BALLADS FOR THE AGE OF SCIENCE

The recordings on these CDs are meticulous digital restorations of the original 1961 recordings in all their monophonic glory. The songs spring from the opus of "Little Songs" that Hy Zaret and Lou Singer wrote, starting with "Little Songs About UN" and "Little Songs About Big Subjects" and continuing through songs about polio, mental health, safety, voting, and better schools. Those were followed by the set of "Now We Know" records, which included some songs now in this "Ballads for the Age of Science" set.

For more information, please see our web site (**www.ArgosyMusicCorp.com**) and our Facebook page (**www.Facebook.com/ArgosyMusicCorp**). The Facebook page is public, so you don't need to be a member, or to log on if you are a member. The web site includes free downloads of digital copies of the original song books.

Here are some of the nice things people have said about these songs:

Dr. J. Richard Suchman, College of Education, University of Illinois:
"The singing science records introduce a wonderfully exciting motivational technique in science teaching that stimulates interest, promotoes conceptual growth and heightens awareness of a vast system of scientific phenonomena ...

... they learn the tunes and the words. They explore the meanings of the words and the ideas the words represent. They sing the songs, dance, and try to express their ideas and feeling thru pantomime and dramatization...

There is a kind of emotional commitment that leads the child to search further and deeper."

Dr. Morris Meister, President, Bronx Community College:
"... delightful and instructive. As a science teacher, I see in these records a most potent force for improving the science literacy of our nation."

Hazel Lockwood, Hollis Hill School, Fairfax County, Virginia:
"Space Songs replaced almost every other school record we have. They always want to play it."

David Gordon, Music Director, Radio Station WPAT, Patterson, New Jersey
"In two decades of radio, I have rarely found so enthusiastic and wide-spread acceptance of a record (Space Songs). It confirmed my original reaction that these songs were a genuinely creative contribution to the entertainment and educational fields."

Esther Marcus, Science Consultant, School Districts 35-40, New York City
"On my rounds to the different schools, I carried the record with me and played it to groups of teachers ... It caught on like wild-fire. Soon it was being used in the classroom, at assembly programs, and in clubs."

But perhaps the most gratifying praise is that, decades after these recordings were out of print, fans created web sites and Facebook pages in their honor. Thank you to all the fans who remembered and persevered.

Enjoy!

Space Songs

Lyrics and Text by Hy Zaret
Music by Lou Singer

Zoom a Little Zoom (Rocket Ship)

(Energetic)

Zoom a little zoom in a rocket ship.
Off we go on a trip.
Headin' for the moon at a rocket clip.
We're gonna zoom, zoom, rocket!

Zoom a little zoom,
Now we're almost free
From the Earth's gravity.
Zoomin' to the moon at terrific speed
Because there is no friction.

Soon we'll see if the moon is
Made out of green cheese, ha, ha, ha, ha!
Zoom, we're here at the moon, let's
See what the moon is like.

Spoken:
1st voice: Look at those high mountains and wide craters and jagged peaks ... and look at that great big moon up there.

2nd voice: That isn't the moon ... that's our Earth.

1st voice: We've landed! How light I feel.

2nd voice: Watch me jump ... thirty feet, a world's record.

1st voice: That's easy on the moon ... keep your suit on, remember there's no air around here.

Zoom a little zoom in a rocket ship.
Home we go, on a trip.
Comin' back to Earth at a rocket clip.
We're gonna zoom, zoom rocket!

What is the Milky Way?

(Tranquil and smooth)

What is the Milky Way?
Stars along the rim of our galaxy.
Billions of stars, they say,
Make the Milky Way a delight to see.

There are many billions of galaxies,
Each of them with billions of stars.
Could it be that somewhere among all these,
There's another planet like ours?

Spoken: Our galaxy is a flat spiral composed of billions of stars. The nearest galaxy to ours is about a million light years away. The farthest we can see are about a billion light years away, and somewhere among the billions of galaxies there could be planets like ours, with life on them.

Repeat song a cappella as a canon, with 2nd voice entering on the third measure ("Stars along ...").

Constellation Jig

(Lively)

Spoken: In olden times people imagined bears and lions, gods and people in the sky. They thought they saw winged horses and wriggling snakes, sailboats and beautiful maidens. They invented interesting stories to explain how those constellations got there. That's how they got their names. Today, astronomers use the constellations to locate the stars.

Wouldn't it be heavenly to know the constellations;
Scan the skies and recognize their names and their locations?
Tho' they're only figments of our own imaginations,
Wouldn't it be heavenly to know the constellations?

Hercules, Delphinus and Andromeda and Lyra,
Sagitta and Pegasus, Dorado and Lacerta,

Ursa Major, Ursa Minor, Cetus and Orion,
I could name a dozen more if I were really tryin'.

In the Zodiac you'll find a dozen constellations.
You can trace them in the sky with just a little patience —
Leo, Virgo, Scorpius and Gemini and Taurus —
These are five, now who can name the other seven for us?

Spoken:
(voices) Aquarius! Sagittarius! Aries! Libra! Capricorn! Cancer! Pisces!

Sung:
What determines what we see among the constellations?
Atmosphere, the time of year, as well as their locations.
Latitude and time of night are prime considerations.
Each of them are factors when we see the constellations.

Beep, Beep! (Here Comes the Satellite)

(Breezy)

Beep, beep! Beep, beep! Here comes the satellite.
Beep, beep! Beep, beep! And now it's out of sight.
Beep, beep! Beep, beep! Around the Earth it goes.
Beep, beep! Beep, beep! And that's how science grows.

Beep, beep! Beep, beep! It photographs the skies
Beep, beep! Beep, beep! And makes us weather wise.
Beep, beep! Beep, beep! It opens new frontiers
Beep, beep! Beep, beep! for future pioneers.

Spoken:
1st voice: Look at it whizz!

2nd voice: It must go at least five miles a second or it will never stay up. Some of them can go around the earth in only an hour and a half.

Repeat first stanza

Why Does the Sun Shine?

(Droll)

Refrain
The sun is a mass of incandescent gas,
A gigantic nuclear furnace,
Where hydrogen is built into helium
At a temp'rature of millions of degrees.

Verse 1
Yo ho, it's hot, the sun is not a place where we could live.
But here on earth there'd be no life without the light it gives
We need its light, we need its heat, we need its energy.
Without the sun, without a doubt, there'd by no you and me.

Verse 2
The sun is hot
Spoken: It is so hot that everything on it is a gas..., iron, copper, aluminum and many others

The sun is large
Spoken: If the sun were hollow, a million earths could fit inside, and yet the sun is only a middle-sized star.

The sun is far away
Spoken: About 93,000,000 miles away ... That's why it looks so small.

And even when it's out of sight
The sun shines night and day.

Verse 3
The sun gives heat, the sun gives light
The sunlight that we see.
The sunlight comes from our own sun's
Atomic energy

Spoken: Scientists have found that the sun is a huge atom-smashing machine. The heat and light of the sun come from the nuclear reactions of hydrogen, carbon, nitrogen and helium

Refrain

What is a Shooting Star?

Sing once through (with all verses) with accompaniment, then sing through again as a round, a cappella.

(With spirit)

A shooting star is not a star,
Is not a star at all.
A shooting star's a meteor
That's heading for a fall.

A shooting star is not a star,
Why does it shine so bright?
The friction as it falls thru air
Produces heat and light.

A shooting star or meteor,
Whichever name you like,
The minute it comes down to earth
It's called a meteorite.

Repeat song a cappella as a 4 voice round with each voice entering at a new verse.

Longitude and Latitude

(Lively)

Refrain
Do you know what longitude, latitude, longitude,
Do you know what longitude, latitude mean?
Longitude, latitude, longitude, latitude.
Yes I/we know what longitude, latitude mean.
Latitude is the angular distance
Measured in degrees.
It tells how far from the Equator
Any place happens to be.
North or south from the Equator,
Wherever a place may be,
Latitude gives the angular distance
Scientifically.

Longitude is the angular distance
Measured in degrees.
It tells how far from Greenwhich, England
Any place happens to be.

East or West from Greenwhich, England,
Wherever a place may be
Longitude gives the angular distance
Scientifically.

Spoken:
1st voice: What is the latitude and longitude of my home town?

2nd voice: Why don't you look it up on a map?

It's a Scientific Fact

(In a light manner - Cha-Cha)

It's a scientific fact, a scientific fact.
It has to be correct. It has to be exact.
Because it is, because it is
A scientific fact.

Spoken:
It's a scientific fact that our high and low tides are caused by the gravitational pull of the moon.

Sung:
It's been proven to be true, like one and one are two.
It's checked and double-checked, a fact that can be backed.
Because it is, because it is,
A scientific fact.

Spoken:
It's a scientific fact that the belts of radiation in

outer space are a hazard for future space flyers to overcome.

Repeat first verse

Spoken:
Well, of course, even scientific facts are not perfectly exact, but they are as exact as it is humanly possible to make them at the time.

Ballad of Sir Isaac Newton

(Narrative and sort of pompous)

Chorus:
There is no disputin', there is no refutin'
We're all indepted to Sir Isaac Newton
Because, because, because
Sir Isaac discovered, his genius uncovered
the nature of natural laws.

For example, "It's simple", said he
"The first law of motion should be:

Spoken:
An object at rest tends to remain at rest and an object in motion tends to remain in motion with the same speed and in the same direction.

If an apple falls down on your head,
"That is gravity" Sir Isaac said.

Spoken:
It strikes me that all objects in the universe exert gravitational attraction upon each other.

He illumined the subject of light
And showed an amazing insight.

Spoken:
By passing a beam of sunlight thru an opening in a darkened room and into a prism, Ladies and Gentlemen, I believe we can see that white light is a combination of the seven colors of the rainbow.

There is no disputin', there is no refutin'
We're all indebted to Sir Isaac Newton.

Because, because, because
1st voice: He constructed a reflecting telescope

Because, because, because
2nd voice: He made great discoveries in the field of mathematics.

