E	R	O	P	I	U	O	L
P	O	Q	F	J	K	I	F	C	D	E	L	B	S
T	U	N	D	R	A	C	R	N	I	A	H	I	E
A	T	R	A	E	I	N	I	A	R	J	I	R	L
R	Z	R	U	T	S	G	D	B	E	Y	X	A	O
M	A	H	C	R	H	S	E	S	B	G	L	C	P
I	F	R	P	T	N	A	C	L	V	Z	A	S	H
G	A	T	S	O	R	F	A	M	R	E	P	Z	T
A	O	U	L	R	N	I	P	Y	E	R	L	W	R
N	N	D	H	W	P	L	G	A	T	U	A	C	O
I	O	D	N	G	N	I	M	M	E	L	N	P	N
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O	A	N	Y	S	W	A	L	A	N	D	Y	M	T

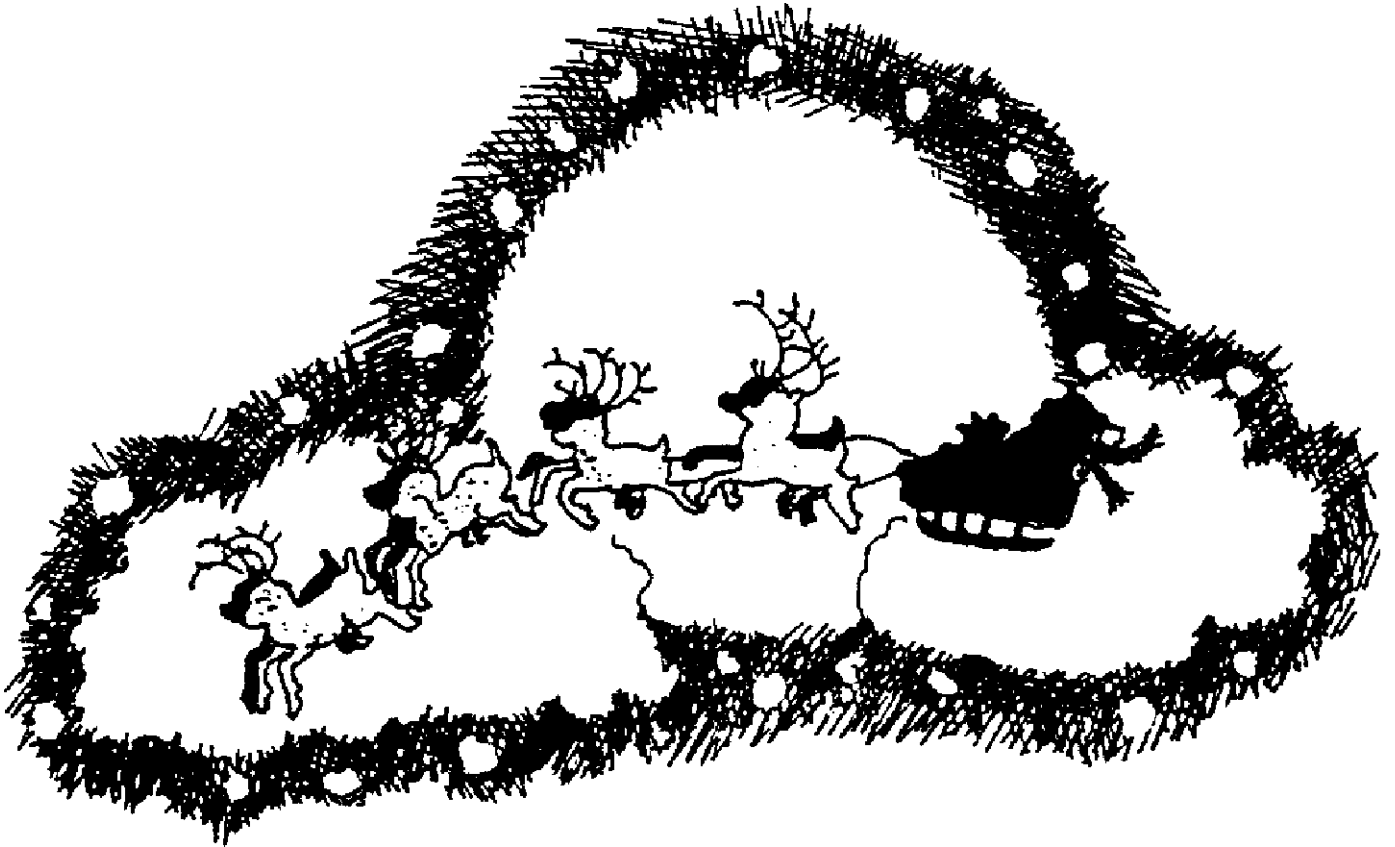
FIND THESE WORDS IN THE SQUARE

ARCTIC FOX
CARIBOU
ESKIMO
LAPLAND
LEMMING
MIDNIGHT SUN

NORTH POLE
PERMAFROST
POLAR BEAR
PTARMIGAN
REINDEER
TUNDRA
WOLVERINE

SANTA AND HIS EIGHT REINDEER

CAN YOU NAME THEM ?



- 1 _____
- 2 _____
- 3 _____
- 4 _____
- 5 _____
- 6 _____
- 7 _____
- 8 _____