

AMERICAN LANGUAGE COURSE

UNIT 2408

OUTLINE AND STUDY OBJECTIVES

READING: NATURAL AND ARTIFICIAL LIGHT

QUESTIONS ON THE READING

SPECIAL EXPRESSIONS

PROVERBS AND WISE SAYINGS

TAPE 2408A

TAPE 2408B

UNIT 2408

READING

NATURAL AND ARTIFICIAL LIGHT

The instructor will read or rephrase the following paragraphs. Books closed. The student may take notes or simply listen to the instructor as he reads or speaks. The student should be prepared to answer questions on the material. The instructor may use questions other than those appearing in the exercise.

The sun is our greatest source of light. We get only a small amount of light from the stars. So we may say that we receive our maximum amount of light from the sun and only a minimum amount from the stars. The sun radiates or sends out light in all directions. The earth receives this radiation from the sun. Actually the earth receives only a small amount of the radiated light which the sun *emits* (radiates). The picture in figure 1 will give you an idea of how the sun's light is *sent out* (emitted) into space.

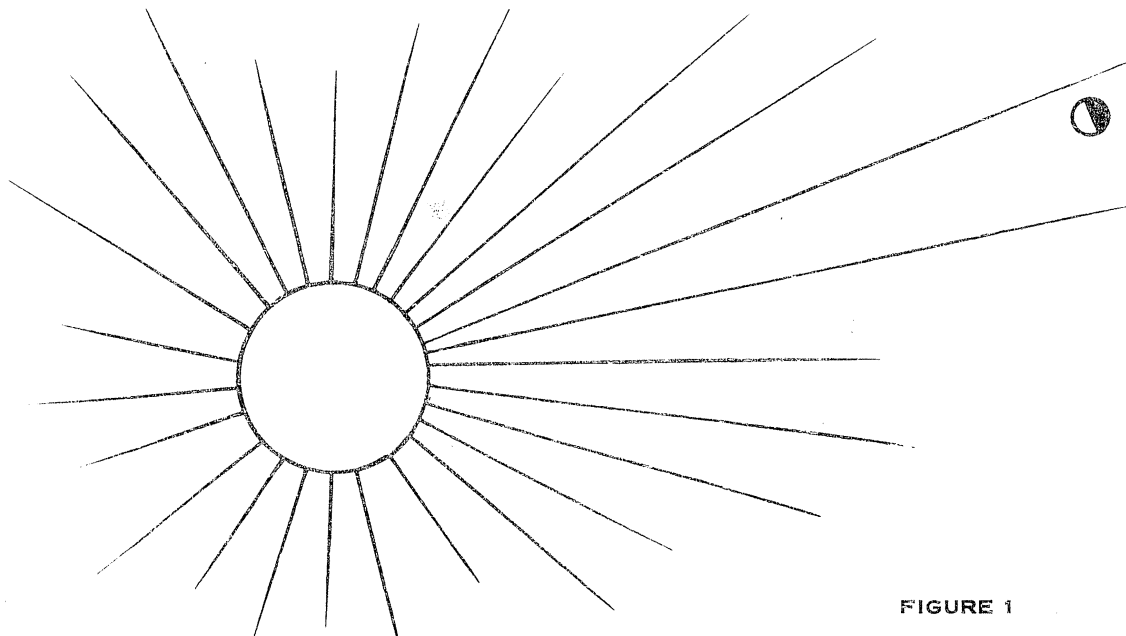


FIGURE 1

QUESTIONS ON THE READING

1. What is the earth's greatest source of light?
2. How much light do we get from the stars?
3. As used here, the words "radiate" and "send out" mean about the same. What is another word used in the reading that means about the same?
4. Does the earth receive all the light that the sun emits?

Light travels at 186,270 miles per second. It is 93,000,000 miles from the earth to the sun. Now, if you or your instructor will divide the speed of light into the distance to the sun, you will find that light will travel to you in 8.3 minutes. This distance and this speed is hard to imagine. In more meaningful terms, you can imagine an object traveling around the world in about 1/7th of a second.

1. What is the speed of light?
2. How long does it take light from the sun to reach you on the earth?
3. If you were traveling at the speed of light, how long would it take you to go around the world?

When we strike a match or light a cigarette lighter, the light produced glows. Thus a radiant or glowing form of energy is released. Light made by man is said to be artificial light. And, of course, light produced by nature is called natural light. The sun is the great source of the earth's natural light. However, both natural light and artificial light come directly or indirectly from the sun. The match and the cigarette lighter fluid simply contain energy which was derived from the sun.