Because, because, because
3rd voice: He discovered many of the laws on which physics and mechanics have been developed.

Because, because, because
Sir Isaac discovered, his genius uncovered, the nature of natural laws.

Spoken:
Naturally, he was a genius.

Friction

(Lusty Mazurka)

Refrain
Friction, what is friction?
Friction is the rub-a-dub dub, rub-a-dub dub
Of objects that are moving.
And the rub-a-dub dub of contact is friction
at work.

Verse 1
Your shoes are made of friction material.
It's immaterial what kind you wear.
Walking or running, friction material
Helps you in getting from here to there.

Girl:
Come now, you don't mean all parts of my shoes.

Boy:
No, only the parts that touch the ground. And by the way, did you kow that cars couldn't move without friction? The tires couldn't grip the ground.

Verse 2
Friction is greater on rougher surfaces.
On smoother surfaces, friction is less.
Oil is quite useful for many purposes.
Speaking of friction, what is your guess?

Spoken: Oil smoothes the surfaces and reduces the friction.

Refrain

Verse 3
Our little planet whirls into outer space.
Out there in outer space, friction is nil.
That's why our planet maintains a whirling pace.
Whirling and twirling, it won't stand still.

Refrain

Why Are Stars of Different Colors?

(Breezy)

Verse 1
Some stars are yellow, some are blue.
Some are red and some are white.
The color of each star, it's true,
Depends upon its fahrenheit.

Chorus
The color of a star you can be sure
Is mostly due to its temp'rature.
The temp'rature is measured by, can you guess?
Yes, you're right, measured by its fahrenheit.

Verse 2
Red stars are cooler than the yellow,
Yellow cooler than the white.
The color of each star above
Depends upon its fahrenheit

Spoken:
There are many kinds of stars. Some are red giants. Some are blue giants. Some are white dwarfs. Some are medium-sized and yellowish white, like our sun. Some stars are dark and give no light ... and, astronomers think that stars change ... they start young and grow old and finally die out.

Why Do the Stars Twinkle?

(Freely)

Why do the stars twinkle at night?
Why do they have a twinkley light?

(Quite slowly and gently)
The light of the stars is steady and clear, but we see the stars thru the atmosphere.
The atmosphere has layers of air. The layers keep moving from here to there.
Because of the diff'rent temp'ratures, the layers keep moving from here to there.
The air moves in, the air moves out, and tosses the light of the stars about.
The moving air bends the light, and that's why the stars twinkle at night.

Spoken:
The stars twinkle because they are bright points of light. The planets do not twinkle because they are much closer to the earth and have a noticeable size.

What is Gravity?

Verse (Bouncy)

If the earth is a ball, why don't we fall off while it spins around?
If the earth is a ball, why don't we all go flying off the ground?
Well, the earth has a force that pulls and draws all matter toward its core,
And the pull of the force called "gravity" is why we don't fall off.

Refrain (Rhythmic)
Gravity, Gravity, all matter has a force that pulls things toward its core.
Gravity, Gravity is what we call that force.

Verse 2
The earth is so large that each little part
Appears to be quite flat.
But the earth is a ball and we never fall off
Due to a simple fact.
There's a force that draws you toward its core
No matter where you're at.
And before you fly from the face of the earth
There's a force to counteract.

Refrain

Spoken
1st voice: How much do you weigh?

2nd voice: About 105 pounds.

1st voice: That's because the earth's gravity pulls you downward with that amount of force

2nd voice: How much would I weigh on the moon?

1st voice: The moon is much smaller than the earth so you would weigh only 18 pounds.

2nd voice: I think I'll stay where I am.

1st voice: Well, gravity will help you do just that.

Refrain

Planet Minuet

(Gracefully)

High above us, way up yonder, planets wander thru the starry skies.
While we gaze at them and ponder, they just wander on.
Stars appear to blink and twinkle, but the planets have a steady glow.
Are the stars and planets diff'rent, and what makes them so?
High above us, way up yonder, planets wander thru the starry skies.
While we gaze at them and ponder, they just wander on.

Spoken:
1st voice: Which is the biggest planet?
2nd voice: Jupitor
1st voice: Which is the brightest?
2nd voice: Venus
1st voice: Which one has a ring?
2nd voice: Saturn
1st voice: Which one is the most likely to support life?
2nd voice: Mars
1st voice: Which one is nearest to the sun?
2nd voice: Mercury
1st voice: Which is the one we love the best?
2nd voice: Good old Mother Earth

Repeat song from "Stars appear to blink..."

Why Go Up There?

(Smoothly)

Why do we all want to be up there, up there?
What is there to do or see, up there, up there?
Outer space is the place where we'll trace the future,
There's a lot of who knows what away up there.
Spoken:
1st voice: Now that I think of it, why do we want to be up there?
2nd voice: Because we're people, members of the human race ... we thirst for knowledge — we want to know ... and we do know that new frontiers and discoveries are waiting for future pioneers and scientists ... away up there.

Repeat song from "Outer Space ..."

Experiment Songs

Lyrics and Text by Hy Zaret
Music by Lou Singer

It's a Magnet

(Soft-shoe style)

With your kind permission we would like to say "hello,"
And to entertain you with a scientific show.
What's the first attraction? Would you really like to know? (Yes)
What's the first attraction? It's a magnet!

Spoken: Ladies and gentlemen,

Here's the kind of magnet that is called a "bar."
North and South are marked on the magnet.
If you're ever lost and wonder where you are,
Just hang the magnet from a string
And, "presto-chango," the magnet becomes a compass.

It's the kind of magnet that we say is "permanent."
It can do so many things, and with your kind consent,
We would like to show you in our first experiment.
What's the big attraction in a magnet!

Spoken:
Observe the magnet in my hand, ladies and gentlemen. Also observe the collection of things on the table. I bring the magnet to a nail. Is the nail attracted to the magnet? Yes!! That's because it's made of iron. Here's a penny. Is it attracted to the magnet? No!! The penny is made of copper. Will the magnet attract this paperclip, or this safety pin? Yes!! That's because they both contain iron. How about this rubber band? No! What else is attracted to a magnet? Try it yourself and find out.

Magnets are attractive but it's time to move along,
And to put a happy ending to the magnet song.
When we ask the question, give the answer loud and strong. Ready?
What's the big attraction? It's a magnet.

Vibration

(Moderato)

Verse
Wrap a rubber band around an empty shoe box.
Listen! Listen! Listen! You hear nothing.
Strike the rubber band with your finger quickly.
Listen! Listen! You hear something.
Now the rubber band's in motion, and that motion is vibration.
You can hear the sound of that vibration carried by the air.

Refrain
Vibration, vibration, vibration is what causes sound.
Vibration, vibration, vibration causes sound.

Spoken:
Now, Tony and his guitar will show you how to control the pitch of a sound by changing the vibration.
- He raises the pitch by tightening the string (sound)
- And he lowers the pitch by loosiening the string (sound)
- He raises the pitch by shortening the string with his fingers (sound)
- He lowers the pitch by lengthening the string with his fingers (sound)
- He rasies the pitch by using a light string (sound)
- He lowers the pitch by using a heavy string (sound)

Boys and girls, you've just heard a scientific demonstration which proves that the pitch of a sound is changed by changing the vibration.

Refrain

We Know the Air is There (Hi, Ho, Fiddle Dee Dee)

(Moderato)

Get a balloon and blow-o-ow,
Fill it full of air.
When it's blown up, then we know
That the air is there.

Refrain
Hi ho, fiddle dee dee,
We don't see the air.
Hi, ho, fiddle dee dee,
Still we know it's there.

Take the baloon and go-o-o.
Find a scale somewhere.
Weigh it empty, weigh it full,
Find the weight of air.

Refrain

Get the balloon and blo-o-ow.
How big will it get?
Let it go and air will flow,
It's flying like a jet.

Spoken:
Now, we can see the wind blowing papers and moving the branches of trees. And we can feel a strong wind push us. And, in a fast moving automobile, we can feel the air go by as it is pushed aside.

Refrain

We're Making Heat

(Lively)

Rub your palms, rub your palms, rub your palms together.
Rub them hard, very hard, feel them getting warm.
Rub them hard, very hard, 'til they are very warm

(Faster tempo)

Hi, ho, what do you know! This trick is neat.
Hi, ho, what do you know! W're making heat!

Spoken:
In the wintertime you rub your hands together to warm them. And, long ago, Indians rubbed two sticks together to start a fire. But today, we start a fire by rubbing a match against rough paper. And this rubbing is called "friction." Friction always causes heat.

Repeat song

Spoken:
We also get heat from the sun's rays, from steam in radiators, from burning something like coal or oil or gas, and from electricity. But my favorite way is making it myself.

Repeat song

Ice is a Solid

(Moderato)

Refrain
Ice is a solid, water is a liquid,
Water vapor is a gas.
That's what they say.
That's what they say.
Let's find out for ourselves today.

Verse
Get a piece of ice and put it in a pan,
Put it in a pan in the sun.
Wait a little while, then another little while.
See what the sun has done.

Spoken:
The heat of the sun has melted the ice and changed it into water.

Verse
Now we have the water, water in the pan,
Water in the pan in the sun.
Wait a little while, then another little while.
See what the sun has done.

Spoken:
If we wait a day or so, we'll find that the water has disappeared and the pan is empty. The heat of the sun has changed the water into water vapor, a gas, that has escaped into the air

Ice is a solid, water is a liquid,
Water vapor is a gas.
That's what we say, that's what we say.
We proved it to ourselves today.

Why do I Have a Shadow?

(Lively)

I have a little shadow, shadow.
I have a little shadow, that looks a lot like me.
I'm very, very glad-o, glad-o.
I'm very, very glad-o, it keeps me company.

(Slow, freely)

It tags along when I play ball.
I run, it runs. I crawl, it crawls.
Sometimes it's tall, sometimes it's small.
Sometimes it isn't there at all.

(Tempo I)

Why do I have a shadow, shadow?
How did my little shadow ever come to be?
..... shadow.
..... it looks a lot like me.
..... it keeps me company.

