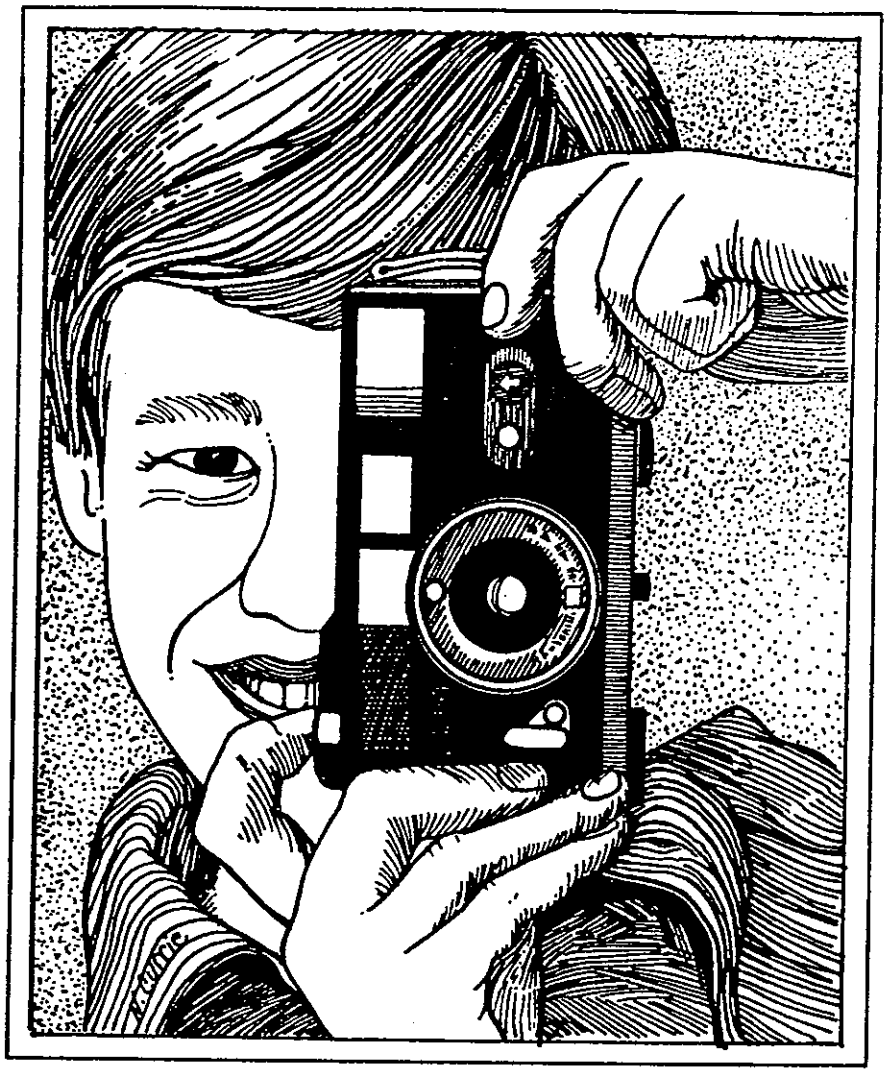
Exploring Photography

Novice



Name _____ Age ____

Club _____

Ontario
4-H Council

Ontario

Ministry of Agriculture,
Food and Rural Affairs

4-H 1800 94N E

THE 4-H PLEDGE

"I pledge:
My Head to clearer thinking
My Heart to greater loyalty
My Hands to larger service
My Health to better living
For my club, my community and my country."

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This project was prepared by
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PURPOSE OF THE 4-H PROGRAM

The primary purpose of the 4-H program is the personal development of youth in rural Ontario.

In 4-H, members will be:

- encouraged to develop self-confidence, a sense of responsibility, and a positive self-image;
- helped to develop their skills in communications, leadership, problem solving, and goal setting; and
- offered the opportunity to learn about the food production, processing, and marketing systems and the heritage and culture of Ontario through projects such as livestock and crop production, financial management, food preparation, nutrition, recreational activities, and career development.