1. What is another word for "radiant"?
2. Is man-made light artificial or natural light?
3. What is the direct and indirect source of natural and artificial light?
4. Where does the energy contained in a match come from?

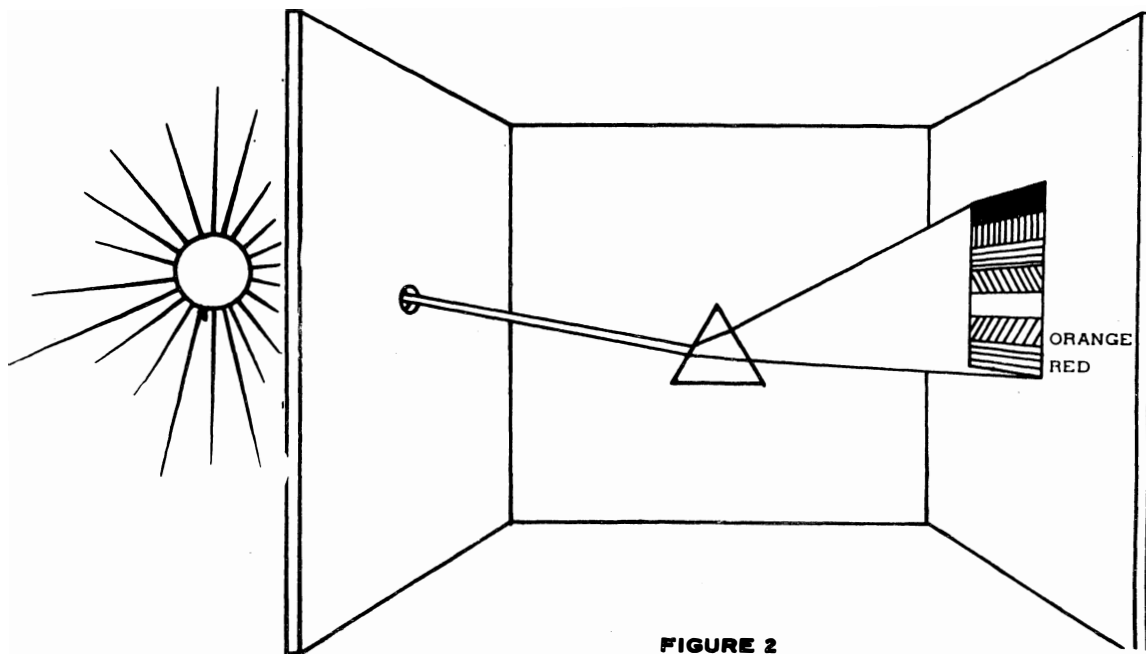
Light from the sun and the stars is called natural light. We also have artificial or man-made light. Artificial light can be produced either chemically or electrically. We produce chemical light by striking a match, lighting a candle, or by burning any substance. We refer to light produced electrically as electric light. Electric light may be produced in *electric lamps* (light bulbs). Familiar examples are: bulbs in flashlights, automobile lights, and lights in our homes and offices. The familiar light bulb used to light our homes contains tungsten wire. As electricity flows through the *tungsten wire* (filament), heat is produced. (A hot filament may be red in color. A hotter filament would be yellow; and the hottest filament will produce white light.)

1. Name two ways in which artificial light is produced.
2. What are some things that produce chemical light?
3. Name a metal that produces electric light.
4. What is produced when electricity flows through the tungsten wire?
5. Which filament produces white light?

For hundreds of years people didn't know what caused the familiar rainbow. Now we know the colors of the rainbow result from refraction of sunlight. Different colors result from the bending and scattering of light by raindrops.

Late in the seventeenth century Sir Isaac Newton showed that white light is made up of all the colors of sunlight. Figure 2 shows how Newton produced a rainbow.

In his experiment sunlight came through a small hole in the wall of a darkened room. As the light passed through a glass prism it spread out and appeared on a white screen as a band of colors in the order: red, orange, yellow, green, blue, indigo, and violet.



A memory aid to help remember colors is Roy G. Biv. This sounds like an American name. Each letter of this name *represents* (stands for) a color: red, orange, yellow, green, blue, indigo, violet.

1. What is white light made up of?
2. What does Roy G. Biv stand for?
3. What effect does a glass prism have on light?
4. How do raindrops affect light?
5. Can light be bent?

SPECIAL EXPRESSIONS

Write sentences for the following special expressions.