Spoken: I have a shadow too. Why do I have a shadow.

(Freely)

When the sunlight meets your body, it cannot pass through.
Then your body casts a shadow right in back of you.
If you turn a round, you'll see your shadow at your feet,
And when the sun is high above, how small it gets to be.

Spoken:
Q: Why is that?

A: When the sun is directly above you, the sunlight is blocked only by your head and shoulders, so the shadow is small. But when the sun is low in the sky, your entire body blocks the light. Also, from this position, the shadow spreads out along the ground, so it is bigger.

(Slow)

Ev'ry shadow is a dark spot and it's clear to see,
Your shadow looks a lot like you,

(Tempo I - Lively)

And mine takes after me.

Spoken: Aren't shadows lots of fun?

Rocks and Gems and Minerals

(Playfully)

Rocks and gems and minerals.
Rocks and gems and minerals.
Anyone can have some fun

With rocks and gems and minerals.

What's a rock and what's a gem,
How do you distinguish them?
What's a gem and what's a rock?
If you know the answer, knock!

Spoken:
Rocks are made up of one or more minerals. And gems are certain kinds of rare and valuable rocks.

There are different kinds of rock,
Think of some before you knock.
Do you know some kinds of rock?
Scratch your head and give a knock!

Spoken:
Granite ... Sandstone ... Marble ... Slate ... Shale ... Limestone ... Flint ... Obsidian ... Feldspar. Good! That's enough for now.

Q: How were the rocks formed?

A: Well, some rocks, like obsidian, were formed from lava that came from erupting volcanoes. And other rocks, like shale and sandstone, were deposited in layers by rivers and on the sea shore. Other rocks, like slate, were formed in the earth by great heat and pressure

Rocks and gems and minerals.
Rocks and gems and minerals.
Anyone can have some fun
With rocks and gems and minerals.

The Earth Goes Around the Sun

(Waltz tempo)

The Earth goes around the Sun, la, la, la.
The Earth goes around the Sun, la, la, la.
Around and around and around and around
The Earth goes around the Sun.

The Moon goes around the Earth, la, la, la.
The Moon goes around the Earth, la, la, la.
Around and around and around and around
The Moon goes around the Earth.

Stop and listen!

Spoken:
It takes the Moon about a month to complete one trip around the Earth. A strange thing about the Moon is that it always turns the same side toward us.

The planets go 'round the Sun, la, la, la.
The planets go 'round the Sun, la, la, la.
Around and around and around and around
The planets go 'round the Sun.

Do stars go around the Sun? (No!)
Do stars go around the Sun? (No!)
Around and around and around and around
Do stars go around the Sun? (No!)

Stop and listen!

Spoken:
Each star is like our Sun and much farther away than any of our planets. The stars move, but not around our Sun.

The Earth goes around the Sun, la, la, la.
The Moon goes around the Earth, la, la, la.
The Earth and the Moon and the planets too,
They all go around the sun.

Around and around and around and around,
They all go around the Sun.

Spoken:
Ah, but not the stars.

Why is it Raining Raindrops?

Spoken: Why is it raining raindrops?

(Not fast)

Refrain
The water goes up and the water comes down
And we hear the raindrops all around.
It's raining, it's raining,
It's raining raindrops
All around.

Verse
The sunlight heats the water,
Which rises in the air.
The higher up it travels,
The cooler it is there.

The droplets come together
And form the clouds we see.
Then all at once it's raining
Down on you and me.

Spoken:
The sunlight heats the oceans and changes some of the water into vapor, which then rises in the air. Winds blow the water vapor over land and sea. And when the air is cooled the water vapor changes to droplets and clouds are formed.

Refrain

Where Does the Sun Go at Night?

Spoken:
Q: Where does the Sun got at night?

A: It doesn't go anywhere; it's just out of sight.
But if you're in the dark about day and night,
This little song will show you the light.

(Moderato)

Verse
The Earth spins around as it circles the sun,
The sun that gives the Earth its light.
Each twenty four hours it spins around once.
That's why we have day and night.

Refrain
Day and night, day and night, year and season,
Whether the weather is hot or freezin',
The Earth goes around and that's the reason
We have day and night

Verse
The part of the Earth that is facing the Sun,
Gets light as bright as bright can be.
The part turned away from the Sun gets none;
It's as dark as night can be.

Refrain

Coda
We have day and night.

What's Inside Our Earth?

(Broadly and good humored)

Our Earth is like a great big grapefruit,
Twenty five thousand miles around.
On the outside land and water and the atmosphere are found.
Inside the Earth there's rock and mineral,
Twenty five thousands miles around.
Lighter rock is near the surface; heavier rock is 'way deep down.

The outer part is called the "crust,"
The center is the "core."
From core to crust the Earth is just
A lot of rock and ore.

Our Earth is like a great big grapefruit,
Twenty five thousand miles around.
You could dig from here to China,
If you could dig through the ground.

Spoken:
But you can't.

There are many useful things inside the Earth:

iron ore from which we get iron; lead ore, from which we get lead; tin ore, from which we get tin; stone for building; and clay for making bricks. We also get coal and gas and oil from the Earth. In fact, the Earth is a giant storehouse of useful materials that make our lives more comfortable.

Where Does the Sun Rise?

(Moderato)

Verse 1
Where does the Sun rise in morning?
Where does the Sun rise? In the East.
Where does the Sun set in the evening?
Where does the Sun set? In the West.

Refrain 1
East is East and West is West.
North is North and South is South
Where does the Sun rise? In the East.
Where does the Sun set? In the West.

Verse 2
Where do the birds fly for the summer?
Where do the birds fly? To the North!
Where do the birds fly for the winter?
Where do the birds fly? To the South.

Refrain 2
East is East and West is West.
North is North and South is South
Where do the birds fly? To the North.
Where do the birds fly? To the South.

Refrain 3
East is East and West is West.
North is North and South is South
Pointing, they say, is not polite,
But when we play it's quite alright.

How Many Colors Are in the Rainbow?

Spoken: Remember vibgyor.
(Light and breezy)

Verse
How many colors are in the rainbow?
How many colors are in the rainbow?
How many colors are in the rainbow?
Count them and you'll see. Seven!

Refrain
Violet, indigo, blue, and green
Violet, indigo, blue, and green
Violet, indigo, blue, and green
Yellow, orange, and red.

Verse
Seven colors are in the rainbow.
Seven colors are in the rainbow.
Seven colors are in the rainbow.
Count them and you'll see. Seven!

Spoken: Vibgyor. Remember vibgyor.

Q: What does it mean?

A: Vibgyor, the key to the rainbow. Vibgyor. Violet, indigo, blue, green, yellow, orange, and red. Vibgyor.

Refrain

Q: Now, do you know it?

A: Yes...Vibgyor...Violet, indigo, blue, green, yellow, orange, and red. Vibgyor.

Who's Afraid of Thunder?

(Swingy)

Who's afraid of thunder? (Thunder's just a lot of noise.)
Who's afraid of thunder? (Like the noise we make with toys.)
When the thunder comes with a boom, boom, boom,
We get out our drums and we room, toom, toom.

When lighting flashes through the sky,
It heats the air as it goes by.
The air expands and rushes back,
And that's what makes a thunder clap.

Spoken: Thunder's just a lot of hot air.

It's a Magnet (Reprise)

Spoken:
Boys and girls, I hope you enjoyed our show.
Thank you. but even good things must end you know, So...

(Soft-shoe style)

With your kind permission, we would like to say farewell.
We sincerely hope you liked our little "show and tell."
Here's a final question, just before the final bell:

(Spoken: Ready?)
What's the big attraction? It's a magnet!

Nature Songs

Lyrics and Text by Hy Zaret
Music by Lou Singer

Introduction to Nature Study

(Slowly)

Spoken:
Come along with me to a land of beauty,
Where the skylark sings to an open sky,
Where the stately oak and the sweet-smelling pine
Say "rest awhile" to each passerby.

Here we'll see how the seeds of plants travel,
And learn the secret of how a bird sings.
We'll find out why the leaves change their color,
How rocks came to be and other such things.

Soon we'll discover what's in the ocean,
How do fish swim and how silk is made.
We will uncover what is an insect,
And what is a mammal will be on parade.

Come along with me to a land of beauty.
While nature delights the heart and the eye,
We will unfold her innermost secrets,
And we'll know forever her "how" and her "why".

Why Do Leaves Change Their Color?

Introduction
(Slow, freely)

Just like people, many trees
Tak a winter vacation.
And in the fall they shed their leaves
As Part of the preparation.
Spoken:
But, before the leaves leave the tree, their colors change. Please tell me...

Refrain

(Fast)

Why do leaves change their color?
Why do leaves change their color?
Why do leaves change their color
Early in the autumn?

All spring and summer chlorophyl
Makes the leaves a lovely green, but
At the time of autumn's chill, the

Cholorphyl then leaves the scene.
The leaves have other compounds, too,
That up till now we couldn't see.
Now these compounds come in view
And color the leaves upon the tree.

That's why leaves change their color,
That's why leaves change their color.
That's why leaves change their color
Early in the autumn.

Red and gold and orange, too,
Are the leaves upon the tree.
Soon they'll say farewell to you.

(Slower)

Then, how bare the tree will be!

What are the Parts of a Tree?

Spoken: Trunk! Roots! Crown! Bark! Cambium!

(Slowly)

A tree has roots, a trunk, and a crown.
The trunk grows up and the roots grow down.
The roots grow down and spread all around,
And hold the tree firmly in the ground.

(Faster)

Hold the tree, hold the tree, hold the tree, hold the tree,

(Slowly)

Hold the tree firmly in the ground.

Spoken:
The roots also provide nourishment for the tree.

How do they do that?

The root hairs absorb large amounts of water and minerals from the earth. This water travels thru the roots, thru the trunk and thru the branches to the leaves. The leaves use it in making food for the tree. The minerals are used by cells in other parts of the tree for new growth. The bark is the outer protective covering of the tree. Under the bark is the cambium from which new wood and bark grow.