Introduction

The most important thing you can do with your camera is to use it. Practice makes perfect in many skills and this is especially true in photography. The more pictures you take, the better you will become at taking them. Regular practice allows you to handle your camera with ease and improves your ability to see and capture good images.

Try shooting, or at least looking for, interesting images for 10 or 15 minutes every day. As you become more aware of your surroundings, appealing subjects will be easier to spot and the quality of your photographs will improve.

Your goal in this project should be to improve your skill in focusing your mind as well as your camera. Enjoy!

Objectives

1. To provide opportunities for hands-on practice of photography skills.
2. To help members gain an appreciation of photography as an art, as a science and as a communications tool.
3. To help members to observe and appreciate their surroundings.
4. To provide experience in recording events, ideas and situations in picture form to use for later reference.
5. To have fun!

General Requirements

A member will complete a project satisfactorily by:

1. participating in at least 2/3 of his/her own club meeting time;

2. completing the project requirements to the satisfaction of the club leader(s);

3. taking part in an Achievement Program.

Photograph Logbook

You should have a small notebook or pad to record information about each picture you take, including: location, light conditions, film type and speed, f-stop, exposure settings and accessories used (flash, filters, etc.). Depending on the type of camera you use, you may not be able to record this much detail.

You might think this is a waste of time, but once your film is processed, you will find this information very valuable. It will help you figure out what you did that worked well in capturing the images you wanted and what didn't work.

Activity Ideas

1. Take a whole roll of pictures of your family in one day and make a display of "A Day In the Life of My Family."

2. Take a series of pictures of someone's stuffed animal collection. Try placing them in different locations or positions. Show the pictures to your club.

3. Find out how to make a pinhole camera and demonstrate to your club how it works.

4. Investigate the history of photography and make a presentation to your club.

5. Take a series of pictures showing different breeds of horses, cattle, goats, rabbits, chickens, pigs or sheep. Display the photos for your club to see.

6. Invent your own idea and have it approved by your leader.

Meeting Schedule

	DATE	TIME	PLACE
MEETING ONE			
MEETING TWO			
MEETING THREE			
MEETING FOUR			
MEETING FIVE			
MEETING SIX			
ACHIEVEMENT PROGRAM			

The 4-H Resource Development Committee of the Ontario 4-H Council reviews and evaluates 4-H resources. Comments and suggestions about 4-H manuals and guides are always welcome. They may be sent to the following address.

4-H Resource Development Committee
c/o Guelph Agriculture Centre
P.O. Box 1030
Guelph, Ontario
N1H 6N1

Get Involved

Be willing to let your name stand for an executive position. It is a rewarding and fun experience. Following your club's elections, complete this club executive chart.

CLUB EXECUTIVE:

	Name	Phone
PRESIDENT	_____	_____
VICE-PRESIDENT	_____	_____
SECRETARY	_____	_____
TREASURER	_____	_____
PRESS REPORTER	_____	_____
OTHER	_____	_____

CLUB MEMBERSHIP:

Members, Phone	Members, Phone
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Leaders, Phone	Leaders, Phone
_____	_____
_____	_____

4-H Association Contact, Position, Phone

_____

OMAF Contact, Position, Phone

_____

KNOWING YOUR TOOLS

Roll Call

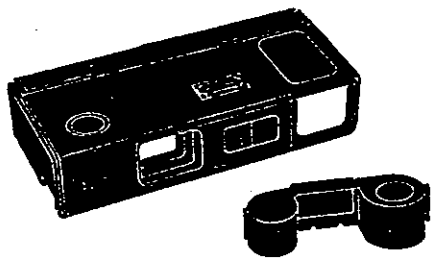
If you could only take one picture, what would it be?