On the blink = not functioning.

My watch is on the blink. What time do you have?

There's a catch = difficult point or trick.

He has a good idea, but there's a catch in it. He wants to borrow my car.

A close shave = barely successful; barely avoiding an accident.

We almost ran out of gas, but we made it. It was a close shave.

Crosscheck = verify from different sources.

I want the facts. Check with him and crosscheck with everyone else involved.

Keep an eye on = watch carefully.

One engine seems to be getting too hot. You'd better keep an eye on it.

Get on with = continue.

That's very interesting but let's get on with the lesson.

Get by with = succeed, manage.

We don't always have the best. We have to get by with what we have.

Go along with = agree.

I'll go along with your suggestion. I think it's O.K.

PROVERBS AND WISE SAYINGS

Students read and discuss literal and/or figurative meanings of the following.

1. Don't count your chickens before they are hatched.
2. Genius is 1% inspiration and 99% perspiration.
3. If the blind lead the blind, both will fall into the ditch.

TAPE 2408A

Listen.

When we strike a match or light a cigarette lighter, the light produced glows. Thus a radiant or glowing form of energy is released. Light made by man is said to be artificial light. And, of course, light produced by nature is called natural light. The sun is the great source of the earth's natural light. However, both natural light and artificial light come directly or indirectly from the sun. The match and the cigarette lighter fluid simply contain energy which was derived from the sun.

Listen and repeat.

Most of our light comes from the sun.	*
The stars furnish only a minimum amount of light.	*
That is, they provide a very small amount of light.	*
Light is a radiant form of energy.	*
Light which comes directly from natural sources is natural light.	*
Man-made light is artificial light.	*

Now answer the following questions. Do not repeat the questions. Give short and complete answers. I repeat, do not repeat the questions.

What is the main source of most of the earth's natural light?	**
the sun	*
The sun is the main source.	*
The sun is the main source of the earth's natural light.	*

How much light do we get from the stars?	**
very little	*
only a minimum amount	*
We get only a minimum amount from the stars.	*

What is light?	**
a radiant form of energy	*
Light is a radiant form of energy.	*

What is another word for radiant?	**
glowing	*
Glowing is another word for radiant.	*

Does artificial light refer to man-made or natural light?	**
man-made	*
Artificial light refers to man-made light.	*

Now let's practice substituting the word "for" for the word "to."

For example, you will hear: I have enough fuel to fly to the base.
 You should say: I have enough fuel for flying to the base.

Listen to another example: I have sufficient time to finish the job.
 You should say: I have sufficient time for finishing the job.

Remember to substitute the word "for" for the word "to." Change the verb form.

I have enough fuel to fly to the base. **
 I have enough fuel for flying to the base. *

I have sufficient time to finish the job. **
 I have sufficient time for finishing the job. *

We had sufficient time to finish the examination. **
 We have sufficient time for finishing the examination. *

Good lights are essential to drive safely at night. **
 Good lights are essential for safe night driving. *

Repetition is necessary to learn a language. **
 Repetition is necessary for learning a language. *

Practice is essential to develop a skill. **
 Practice is essential for developing a skill. *

Drill is necessary to develop fluency. **
 Drill is necessary for the development of fluency. *

Fuel and oil are necessary to operate many machines. **
 Fuel and oil are necessary for the operation of many machines. *

Pumps are sometimes required to bring the oil to the surface. **
 Pumps are sometimes required for bringing the oil to the surface. *

Listen.

The expressions "on the blink" and "out of order" mean about the same. You will hear a sentence in which one of these expressions is used. Then you will hear a question. Answer the question by using both expressions in your answers.

For example, you will hear: "on the blink" = out of order
 My watch is on the blink. What is wrong with your watch?"

You should say: "It is on the blink." "It is out of order."

on the blink = out of order

His tape recorder is on the blink. What is wrong with his tape recorder?

**

It is on the blink.

*

It is out of order.

*

His tape recorder is out of order.

*

Listen.

The expressions “keep an eye on” and “watch carefully” mean about the same. expressions in answers to questions you will hear. Repeat the correct responses.

Listen and answer.

Your left rear tire is bad. You’d better keep an eye on it.

What should you do about the bad tire?

**

I’d better keep an eye on it.

*

I’d better watch it carefully.

*

The engine seems to be getting too hot.

What should you do about it?

**

I’d better keep an eye on it.

*

I’d better watch it carefully.

*

Listen.

The expressions “get on with” and “continue” mean about the same. Let’s use these expressions in some sentences.