Trunk! Roots! Crown! Bark! Cambium!

What is an Insect? (Cricket In a Thicket)

(Moderately)

A cricket in a thicket
Said to a butterfly,
"They say we both are insects.
Oh, can you tell me why?
Oh, can you tell me why?"

The butterfly looked puzzled
And scratched its tiny head.
"Because we are six legged?"
"That's right" the cricket said.
"That's right" the cricket said.

The cricket in the thicket
Then asked the butterfly
"What else makes you an insect?"
And it got this reply,
And it got this reply.

"For ladybugs and crickets,
For bees and butterflies,
For every adult insect,
This little rule applies,
This little rule applies."

"All insects have antennae
And special kinds of eyes.
Their bodies all have three parts
Regardless of their size.
Regardless of their size."

Just then they spied a spider
Beside the butterfly.
"That spider's not an insect!"
They heard the cricket cry.
They heard the cricket cry.

"The spider's not six-legged,
As anyone can see,
And it has no antennae.
It's not like you and me!
It's not like you and me."

"Farewell, my little cricket."
"So long, sweet butterfly."
We've had a lovely meeting.
Farewell, so long, goodbye.
Farewell, so long, goodbye."

What is a Mammal?

Spoken:
Mammals are warm-blooded and their body termperatures always remain about the same in hot or cold weather. Cold-blooded creatures like snakes and frogs and insects and fish get sluggish when it's cold and many of them cannot stand the heat. The warm-blooded mammals have a great advantage in adjusting to different kinds of weather and climate.

Q: What is a mammal?

(Lively)

Spoken in rhythm
Why, anyone can tell you what a mammal is,
Anyone who understands.
They're warm-blooded, have hair on their bodies,
And suckle their young from mammary glands.

A camel is a mammal and so is a cat,
A dog, a lion, a rabbit, and a bat.
And a whale might seem like a fish to you,
But a whale is really a mammal too.
And then of course there's the chimpanzee,
Well, he's a mammal like you and me.

A cow is a mammal and so is a horse.
A deer and an elephant?
Well, of course.
And a sheep and a goat and a kangaroo.
And many others we see at the zoo.
Now, it seems to me I've named quite a few.
How would you like to name some too?

Spoken:
Go ahead, name some.

How do the Fish Swim?

(Moderately and smooth)

Where do the fish swim?
Fish swim in the water nat'rally.
Where do the fish swim?
Fish swim in the river and the sea.

How do the fish swim?
Fish swim with no motors and no sails.
How do the fish swim?
Fish swim with the movement of their tails.

(Slightly faster)

Fish have tails to push with,
And fish have fins to stear with,
And fish have nostrils, eyes and ears
To smell and see and hear with.

(Tempo I)

How do the fish breathe?
Fish breath on the move or standing still.
How do the fish breathe?
Fish breathe through the action of their gills.

Spoken:
Fish don't really breathe the way we do. A fish

gets its oxygen from the air dissolved in the water. It gulps in water and pushes it out past the gills. There, oxygen passes through thin walls of tiny blood vessels into the body. At the same time, waste carbon dioxide is picked up from the blood vessels in the gills and goes out with the water.

Repeat last verse

Song of the Rocks

(March - tongue-in-cheek pomposity)

We are all solid members of the Rock family.
We're Metamorphic, Igneous, or Sedimentary.
I'm Granite. I'm Agate. I'm Sandstone. I'm Soapstone.
We're Flint, Gneiss, and Gypsum, and Quartzite.
I'm Limestone, I'm Pumice, and I'm Micaschist.
We're Porphyry, Obsidian, and Marble.
We are all diff'rent branches of the same fam'ly tree,
But we're all solid members of the Rock family.

Spoken:
Hey, don't forget us. I'm Quartz. I'm Slate. I'm Shale. I'm Hornblende. We're Cennebar, Hematite, Talc. Metamorphic, Igneous, or Sedimentary,
We are all solid members of the Rock family.

Spoken:
Q: Which of you are the Metamorphic rocks?

A: We are. I'm Slate. I'm Gneiss. I'm Schist. I'm Quartzite. We were formed when other rocks were squeezed and changed by heat and pressure in the earth.

Q: Which of you are the Igneous rocks?

A: We are. I'm Granite. I'm Basalt. We're two of the Igneous rocks. We were formed when molten rock solidified.

Q: And how about the Sedimentary Rocks?

A: We are Sedimentary rocks: Limestone, Sandstone, Shale. We were formed when rocks were broken down by "weathering" and deposited in the rivers, lakes, and oceans.

Repeat song

The Birds Have a Language

(Gently and freely)

The birds have a language that is their very own.
A bird uses music to make its feelings known.
A Robin will sign out when he calls his mate.
A baby "peeps" when the mother bird is late.

When Blue Jays are angry you hear them far and near.
And Mocking birds will mimic 'most any sound they hear.
The birds have a language, a language of their own.
A bird uses music to make its feelings known.

Spoken:
Whip-poor-will. Carolina Wren. Screech Owl. Bobolink.

How Does a Bird Sing?

Spoken:
The song of a bird is a very pretty thing.
But how in the world does a little birdie sing?

(Not fast, staccato)

At the bottom of its windpipe
A syrinx is located.
The syrinx is a voice box
And muscles regulate it.

When air goes through the syrinx,
Its membranes are vibrated
And then the air is merry
With the music it created.

What Does a Bird Have That I Have Not?

(Medium tempo and bouncy)

What does a bird have that I have not?

Spoken: Feathers!
That's what!
Countour feathers for flying,
And downy feathers for warmth.
Colored feathers to attract a mate,
And to help them propagate

What does a bird have that I have not?

Spoken: An oil gland at the base of its tail feathers!
That's what!
When their feathers are ruffled,
To get them tidy and cleaned,
They comb their feathers with oil until
They're water-proofed and preened.

And further more, among other things,
A bird has a beak, a tail, and wings,
A streamlined body that's built for flight
With hollow bones that are strong and light.
And here and there little sacs of air
Attached to its lungs give it air to spare.

What does a bird have that I have not?

Spoken: A special kind of foot!
That's what!
Some of them have webbed-feet to
Help them when they swim.
Some have feet that'll
Help them hop or perch out on a limb.

What does a bird have that I have not?

Spoken:
Feathers, oil gland, beak, tail, hollow bones, air sacs, and wings, and a few other things!
That's what!
That's what a bird has that I have not!

How Silk is Made

(Allegretto)

This is the way that silk is made,
Silk is made, silk is made.
This is the way that silk is made,
By the little silk worm.
A lady moth will lay her eggs,
The farmer takes a way her eggs.
The farmer takes away her eggs
And puts them into storage.

The farmer takes away her eggs
And puts them into storage.
In the spring the eggs are hatched
In an incubator.
Now the eggs are tiny worms,
The worms are hearty eaters.
They munch a bunch of mulberry leaves,
And need a lot of feeding.

This is the time when all they do
Is eat and grow the whole day through.
Munch and crunch and while they chew
They keep a growing bigger.

One day when they are kind of big,
And through with "eating like a pig",
They look around to find a twig
To fasten their cocoons to.
The farmer knows just what it means;
He rushes racks upon the scene.
No worm will lack a bit of rack
To fasten its cocoon to.

Now they begin to spin cocoons,
And here is how they do it:
From the upper lip there comes
A "gluey-gooey" fluid.
As the fluid hits the air
To silken thread it hardens.
They spin and wind the silk they spin

Round and round their bodies

This is the way cocoons are spun
And, after the cocoons are done,
The processing is then begun
To make them into raw silk.

Spoken:
The cocoons are sorted for color and soaked in water to soften the gum that holds them together. Then the cocoons are unwound and strands of several of them are joined together to form a thread. These threads are processed and combined to make stronger threads that may be woven into a variety of silk products such as satin, crepe, velvet and brocade.

Sung:
This is the way that silk is made,
Silk or satin or brocade.
This is the way that silk is made
By the little silkworm.

What's In the Ocean?

(Moderato)

Refrain
What's in the ocean? What's in the ocean?
What's in the ocean? What is there to see?
Mud on the bottom, waves on the surface,
Fish in the middle swimming rapidly.

Verse 1
Kingfish and codfish, sailfish and swordfish,
Small fish and large fish moving restlessly.
Herring for breakfast, flounder for dinner,
Sardine and tuna for the cannery.

Refrain
What's in the ocean? What's in the ocean?
What's in the ocean? What else can there be?

Verse 2
Coral and sea plants, lobsters and walruses,
Snails, whales, and turtles, and other animals
What's in the Water? Salt and magnesium,
Bromine and iodine, and other minerals.

Refrain
What's in the ocean? What's in the ocean?
What's in the ocean? That's enough for me ...
and me

How Do the Seeds of Plants Travel?

Spoken:
A seed contains a tiny plant, a supply of food and a protective seed coat. The tiny plant is called an "embryo" and it is the part of the seed that will grow into a plant.

(Moderato)

Verse
Elm and birch and maple trees,
Mikweed and dandelion
Have seeds that travel with the breeze,
Travel rain or shine.
Birds and other animals
Pick fruit right off the trees,
And when they finish with the fruit
Drop and scatter seeds.

Refrain
Sailing, sailing where ever the breezes blow,
The seeds of plants keep planting seeds
Ev'ry where they go.
Sailing, sailing are tiny seeds of fruits;
Some have wings and some have sails,
And some have parachutes.

Verse
Squirrels bury nuts we know
And even little ants
Will carry tiny seeds that grow
Into great big plants.
When you walk, the seeds of weeds
Will often cling to you,
And there are seeds that travel by
Plane and auto, too.

Refrain

The Balance of Nature

(Calypso style - not fast)

Verse
If it weren't for the birds, remember, my pet,
The balance of nature would be upset.
The insects of the world would surely double
And the people of the world would be in trouble.

Refrain
The balance of nature must not be unbalanced;
The balance of nature should be understood.
If the balance of nature is ever unbalanced,
Whatever will happen will not be good.