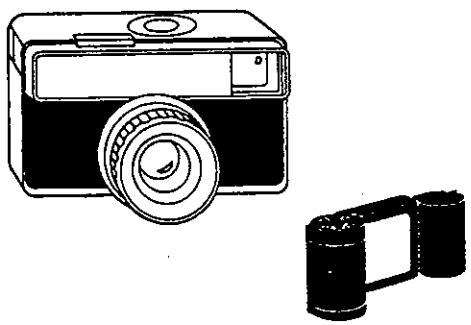
Choosing the Right Camera

There are lots of different types of cameras. Some come with lenses you can use to get special effects and lots of different controls. Others are fairly simple, the point and shoot type. With practice, though, you can take a good picture with any camera. Here are the four most popular types of camera.

110 or 126 Cameras

These small, compact, cartridge-loading cameras come with simple manual controls or are automatic. They may have a built-in flash and extra built-in close-up or telephoto (long distance) lenses.





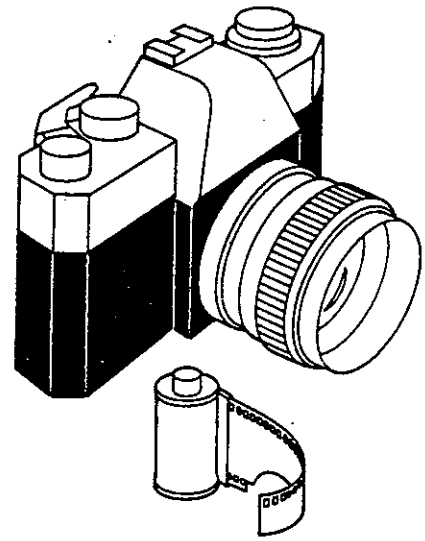
Disc Cameras

They have simple exposure controls, a fixed focus and sometimes an extra close-up lens and built-in flash. Most wind film on automatically after each shot.

35mm Compact Cameras

They come in a lot of different shapes and sizes but generally all models will give you good quality pictures. Some 35mm compact cameras are fully automatic but some have manual overrides, which you can use to try out special photo techniques. You can sometimes buy separate lenses for special shots such as close-ups.

Single Lens Reflex (SLR) Cameras



SLR cameras are named after their special "reflex" viewfinding system. They usually have both automatic and manual controls. You can also buy a wide range of accessories such as extra lenses to expand your picture-taking possibilities. They use 35 mm film.

When selecting your camera, remember that different types of film make different sizes of negatives. The more a negative has to be enlarged the worse the quality of the print. Negatives from film used for 110 and disc cameras need to be enlarged a lot to make a print. Film for 35mm cameras produce very sharp prints because they produce bigger negatives.

If you plan to use your camera for long periods of time or carry it with you while on vacation, consider the weight of the camera and any accessories you buy.

How a Camera Works

There are lots of different cameras but they all capture patterns of light and dark on film. When the film is developed, these patterns turn into pictures.

1. Light comes from all sorts of different places: the sun, the moon, streetlights, lamps, candles and fires. Light can be reflected off glass, water or anything that is shiny. Wherever it comes from, light helps us see things.

2. Taking a picture captures the light rays that bounce off all objects. It is important to let just the right amount of light into the camera. If too much light is let in, the pictures look overexposed (exposed to too much light making a light photo). If not enough light gets in, the pictures look underexposed (exposed to too little light making a dark photo).