Listen and repeat.

We have to finish this job by 5 o’clock.

*

Let’s get on with the job.

*

Let’s continue the job.

*

We must finish this lesson today.

*

Let’s continue the lesson.

*

Let’s get on with the lesson.

*

Now we have enough money to finish the project.

*

We can get on with the project.

*

We can continue the project.

*

TAPE 2408B

Listen.

Let's learn some special expressions. The expression "on the blink" means not functioning, out of order, etc.

Listen and repeat.

not functioning	*	not functioning	*
out of order	*	out of order	*
on the blink	*	on the blink	*

What time do you have?			*
My watch is not functioning.			*
My watch is on the blink.			*

Is your car in running order?			*
My car is not functioning right.			*
My car is on the blink.			*

Now substitute "on the blink" in the following sentences. Repeat the correct responses.

My car is not functioning.		**
My car is on the blink.		*

My tape recorder is out of order.		**
My tape recorder is on the blink.		*

His watch is not running.		**
His watch is on the blink.		*

My car is not functioning because it needs a new generator.		**
My car is on the blink because it needs a new generator.		*

My tape recorder is out of order since the batteries are dead.		**
My tape recorder is on the blink since the batteries are dead.		*

His watch is not running for he dropped it on the floor.		**
His watch is on the blink for he dropped it on the floor.		*

The expression "keep an eye on" means watch carefully.

Listen and repeat.

watch carefully	*	watch carefully	*
keep an eye on	*	keep an eye on	*

Doesn't your engine seem to be getting too hot?		*
You'd better watch it carefully.		*
You'd better keep an eye on it.		*

Now substitute “keep an eye on” in the following sentences. Repeat the correct responses.

The engine is getting too hot; I must watch it carefully. **
 The engine is getting too hot; I must keep an eye on it. *

When children are small, parents should watch them carefully. **
 When children are small, parents should keep an eye on them. *

The expression “go along with” means to agree.

Listen and repeat.

agree	*	agree	*
go along with	*	go along with	*

How do you like his suggestion? *
 I don't particularly like it, but I'll agree with it. *
 I don't particularly like it, but I'll go along with it. *

Now substitute “go along with” in the following sentences. Repeat the correct responses.

Although I don't agree with the plans, I'll OK them. **
 Although I don't go along with the plans, I'll OK them. *

I agree with her choice; this dress is the prettiest. **
 I go along with her choice; this dress is the prettiest. *

The expression “pressed for time” means have very little or too little time.

Listen and repeat.

have very little time	*	have very little time	*
have too little time	*	have too little time	*
pressed for time	*	pressed for time	*

Are you going to the party? *
 I am not going to the party, for I have too little time. *
 I am not going to the party, as I am too pressed for time. *

Now substitute “pressed for time” in the following sentences. Repeat the correct responses.

I am not going to study, for I have very little time. **
 I am not going to study, for I am too pressed for time. *

A student cannot study effectively, if he has very little time. **
 A student cannot study effectively, if he is pressed for time. *

The expression “jump to conclusions” means to decide too quickly.

Listen and repeat.

decide too quickly	*	decide too quickly	*
jump to conclusions	*	jump to conclusions	*

How did she like the speech which was given last night?	*
Before the speaker had concluded his speech, she had already decided.	*
Before the speaker had concluded his speech, she had jumped to conclusions.	*
She said she didn't like it.	*

Now substitute “jumped to conclusions” in the following sentences. Repeat the correct responses.

This is serious; don't decide too quickly.	**
This is serious; don't jump to conclusions.	*
He decided too quickly when he accused John of the mistake.	**
He jumped to conclusions when he accused John of the mistake.	*

Now substitute “on the blink” in the following sentences. Repeat the correct responses.

My car is not functioning.	**
My car is on the blink.	*

My tape recorder is out of order.	**
My tape recorder is on the blink.	*

His watch is not running.	**
His watch is on the blink.	*

My car is not functioning because it needs a new generator.	**
My car is on the blink because it needs a new generator.	*

My tape recorder is out of order since the batteries are dead.	**
My tape recorder is on the blink since the batteries are dead.	*

His watch is not running for he dropped it on the floor.	**
His watch is on the blink for he dropped it on the floor.	*

Now substitute “keep an eye on” in the following sentences. Repeat the correct responses.

The engine is getting too hot; I must watch it carefully.	**
The engine is getting too hot; I must keep an eye on it.	*

When children are small, parents should watch them carefully.	**
When children are small, parents should keep an eye on them.	*