Verse
If it weren't for the snakes, mice would multiply,
And without the algae the fish would die.
The flowers and the fruit need pollination
And the balance of nature consideration.

Refrain

Spoken:
If too many trees are chopped down, we have floods and soil erosion and a reduced water supply. If too many plants are destroyed, the animals may not have enough food and oxygen. If too many animals are killed, the minerals and carbon dioxide that animals supply to plants will be diminished.

Refrain

More Nature Songs

Metamorphosis

(Lively polka)

Refrain
What do we mean by metamorphosis,
Metamorphosis, metamorphosis?
A certain kind of change is what it is,
When it's a metamorphosis.

Verse 1
We have an egg, an egg that changes
Into a larva, the larva changes
Into a pupa, the pupa changes,
And it's a butterfly, at last.

Refrain

Verse 2
We have an egg, an egg that changes
Into an embryo, that also changes
Into a tadpole, that also changes,
And it's a frog, a frog, at last

That's what we mean by metamorphosis,
Metamorphosis, metamorphosis.
A certain kind of change is what it is,
When it's a metamorphosis.

How Does a Frog Become a Frog?

Refrain

(Quasi Czardas - quite slowly)

How does a frog become a frog,
Squatting on a bump on a log-o?
How does a frog become a frog,

Instead of a big polliwog-o?

How does a frog become a frog,
Squatting on a bump on a log-o?
How does a frog become a frog,
Instead of a big polliwog-o?

Verse
(Slowly, becoming increasingly fast)

In the spring the frogs had mated,
The female's eggs were expelled.
Then the male frog fertilized the
Eggs and said, "fare well."

Soon the eggs were tiny embryos,
The embryos became polliwogs;
They had gills, had gills until
They grew up into frogs.

Refrain
That's how a frog become a frog,
Squatting on a bump on a log-o.
That's how a frog become a frog,
Instead of a big polliwog-o.

What is an Animal? (What is a Plant?)

Spoken:
Did you know that there are tiny one-celled living things called "protista" which have some of the qualities of both plants and animals? But all other living things are either animals or plants ... animals or plants ... animals or plants ...

(Breezy)

What is an animal,
What is a plant,
What can the difference be?
If you know what the diff'rence is,
Won't you please tell me.

A horse is a horse and a snake is a snake,
A fish is a fish and a bee is a bee;
They're all diff'rent from each other,
But they're all ... animals.

A rose is a rose and a carrot is a carrot,
An oak is an oak and the grass is the grass;
They're all different from each other,
But they're all ... they're all plants.

Spoken:
Well, some of the differences are:

All animals feed on plants or other animals, but most plants make their own food from carbon dioxide and water. And most animals are able to move about while plants usually stay in one place.

And the higher forms of animals have nervous systems and they respond quickly to changes around them. No plant has a nervous system and most of them respond slowly.

But both animals and plants are living things.

What is an animal,
What is a plant,
What can the diff'rence be?
Now I know what the diff'rence is.
Thanks for telling, thanks for telling me.

Bobo the Bear (The Hibernation Song)

(Lively)

Bobo, the bear, was preparing for the winter,
Preparing for the winter, when he would hibernate.
Bobo, the bear, was preparing for the winter.
Preparing for the winter, he ate and ate and ate.

Bobo looked to find a nook for sleeping,
Found a nook where he curled up in a heap.
While he slept his body needed feeding;
His extra fat was used up while he was asleep.

Winter sleep that we call "hibernation"
Helps to keep many animals alive.
Bobo eats for his self-preservation;
All through the winter it helps him to survive.

Bobo, the bear, was emerging from the winter;
While he was busy sleeping, he'd lost a lot of weight.
Bobo, the bear, was emerging from the winter;
Since he was very hungry, he ate and ate and ate.

He ate and ate and ate and ate and ate and ate and ate and ate
And ate and ate and ate and ate and ate and ate and ate.

Song of the Fossils

(Waltz)

The fossils, the fossils,
We're talking of fossils;
What is a fossil, it's time that I knew.
Somethings I don't know,
One thing I do know:
I'm not a fossil and neither are you.
I'm not a fossil and neither are you.

The fossils, the fossils,
We're talking of fossils,
What is a fossil, I'm still asking you.
Fossils are traces, time-preserved traces
Of plants and creatures that once lived and grew

Spoken:
A fossil is a preserved impression of an animal or plant that lived thousands, or millions, or billions of years ago. How were fossils formed? Sometimes, dead animals were buried in mud and sand under water. After many years, the mud or sand hardened into rock, with the fossil shells or skeletons inside. In other cases, foot prints or imprints of leaves were filled in by mud and hardened into rock. Scientists can "read" the history of life on Earth by careful study of the many different fossils that have been found.

The fossils, the fossils,
By "reading" the fossils,
It's just colossal what science can do.
Some things I don't know.
One thing I do know:
I'm not a fossil and neither are you,
I'm not a fossil and neither are you.

How Does a Cow Make Milk?

(Freely)

How does a cow make milk, I wonder,
How does a cow make milk?
Ev'ry cow has a milky way
And right now I'm prepared to say:

A cow has glands, and all those glands
Are chemical factories,
Busily manufacturing
Lots of things she needs.

She chews the grass and chews the grass
Then swallows down her cud.
The glands make juice that help produce
Muscle, bone and blood.

And when the little calf is born,
To help the happy mother,
A certain gland gets active and
That gland is called the "udder."

The udder manufactures milk
And when the calf is born,
Squirt! Squirt! the little "squirt"
Turns the faucets on.

And when the calf is through with his,
We get all the milk there is.

Eohippus
(The Evolution of the Horse)

(Lively)

There once was an animal called "Eohippus."
What was Eohippus?
The dawn horse, of course.
The size of a fox,
Its front feet had four toes,
Its hind feet had three toes,
It fed upon leaves

Spoken:
Eohippus lived about fifty million years ago and was well adapted to living in the swamp-like forests. It could hide from its enemies behind trees and in the shadows. Its teeth could chew the leaves of bushes and small trees. Then, as time went by, Eohippus changed!

A few "adaptations" and new situations.
It's now "Mesohippus," a collie-sized horse.
It still ate the leaves,
But each of its four feet
Now had only three toes;
Its hoof had begun.

Spoken:
That was about 38 million years ago. And, as more millions of years passed, we find that Mesohippus continued to evolve into a new variety of horse!

With some "variations" as well as "mutations"
It's now "Merychippus", a pony-sized horse.
It's teeth could chew grass.
Tho- each foot had three toes,
The one in the middle
Was more like a hoof.

Spoken:
Merychippus roamed the plains about 20 million years ago. Its greater speed and size as well as its ability to chew grass enabled it to survive. Then, as still more time went by, the horse became even bigger and its hooves more like those of the modern horse, Equus.

It took a long time, but in time Eohippus
Evolved into Equus, the modern-day horse.
The fossils reveal
The documentation
And this is the end of
The tale of the horse.

Spoken:
But not the end of the evolution of the horse.

The Conservation Song

("Mountain" style)

Verse 1
We have the mountains and the forests
And the rivers and the valleys
And the natural resources they contain.
We have the natural resources,
But the theme of my discourse is:
Just how long will those resources all remain?

Refrain
If we study conservation
And practice conservation,
There's no doubt that it will keep our nation strong.
It's my earnest observation
That the entire population
Join the chorus of the conservation song.

Verse 2
With scientific crop rotation
And the proper irrigation,
We can stop our soil from washing down the drain;
We can increase re-forestation
And reduce the conflagrations
That are burning up the trees that do remain.

Refrain

Verse 3
We have to find the right solution
For the problem of pollution
That is poisoning the water and the air;
And it's appropriate to mention
That an ounce of flood-prevention
Would be worth a pound of after-flood repair.

Refrain

Why is the Sky Blue?

(Freely)

Why, oh why, is the sky b-l-u-e, blue?
I'll t-r-y to supply the scientific point of view.

(Moderately)

The sun sends out the sunlight,
The sunlight looks like one light,
But science says the sunlight
Has all the colors of the rainbow.
The air that sunlight passes
Has dust and water droplets;
They break the light and scatter
The blue light that is in the sunlight.

The dust and water droplets in
The lower atmosphere,
Break up the light and scatter blue,
The blue we see from here.
The scattering of blue light
Shows sunlight in a new light.
That's why the sky is blue-oo.
And not the colors of the rainbow.

At sunset when the sunlight passes
Through more atmosphere,
The red light passes right on through
And red sunsets appear.
The red's a passing through light,
but we still see the blue light.
That's why the sky is blue-oo.
And not the colors of the rainbow.

What Makes a Rainbow?

(Gently)

Did you ever see a rainbow
As it brightens up the sky?
Did you ever stop to wonder
'Bout a rainbow's "how" and "why?"

Spoken:
I've often wondered about it, but now I know.

When the sunlight strikes the rain-drops,
Strikes the rain-drops 'way up high,
Then the colors in the sunlight
Show a spectrum in the sky.

Refrain
By refraction and reflection
And dispersion of the light,
Little rain-drops make a rainbow
And it makes a lovely sight,
And it makes a lovely sight.

Spoken:
A rainbow may be seen when the sun is low in the sky in back of you, while a cloud or mist appears in front of you. Sunlight enters the droplets of water in the cloud and is reflected from the backs of the droplets towards your eyes. As the rays pass from air into water and out again, they are bent, or refracted. At the same time, colors in the white light are dispersed, or spread apart, into a spectrum.

So, when the light reaches your eyes you see the separate colors of which the sunlight is composed.

Refrain

Let's Wander Through the Seasons

(Moderately)

Let's wander through the seasons, beginning with the spring,
And see the lovely changes the changing seasons bring.
We'll see the snow-flakes falling and hear the robbins sing,
As we observe the changes the changing seasons bring.

The spring is filled with promise, the doors are opening.
The seeds are being planted, the birds begin to sing.
They're nesting and migrating and foraging for food.
For living things, the cycle of life is now renewed.