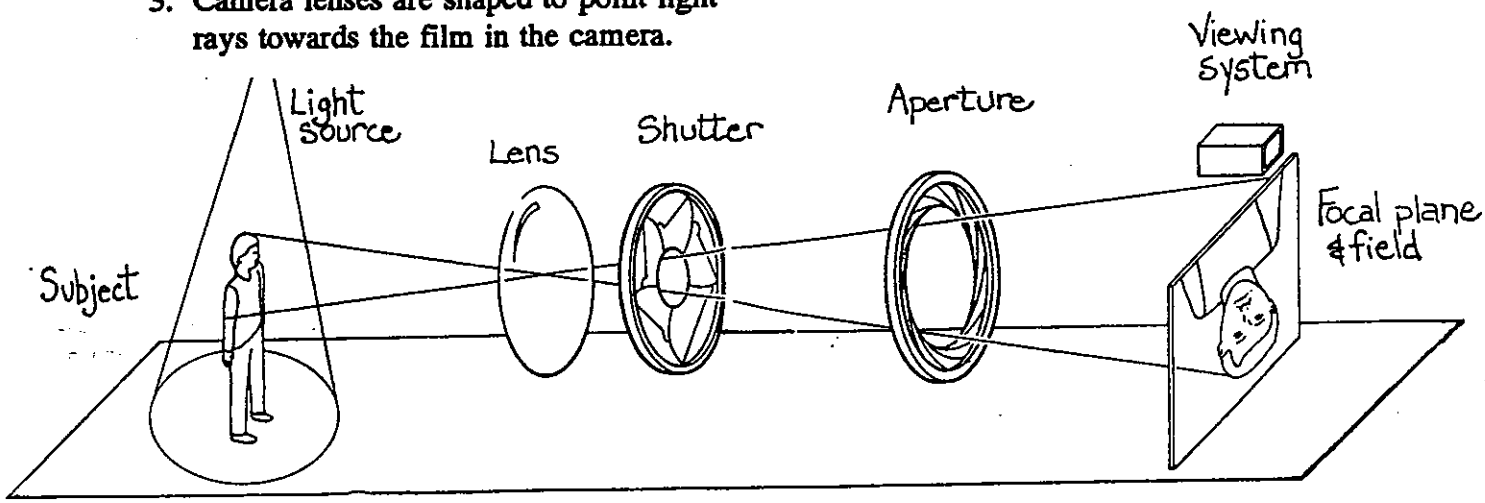
3. Camera lenses are shaped to point light rays towards the film in the camera.

4. A door called a shutter, which is behind the lens, opens to let the rays through. You can control how much light gets into the camera by controlling how long the shutter stays open.

5. The light rays also pass through a hole behind the shutter called the aperture. With some cameras you can control how wide the aperture opens.

6. With some cameras you can control the amount of light that gets into the camera by balancing:
   - shutter speed
   - aperture width
   - film speed.

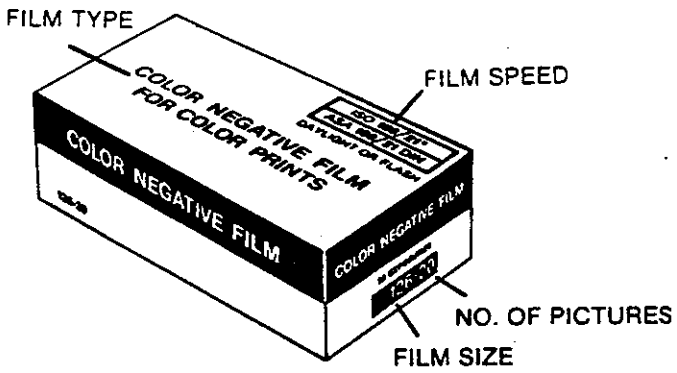
7. Although you can't see this, the light rays cross over before they reach the film and turn the image of the object upside-down.



Buying the Right Film

Film comes in many shapes and sizes and buying the right kind of film can help you take great pictures.

First you have to know which kind of film fits in your camera. You also have to know whether you want colour prints, slides or black and white prints.



When you're buying film you'll notice that it has a special number on it with the letters "ISO" or "ASA" in front. "ISO" stands for "International Standards Organization," while "ASA" stands for "American Standards Association." Both are ways of marking film speed. Film is either slow, medium or fast-speed and you choose which speed you need depending on the light conditions when you take a picture and how fast your subject is moving.