In summer, days are longer and sunshine fills the sky,
The trees and flowers blossom and young birds learn to fly.
For animals, the summer's the growing time of year,
And people are so happy vacation time is here.

The fall is filled with color, the leaves are filled with gold
The birds are turning southward, the nights are turning cold.
The winter brings the snow-flakes to cover sleeping things,
Until the world awakens to greet another spring.

Why Does a Bee Bzzz?

Spoken:

If someone should ever ask you, "Why does a bee bzzz?" all you have to say izzzz:

(Happily)

Did you ever hear a honey-bee go Bzzz, bzzz, bzzz,
As it gaily wanders to and fro? Bzzz, bzzz, bzzz
Did you ever hear a honey-bee go Bzzz, bzzz, bzzz,
As it gaily wanders to and fro? Bzzz, bzzz, bzzz

No matter where it's flying, in a garden or a town,
Four hundred times a second, its wings go up and down.
Bzzz, bzzz, the tiny wings vibrating make a humming sound
And start the air waves rushing
To spread the sound a round, Bzzz, bzzz.

Did you ever hear a honey-bee go Bzzz, bzzz, bzzz,
As it gaily wanders to and fro? Bzzz, bzzz, bzzz

Spoken:
Honey-bees gather nectar and pollinate flowers and make honey. The honey is made in the "honey stomach" found only in the workers.

Bzzzzz, hello, little honey-bee.
Bzzzzzz, 'bye, little honey-bee.

What are the Parts of a Flower?

Spoken:
What are the parts of a flower?

(Country style)

There are four important sections in a flow'r (in a flow'r),
There are four important sections in a flow'r (in a flow'r).
The calyx and corolla, the stamen and the pistil,
There are four important sections in a flow'r.

Oh, the calyx is a section of the flower.
It's the outer-leaf protection of the flower.
The calyx is a section whose function is protection.

Oh, the calyx is a section of the flower.

The corolla is the blossom of the flower.
It provides the scent and color of the flower.
The color and the scent do exactly what they're meant to:
Attract the birds and insects to the flower.

There's a pollen-bearing organ in a flower.
There's a pollen-bearing organ in a flower.
It's time we were explainin' the purpose of the stamen,
It's the pollen-bearing organ of the flower.

Now, the pistil has the ovule for the seed
And the stamen has the pollen that it needs.
The calyx and corolla, the stamen and the pistil,
Every section has a function, yes indeed.

Spoken:
Bees, butterflies, and other animals wander from flower to flower in search of nectar. Pollen clings to them and is carried from one flower to another. The pollen changes the ovules in the flower into ripe seeds. Then the seeds are scattered in many ways and start new plants growing.

There are four important sections in a flower.
There are four important sections in a flower.
The calyx and corolla, the stamen and the pistil,
There are four important sections in a flower.

The Face of the Earth is Changing

(Rather slow waltz)

Changing, changing,
The face of the Earth is changing,
Changing ev'ry day.
Rivers flow and mountains grow,
While others are wearing away.

Changing, changing,
The face of the Earth is changing,
Changing ev'ry day.
Rivers flow and mountains grow,
While others are wearing away.

Spoken:
The Earth is several billion years old. During that enormous period of time, vast changes have occurred. Numerous earthquakes cracked the ground and lifted the land to form mountains. Other mountains were formed as lava poured out of volcanoes. Whole continents slowly sank and were engulfed by the oceans. At other times, submerged land rose and became continental regions. Rain, snow, and wind eroded the mountains and created river valleys, lakes, and plains. The debris was carried to the oceans and deposited as sand, mud, or salts. New rocks formed under the sea as the sand and mud hardened, while the ocean slowly became salty. These slow but sure changes are occurring right now.

REPEAT SONG

(Fading away)
Changing, chainging, chainging, changing.

Energy & Motion Songs

Lyrics and Text by Hy Zaret
Music by Lou Singer

What Is Energy? (Part 1)

(March)

Spoken:
Q: What is energy?
A: Energy is the ability to do work, the ability to cause motion and change.

To understand the fundamental facts of energy,
You must have a working knowledge of its terminology.
From atoms down to X-rays, sing along and learn with me
The ABCs and XYZs of energy.

Spoken: What kinds of energy are there?
There's nuclear, mechanical and solar energy,
And electrical and chemical and radiant and heat;
There's light and there's magnetic and that's quite enough for me,
'Cause that makes nine different kinds of energy.

Spoken: There are more, of course, but we won't go into that now.

Grand Coulee Dam (How Energy Changes Its Form)

(Shuffle Rhythm Rag)

Spoken:
Q: Can energy change from one kind to another?
A: Yes, energy can change from one kind to another. For example, water power can be changed into mechanical energy and from that into electrical energy.
Would you like to see how it happens? Let's take a quick trip to the Grand Coulee Dam.

Verse
They've got a lot of water at the Grand Coulee Dam.
They use a lot of water at the Grand Coulee Dam.
They need a lot of water at the Grand Coulee Dam,
To turn a lot of turbines at the Grand Coulee Dam.

Chorus
They change water power, the turbines are a hummin',
Change water power, power keeps a comin'.
Change water power, the great generators
Make eletric current at the Grand Coulee Dam.

Verse
The turning of the turbines at the Grand Coulee Dam
Is turning generators at the Grand Coulee Dam,
And turning water power at the Grand Coulee Dam
Into electric current at the Grand Coulee Dam.

Chorus
They change water power, the turbines are a hummin'.
Change water power, power keeps a comin'.
Change water power, the great generators
Make electric current at the Grand Coulee Dam.

Coda
They turn mechanical energy into electrical energy
When they make electric current at the Grand Coulee Dam.

E-lec-tri-city

(Samba)

Refrain
Electricity (*Spoken:* AC)
Electricity (*Spoken:* DC)
A wonderful kind of energy,
That's electricity. (Spoken: Si, Si.)

Interlude
It's the kind of energy
You can change so easily.

Verse 1
You can change it into heat in a heater,
Change it into light in a lamp,
Change it into motion in a motor,
Change it into sound in a phone.

Refrain

Interlude
It's the kind of energy
We produce so easily

Verse 2
You can make it with a steam or water turbine,
Make it when the generator turns,
Make it with a simple storage battery,
Make it with a photo-electric cell.

Refrain

Interlude
How would modern living be
Without electricity.

Spoken:
It would be terribly inconvenient, to say the least.
Can you imagine what living would be without ...
Electric lights ... Bells and clocks,
Heaters and refrigerators,
Vacuum cleaners ... washers, dryers,
Freezers, fans, and elevators,
Radios and TV sets,
Hi-fi phonographs, motion pictures ...
X-rays and the telephone and telegraph,
Electric motors and machines,
For home and farm and industry.
Our modern world is resting on
E-lec-tri-city.

Verse 3
It's essential in today's transportation,
Vital if you want light and heat,
Necessary in communication,
Indispensable mechanically.

Refrain

Engines (Mechanical Energy)

(Waltz)

Spoken: Now, tell us something about engines

Rocket or turbine or gasoline,
Three different kinds of engines,
Rocket or turbine or gasoline,
All have a similar function.
They convert energy for machines.
Sep'rately or in conjunction,
Providing mechanical energy is an engine's primary function.

Spoken:
Engines burn fuel (chemical energy) to create heat (heat energy). The heat makes gases expand and exert force to cause motion (mechanical energy). In a gasoline engine the fuel explodes inside closed spaces called "cylinders" and forces moving parts called "pistons" to move down and up. This motion makes the wheels turn.

Providing mechanical energy
Is an engine's primary function.

Solar Energy

(Andantino)

Long, long ago the word began.
Long, long before the time of Man.
Even then the sun was shining,
Shining on the earth below.
Plants, nourished by the sunlight
Flourished on the land and sea.
And, in time, hosts of living creatures came to be.
Now, long ago is far away.
How do we need the sun today?
If, somehow, the sun stopped shining
What would happen here below?
Plants from the Earth would vanish,
Vanish from the land and sea.
And, in time, ev'ry living creature would not be.

Energy In Roundabout Ways

Spoken:
Leaves of plants use energy from sunlight to

make food. This process is called "photosynthesis." Animals and people feed on the plants and obtain the energy they need. Sunlight also keeps the surface of the Earth warm and makes it posssible for us to exist. In fact, almost all the energy we use on Earth comes from the sun's rays. And almost all the energy we get from the sun comes in roundabout ways.

(Moderate tempo, freely)

In roundabout ways, (In roundabout ways,)
The sun gives energy (The sun gives energy,)
In round about ways.....
The sun's energy has been stored in the past
In the plants and in animal bodies.
Time marchs on! They are coal, oil, and gas—
energy in roundabout ways.

Spoken:
Ancient plants and animals died and were buried under the earth and sea. Their fossil remains were changed into coal, oil, and gas. Today we use these fuels as energy sources for our modern civilization.

In roundabout ways, (In roundabout ways,)
The sun gives energy (The sun gives energy)
In round about ways ...
The energy in moving water and wind
Has been brought into play by the sunlight.
Energy from wind and water becomes
Energy in roundabout ways.

Spoken:
Sunlight heats the ocean and makes the water evaporate. Later, this water falls as rain to form rivers and create water power. Winds are also created by the heating of the Earth. The energy of wind can push sailboats, turn windmills, and operate electric generators on farms.

In roundabout ways, (In roundabout ways,)
The sun gives energy (The sun gives energy)
In roundabout ways.

What Is Energy (Part 2)

Spoken:
With the discovery of atomic energy, scientists have found that matter can be changed into energy and energy can be changed into matter. But, even though matter and energy may change their forms, the total amount in the universe remains the same.

(March)

The "Law of Conservation", speaking universally,
Says you can't increase or decrease the amount of energy.
Though energy may change its form and does it constantly,
You can't increase or decrease the quantity.

Kinetic and Potential Energy

(Tango)

The rolling boulder crashing down the mountain;
That's kinetic energy. (Kinetic!)
The boulder sitting high up on the mountain;
That's potential energy. (Potential!)