For example, if you are going to take pictures in bright light of a person standing still, a tree, a building or something else that isn't moving, you would use a slow-speed film, which is a film marked with an ISO of between 25 and 32.

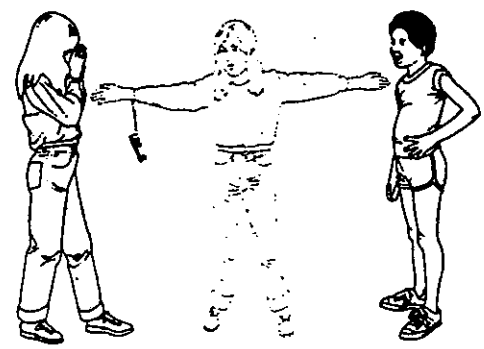
You would use a fast-speed film with an ISO of between 160 to 400 if you are going to take pictures of speedy subjects in bright light. You would also use a fast-speed film if you were going to take pictures when there is very little light.

The film you'll probably use most often is a medium-speed film with an ISO of 64 to 125. It's best for taking pictures of things that aren't moving at high speeds under normal outdoor lighting conditions.

Focusing

When most of us take pictures, we want them to be in focus, which means we want the image to be sharp, not fuzzy. It takes a lot of practice to learn to focus any camera properly. Your camera manual will give you tips on how to focus your camera most easily.

- Most cameras need to be focused manually. There are several ways of doing this, depending on the kind of camera you have. Most cameras cannot focus on subjects any closer than 1-2m. Your manual will tell you how close you can focus on a subject. If you're not sure, stand at least an armspread away.



- Disc cameras and 110 cameras have a fixed focus which cannot be adjusted. When you are taking a picture with either of these cameras you have to pay attention to the distance between the camera lens and the subject of your picture. If you are not in the distance range that the camera is focused for, your pictures will be fuzzy. Check your camera manual for this distance.

- Some cameras focus automatically. Some automatic cameras send out a pulse of infrared light or a sonic pulse which bounces off whatever object appears in the centre of the viewfinder. The camera measures how long the pulse takes to return and then sets the focus. Some cameras show the focusing distance in the viewfinder.

  This can cause problems if what you want to take a picture of something that doesn't appear in the centre of the viewfinder. In cases like this, the pulse of light the camera sends out may pass the subject by and cause the camera to focus on the background.

  On the other hand, if the subject of your picture is behind something and the pulse of light hits the object in front, it will focus on whatever is in the foreground.

  Some automatic cameras have a focus lock to overcome these problems. To use the lock, first point the camera at your main subject and press the shutter release halfway down to hold the focus. Then move the camera to compose the scene you want.

What the Camera Sees

Taking a good picture is hard work. It's not only the camera that has to be focused, but the photographer has to be focused on taking the best picture possible. It takes a lot of concentration. The camera sees everything and you have to practice seeing everything, too. That way you can choose what you want to be in your picture (the subject) instead of waiting for your film to be developed to see what you got.

Once you have decided on what you want to take a picture of, get rid of the things you don't want. Here are some hints.

- Decide whether you want the focus of interest in the foreground (front of the picture) or the background. Check to see that the picture is not too cluttered.

- Check for background objects that shouldn't be there. Is there a branch growing out of someone's head? A pile of stuff cluttering the picture? If so, remove the extra things, move the subject to another area, move yourself to a different view point or move close to fill the viewfinder with the subject.

- Avoid cutting off the tops of heads or arms and legs. Look at the whole scene in the viewfinder, not just your main subject.

- Don't always take a picture standing up. A new viewpoint will make a big difference. Bend down so the sky is the background or climb up onto something so the ground becomes the background. Walk around your subject to find another viewpoint. Try out several views before you take a photo.

- Try framing your pictures by using a tree branch, an archway, a pair of legs or arms. This makes it look like you are looking through a window to the scene that is stretching out beyond.