Energy in motion is kinetic;
Energy that's waiting is potential.
But whether it's kinetic or potential,
Both of them are energy! (Ole!)

You stretch a rubber band and then release it;
That's kinetic energy. (Kinetic!)
You stretch a rubber band and then you hold it;
That's potential energy. (Potential!)

Energy in motion is kinetic;
Energy that's waiting is potential.
But whether it's kinetic or potential,
Both of them are energy! (Ole!)

The heat that comes when gasoline is burning;
That's kinetic enerfy. (Kinetic!)
The energy that gasoline has stored up;
That's potential energy. (Potential!)

Energy in motion is kinetic;
Energy that's waiting is potential.
But whether it's kinetic or potential,
Both of them are energy! (Ole!)

Jets (Action and Reaction)

Spoken:
In a jet plane, hot gases shoot out of the back of the engine at great speed. Energy for the motion of the gases is supplied by the burning of fuel. The action of the rushing gases causes an equal and opposite reaction which sends the jet plane forward.

Introduction

(Fast)

And that's how a jet plane flies!

Refrain
The law of motion, applied to jets,
Is simply action and reaction;
The zooming power the engine gets
Is simply action and reaction.

Verse 1
Gas compressed inside the engine
Pushes out in all directions,
Sideward thrusts are equalized
And can't escape from the jet.

Verse 2
Gas exhausted through the engine
Brings an opposite reacton,
Gives the jet its forward thrust.
That's all there is to a jet.

Coda
Newton said it ...
Give him credit ...
His law of motion still applies:

Spoken:
For every action there is an equal and opposite reaction.

Sung:
And that's how a jet plane flies!

Ultra Violet and Infra Red

(Western style)

Verse 1
Among the many kinds of light rays,
Theres one called ultra violet,
And when you're thinkiing of this light ray,
Here's one thing you should not forget:

Spoken:
Ultra violet rays are important in flourescent lights, and they also cause sunburn.

Verse 2
Among the many kinds of light rays,
There's also one called infra red,
And when you're thinking of this light ray,
This fact should linger in your head:

Spoken:
Infra red rays are very useful in broiling food and for heating.
Refrain
Ultra violet and infra red,
Ultra violet and infra red,
Among the many kinds of light rays,
There are ultra violet and infra red.

Spoken:
Q: And what are the others?

A: The spectrum of visible light ranges from red to violet. On one side of the spectrum are the infra red rays. On the other side are the ultra violet rays.

These are a small part of a much larger spectrum of electromagnetic waves. The complete spectrum of electromagnetic waves ranges from radio and TV waves through infra red to light, ultra violet, and then to X-rays, gamma rays, and cosmic rays at the opposite end.

Refrain

What Is Chemical Energy?

Spoken:
A fire releases heat energy, light energy, smoke, and gases. All materials are made up of tiny particles called molecules. When a chemical like wood is burned, its molecules rearrange themselves to form new combinations. A lot of motion and commotion of molecules results. This is heat! Electrons jump from orbit to orbit inside the atoms. This causes the light!

(Tarantella)

Mama mia, what is this chemical energy?
Mama mia, what do they mean by that?
Hey, bambino, why do you make it tough for me?
Hey, okay, I'll try to answer that.

When wood is being burned,
And it's combined with oxygen,
Then in the form of heat
It's giving off energy.
The energy released
When particles of matter change,
The energy released
Is chemical energy.

Mama mia, what is this chemical energy?
Hey, bambino, what do you mean by that?
Mama mia, why do you make it tough for me?
Hey, okay, I'll try to answer that.

Each time you light a match
Or spark a motor's gasoline
The energy released
Is chemical energy.
The energy released
When particles of matter change,
The energy released
Is chemical energy.

Hey bambino, what is this chemical energy?
Mama mia, what do you mean by that?
Hey, bambino, why do you make it tough for me?
Hey, okay, I'll try to do just that.

When something's being burned
And it's combined with oxygen,
Them, in the form of heat,
It's giving off energy.
The energy released
When particles of matter change,
The energy released
Is chemical energy.

How Do We Measure Energy?

(Fast, brightly)

How do we measure energy?
In foot pounds, foot pounds.
How do we know when it gets to be
A foot pound, foot pound?
The energy expended by lifting
One pound one foot high,
That's one foot pound, that's one foot pound.
The foot pound measures energy.

Pick up an object from the ground.
Easy does it.
Say that the object weighs ten pounds,
ten pounds, ten pounds.
Lift up the object four feet high,
Ten by four, you mutiply.
Forty foot pounds, Forty foot pounds.
The foot pound measures energy.

The foot pound measures energy.

Motion, Motion, Everywhere

Spoken: A rock looks so still, but is it? The rock is made of tiny, invisible particles called molecules. These molecules vibrate rapidly. The molecules are made of atoms. In the atoms electrons whiz around at tremendous speeds. There is plenty of motion in the rock and in everything else, and that motion is energy.

(Hora)

Stars and waterfalls,
Motors and bouncing balls,
Sunlight and sound and air,
Moving continually
Are proving conclusively:
Motion, motion everywhere.

Rocks and minerals,
Insects and animals
Have one thing that they all share.
Moving continually
They're proving conclusively:
Motion, motion ev'rywhere.

Clouds and jumping beans,
Roses and evergreens,
Dishes and silverware,
Moving continually
Are proving conclusively:
Motion, motion everywhere.

Take a look at me.
What are you sure to see?
Muscle, skin, and teeth and hair,
Moving continually.
They're proving conclusively:
Motion, motion everywhere.

Thumbnail Introduction To Atomic Energy

(Jig tempo)

Here's a thumbnail introduction to atomic energy.
Here are some important highlights of atomic history.
From the X-ray and electron and the quantum theory
Down to Einstein and his formula for mass and energy.

Hip, hooray! We've got atomic energy.
It could mean a better world for all.
Hip, hooray for those who made it come to be!
May we present the main events and heroes great and small.

Spoken:
1896 France
Henri Beckquerel finds that uranium ore is radioactive

1905 Switzerland
Albert Einstein shows that energy and matter are equivalent. E equals MC squared.

1913 Denmark
Niels Bohr explains how atoms emit light as electrons jump from higher orbits to lower ones.

1938 Germany
Otto Hahn and Fritz Strassman split the uranium atom.

1942 United States of America
Enrico Fermi builds the first atomic pile and shows that atomic energy is practical.

Hope and pray we use the pow'r constructively
To bring about a peaceful world for people great and small.

Weather Songs

Lyrics and Text by Hy Zaret
Music by Lou Singer

What Makes the Weather?

(Like a tango)

What makes the lightning?
What makes the thunder?
What makes the rain and sleet and snow?
What makes the weather?
What makes the weather?
What makes the weather come and go?

Spoken:
Weather is made by the action of heat on water and on air.

What is the Atmosphere?

(Brisk)

We live at the bottom of an ocean of air, an ocean of air, an ocean of air.
We live at the bottom of an ocean of air that's called the atmosphere.

The atmosphere is made of
Dust and water vapor,
And diff'rent kinds of gases
Like nitrogen and oxygen.
The oxygen we're breathing

Breathing in and out:

The atmosphere protects us
From the burning sunlight.
It also makes the weather:
The snow and sleet and hail and rain are caused by air, as I'll explain

Spoken:
Later
We live at the bottom of an ocean of air
That ocean of air has a motion of air
A motion of air in the ocean of air
We call the atmosphere.

Where is the Stratosphere?

Spoken:
The atmosphere has several layers. Changes in weather occur in the lowest layer, the troposphere. Above that is the stratosphere, which is relatively weather free. Then, the ionosphere, which contains electrified layers of air that reflect radio waves and make round-the-world communication possible. Beyond that is the mysterious, rarified exosphere now being explore by Earth satellites.

(Like a polka)

Where is the stratosphere? Just above the troposphere.
Where is the tropopause?
It is in between.
Where is the stratosphere?
Under the ionosphere.
Where is the exosphere?
Highest on the scene.
All together, all together, they make up the atmosphere
All together, all together, that's the atmosphere.
Troposphere and stratosphere, ionosphere and exosphere
All together, all together, that's the atmosphere.
Where is the weather made?
Where is all the weather made?
Where is the weather made?
In the troposphere.

The Water Cycle Song

Spoken:
Heating by sunlight is the source of energy for all changes in the weather. This heat evaporates water from oceeans, lakes, and earth and changes it into water vapor.

(Moderately and quite freely)

The sun heats the earth and the oceans and lakes
And it causes the vapor to rise.
As it rises it cools and condenses and makes
All the clouds that we see in the skies.
All the clouds have been formed 'cause the land and sea were warmed
And the vapor goes up with the air.
And you know that water evaporates
When you see those clouds up there.

Evaporation and condensation (the water cycle, the water cycle)
Followed by precipitation (the water cycle, the water cycle)
The never ending cycle is taking place
All the time and ev'ry where.

The rain and the hail and the sleet and the snow
Falling down on the land and the sea
Fill the lakes and the ponds and the rivers that flow
To the oceans continually.
And the heat giving sun just repeats what it has done,
And the vapor goes up with the air,
And you know that water can circulate
When you see those clouds up there.

Evaporation and condensation (the water cycle, the water cycle)
Followed by precipitation (the water cycle, the water cycle)
The never ending cycle is taking place
All the time and ev'ry where.

Why Does the Wind Blow?

Spoken:
Cold, heavy air at the poles tends to fall and slide along the Earth's surface to lift up the warm, light air at the equator. Such a motion of air, caused by heat, is called a "convection current." But this basic wind pattern is disrupted by the spinning of the Earth, which causes all winds in the northern hemisphere to veer to the right, and all the winds in the southern hemisphere to the left.

(Moderately)

Refrain
Why does the wind blow oo-oo?
Why does the wind blow shh?
Why does the wind blow oo-ee.
Why does the wind blow pfff?