- If you are taking pictures of a person's profile (side view), leave more room in front of the person's head than behind.

The Parallax Error

If you have a Single Lens Reflex (SLR) camera, the picture you see in the viewfinder is the picture the lens sees, too. But if you have a rangefinder, you are seeing a slightly different angle of the picture than the lens does when you look through the viewfinder. It's called parallax error and it only causes problems on close-up shots.

When you look through the viewfinder in a rangefinder camera you'll see lines all around the edges. Only the parts of the scene inside these lines or border will show up in the photo. So, when you are composing your photograph, you should make sure everything you want in the picture is inside the border marks.

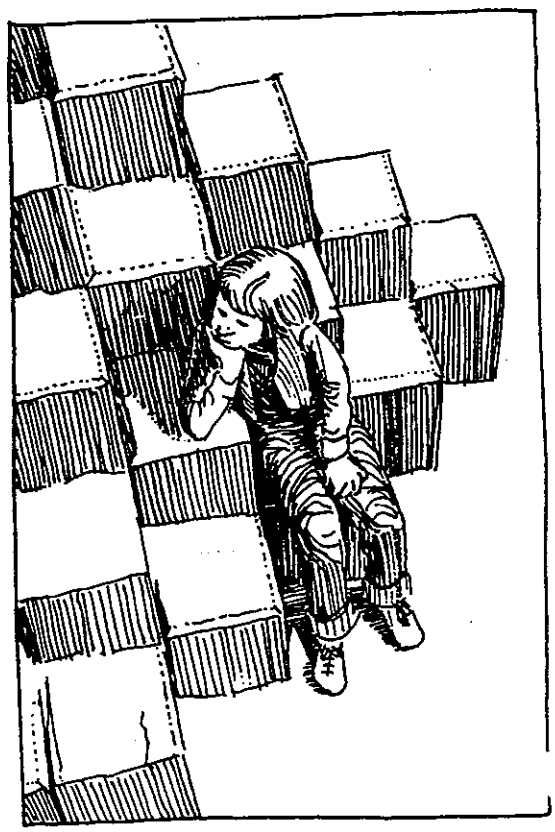
Don't Just Stand There

Ordinary objects can suddenly become quite dramatic-looking if you change the way you look at them. For example, a picture of a cat peering over the edge of a table is suddenly more interesting if the photographer is under the table looking up at the cat. A table set for a special occasion looks more dramatic if you stand on a chair to take the picture.

Before you snap a picture, try looking at it through your camera's viewfinder while you are standing above it, standing at the same level, kneeling, crouching or lying on the ground. You could be surprised!

Eye level

From below



From above

Before The Next Meeting

Bring in a landscape photograph that you like. It could be from a book, a magazine, a calendar or the newspaper or one of your own photographs.

THE LIE OF THE LAND

Roll Call

Show the landscape photograph you brought and explain why you like it.

Getting Rid of the Shakes

Unless you're taking a picture of Superman — or the speeding bullet — blurry pictures are usually not good. When you want a sharply focused photograph, here are some tips on how you can hold your camera steady and avoid the shakes.

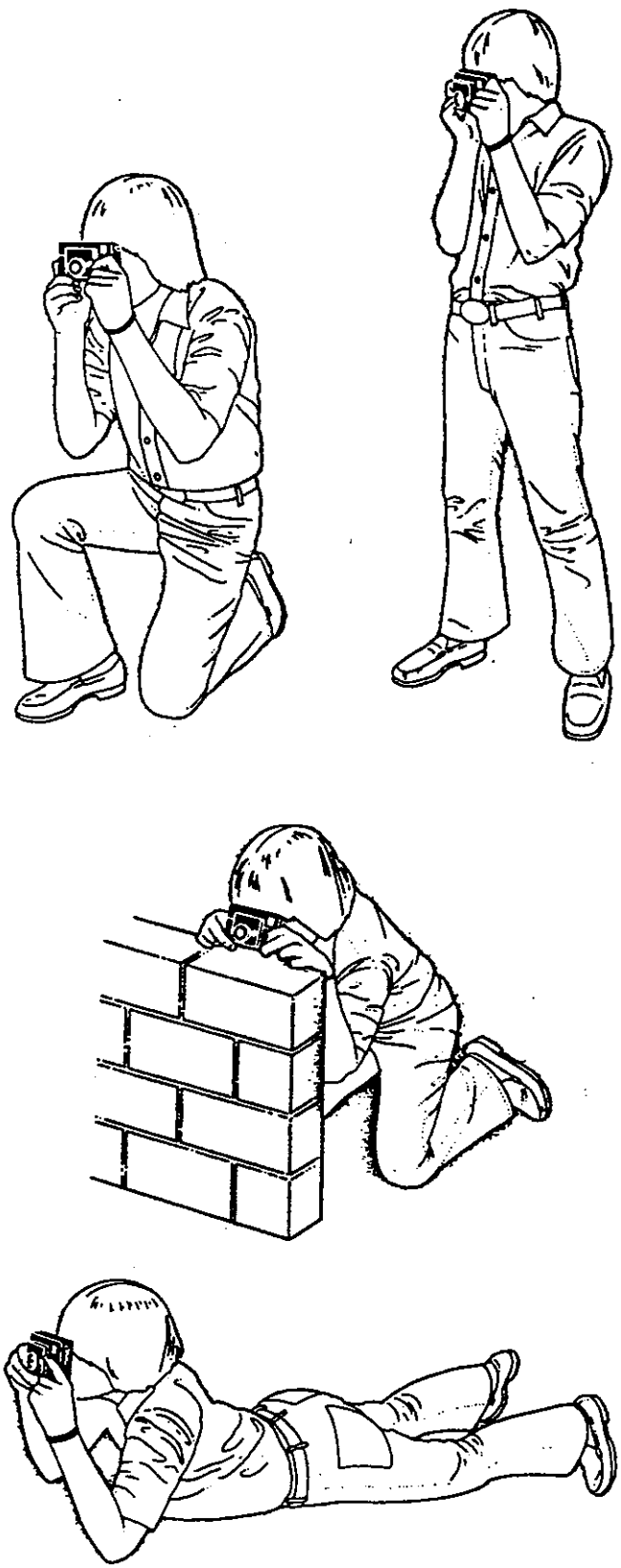
1. Hold your camera firmly — but not too tightly — with both hands. Be sure that your fingers aren't touching any part of the lens — unless you **want** a picture of your fingers! Tuck your arms in at your sides for extra support.

2. If your camera has a strap, use it. Put it around your wrist or neck to keep it away from the lens — and so you don't drop the camera!

3. Try to use shutter speeds of 1/125 or faster.

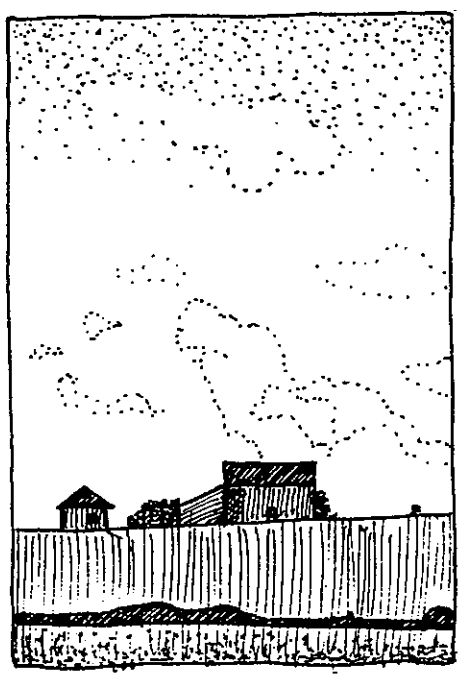
4. Don't be afraid to lean against a wall or something for support or use a tripod.