Verse
The sun-heated Earth makes the air get warmer,
Makes air lighter and, as it does,
The cool air pushes the warm air up;
Now the cool air is where the warm air was.
That moving air is called a "wind,"
And ev'ry body knows
What the wind is called depends
Upon the speed at which it blows.

Refrain
That's why the wind blows oo-oo.
That's why the wind blows shh.
That's why the wind blows oo-ee.
That's why the wind blows pfff.

Spoken:
At 8 miles an hour, it's just a breeze. Above 25 miles an hour, it's a gale. Above 64 miles an hour, it's "blowing up a storm". Above 75 miles an hour, that wind is a hurrican.

That's why the wind blows.

How Clouds are Formed

(Gently)

When air is cooled below its saturation point,
The water vapor in the air condenses.
When the vapor in the air condenses, then clouds are formed.
Saturation ... condensation bring about the cloud formation.
Stratus or cumulus, that's how the clouds are formed.
When air is cooled below its saturation point,
The water vapor in the air condenses.
When the vapor in the air condenses, then clouds are formed.

Warm Fronts, Cold Fronts,

Spoken:
A "front" is the boundary between two masses of different kinds of air. Such air masses extend over distances of thousands of miles and determine the weather in a region for several days.

(Lusty)

Verse
The weather changes, I've been told
(Hi, ho, the weather-o).
The weather changes, I've been told
(It changes day by day).
The weather changes, I've been told,
Are caused by fronts both warm and cold;
They cause the weather changes from day to day.

Refrain
The warm fronts, the cold fronts
a pushin' and a wanderin'
They cause the weather changes
From day to day.

Verse
A warm front will occur, they say
(Hi, ho, the weather-o),
When warm air pushes cold away
(It changes day by day).
When warm air pushes cold away,
A warm front's here, but not to stay,
Because the weather changes
From day to day

Refrain

Verse
Barometer shows pressure's down
(Hi, ho, the weather-o),
A warm air mass has come to town
(It changes day by day).
A warm air mass has come to town
And rainy weather hangs around
Until the weather changes
Some other day.

Refrain

Verse
When cold air rides beneath the warm
(Hi, ho, the weather-o),
The warm air cools and clouds will form
(It changes day by day).
The warm air cools and clouds will form
And that can cause some thunderstorms.
That's how the weather changes
From day to day.

Refrain

What is Humidity?

("Latin" style)

Humidity is relative, but relative to what?
If I were quizzed on what it is, then I'd be on the spot.
So, just in case, to save my face, I'll look it up today
And then if someone brings it up, I'll casually say:

Spoken:
Humidity is the amount of moisture in the air.
Relative humidity is the percentage of water vapor actually in the air compared with the most that the air could hold at each temperature.

Now when they say "It's not the heat but the humidity",
I won't be quite as hot and bothered as I used to be.

The Hurricane Song

(Medium Rock)

A hurricane by any name
Still remains a hurricane.
Betty, Cora, Esther, Jane,
It's the same old huricane.

They get started in the tropics
In the ocean far from land;
Thru the summer, tropic sunlight
Heats the water; there's no breeze.

Air and water both get warmer.
They get warmer day by day.
Then the cool air starts a breeze there;
Hurricane is on its way.

Warm air funnels inward, upward,
Moving at increasing speed.
Vapor cools and condenses
And the heavy clouds are formed.

Clouds' condensing heats the air and
Makes the air rise higher still.
Wind increases, spirals inward
And the rain comes pouring down.

Winds are raging as the air mass
Slowly moves across the sea,
Edges towards the coastal regions
Whipping waves up crazily

Tho' its eye is calm and gentle,
It's as wild as it can be.
Hurricane hits farm and city,
In its wake is tragedy.

A hurricane by any name
Still remains a hurricane.
Betty, Cora, Esther, Jane
It's the same old hurricane!

Why is it Hot in the Summer?

(With a lilt)

Why is it hot in the summer?
Why is it cold in the winter?
Why do we have the seasons?
What can the reason be?

The days in the summer
The days are much longer
The rays are much stronger
And shine more directly down on the earth

Spoken: What rays? The sun's rays!

The days in the winter,
The days are much shorter,
The rays are more slanted
And shine less directly down on the Earth.

Spoken: What rays? The sun's rays!

The days in the summer
The days are much longer
The rays are much stronger
And shine more directly down on the earth

Spoken: What rays? The sun's rays!

The days in the winter,
The days are much shorter,
The rays are more slanted
And shine less directly down on the Earth.

Spoken: What rays? The sun's rays!

Highs and Lows

Spoken:
High pressure cells, called "highs," are areas of heavier air which are cold, or dry, or both. Such air, passing over warmer ground, brings clear weather because water droplets tend to evaporate.

Low pressure cells, called "lows," are areas of air which are warm, or moist, or both. Such air, passing over cooled ground, condenses from below to form "overcasts" or steady rains.

(Swingy)

Sung twice
Unequal heating of the Earth causes winds to circulate.
The direction of the winds changes as the Earth rotates.
Shifting masses of the air, whirling twirling, swirling, by,
Make the pressure cells up there pressure cells, both low and high.

What Makes the Lightning?

(Swingy, but not fast)

Refrain
What makes the lightning? It's a story in rhyme,
Where the negatives and the positives make the heavens shine.
They were separated, then when they accumulated,
Got together and created lightning.

Verse
Now ev'ry little rain drop has some electricy,
Both negative and positive electricity.
And when the little drops get tossed through the air,
The negaitves and positives separate there.
The negatives and positives separate
Go off to diff'rent places and accumulate.
The bunches get bigger, the attraction gets stronger,
'Til you just can't hold them back any longer

Spoken:
Flash! A bunch of charges are off! And as they streak thru the air a mighty electric current sweeps thru the air. There's a heat and a flash as the charges dash between the clouds or the clouds and the Earth to join the opposite charges there. Flash! Crash! That's lightning, brother, and that's positive!

Refrain

Stratus and Cumulus

(Waltz)

Refrain
Stratus and cumulus are two basic classifications.
Stratus and cumulus are classified by their formations.

Verse
Clouds that are formed when the air current rises,
Piled up and puffy, inflated,
They are called "cumulus." Cumulus means
Piled up or accumulated.

Refrain

Verse
Clouds that are formed without up and down movement,
This information's the latest,
Cooled without rising and sheet-like or layered,
Sheet-like or layered they're stratus.

Spoken:
Two other cloud forms are "cirrus" clouds, which are very high and thin, and "nimbus," which are heavy rain clouds. The prefix "alto," meaning high, is also used to describe clouds, as for example "altocumulus" and "altostratus." Still other cloud forms that you can see in the sky are "cumulonimbus," "nimbostratus," "cirocumulus," and cirrostratus."

Refrain

Snowflake, Snowflake

Spoken:
Looking at a snowflake with a magnifier, we see a beautiful six-sided flat crystal, often star-shaped, with many branches. This happens because the tiny molecules of which water is composed have a characteristic shape. When the molecules join one by one in below-freezing air, they line up in regular order, following their shapes, and form a hexagonal crystal.

(Bouncy, but not fast)

Snow-flake, snow-flake, what are you?
A star-shpaed crystal, how-de-do.
Show-flake, how'd ya get that way?
It happened on a wint'ry day.
Some water vapor in the air
Discovered it was freezing there,
Found a tiny bit of dust
And froze around that nucleus.
Moving through the air it grew,
It's molecules were added to.
That six point crystal fell below
And here I am, a flake of snow.
Thank you, snow-flake, now I see
How and why you came to be.

What Does the Glass of a Greenhouse Do?

(Robust)

What does the glass of a greenhouse do?
It lets the short solar rays pass through.
The objects in the house absorb these rays
And re-radiate them as long heat rays.

What does the glass of a greenhouse do?
It doesn't let the long heat rays pass through.

Trapped by the glass they bounce back and forth,
Reradiated and reabsorbed.

Stay! stay! you long heat rays.
Warm up the house on cold, cold days!
Stay! stay! you long heat rays,
Warm up the house on cold, cold days!

The atmosphere is like a greenhouse, too.
It lets most of the solar rays through.
The surface of the Earth absorbs these rays
And re-radiates them as long heat rays.

There's vapor in the air, what does it do?
It doesn't let the long heat rays pass through.
Trapped by the vapor, they bounce back and forth
Re-radiated and re-absorbed.

Stay! stay! you long heat rays,
Warm up the house on cold, cold days!
Stay! stay! you long heat rays,
Warm up the house on cold, cold days!

What is Climate?

Spoken:
What causes a desert climate? Hot, dry air. What causes the hot, dry air? Here is one way: Air goes up a mountain range, cools at it rises; the moisture condenses and precipitates. As the air goes down the other side of the mountain it is drier because most of the water has left it. The air heats up as it descends and water droplets tend to evaporate. The combination of hot, dry air creates a desert. This is the way deserts are made in the western part of the United States.

(Swingy but not fast)

Latitude, prevailing winds, and ocean currents,
Mountains and the nearness to the sea,
Things like that determine what we call the climate,
Determine what the climate of a place will be.

What is the climate? It's the av'rage weather in a particular area.
What is the climate? It's the av'rage weaather over a period of time.

Av'rages of temp'rature and rain occurrence
Calculated scientific'lly,
Things like that determine what we call the climate
Determine what the climate of a place will be.

What is the climate? It's the av'rage weather in a particular area.
What is the climate? It's the av'rage weather over a period of time.

What Makes the Weather?

Spoken:
All over the Earth today there are thousands of co-operating weather stations. Using barometers, hygrometers, anemometers, thermometers, rain gauges, and other instruments they gather valuable weather information.

Scientists are cooling clouds to produce rain, and using various methods to try to stop hurricanes. They are also obtaining valuable information from Earth satellites.

Meteorology, the science of weather, is opening new frontiers in weather prediction and control, and every day we are learning more and more about.

(Tango)

What makes the lightning?
What makes the thunder?
What makes the rain and
Sleet and snow?
What makes the weather?
What makes the weather.
What makes the weather
come and go?

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