5. Then, when you're ready to take the picture, press the shutter release gently and slowly to avoid moving the camera.

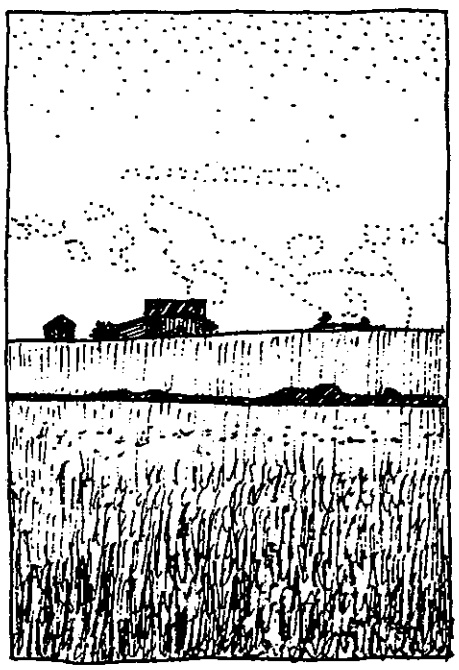


Tips for Taking Landscape Pictures

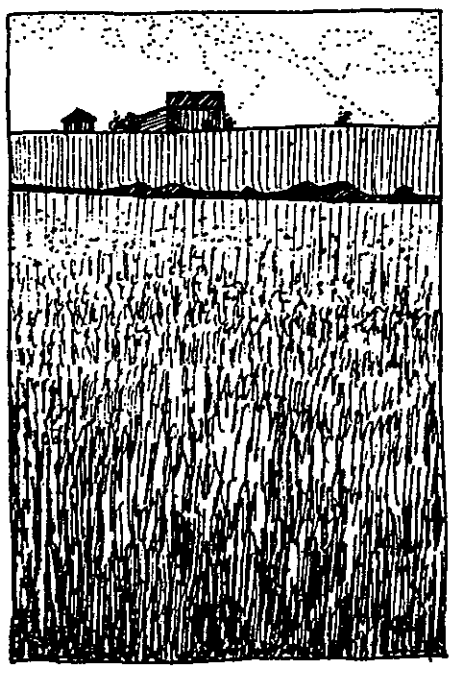
- Figure out what you are going to take a picture of and keep it simple. When people look at the finished picture you want them to look at the subject first. Choosing a main point of interest will give the picture interest and impact.
- Move around. Look at the scene from several places and from several different angles before you choose the best viewpoint for your photo.
- Take more than one picture. You don't have to fit it all in one shot. Work out which is the most important and interesting part of the view and take a picture of that first. Then try another view.
- Decide what you are trying to show or say in your picture.
- Try taking some pictures where the subject is close to the camera and when it is far away.
- Keep your camera level, otherwise you will get a crooked picture.
- When they are held normally most cameras take a horizontal-shaped picture (sometimes called landscape). You can take a vertical shot (sometimes called portrait) by turning the camera sideways.
- Think about the time of day you will be photographing the landscape — sunrise, mid-day, sunset — and what effect that will have on the photos.
- Don't have the horizon line run through the exact centre of the photograph. Make it slightly higher or lower than centre for a more interesting composition. In either case, keep the horizon line level.



Low horizon: spacious sky



Mid-horizon: picture looks folded



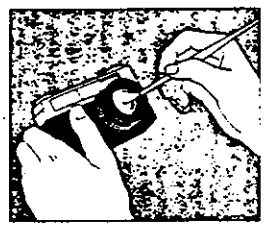
High horizon: spacious earth

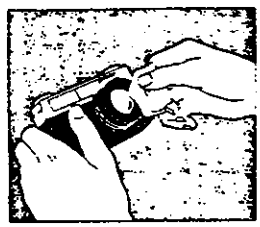
Taking Care of Your Camera

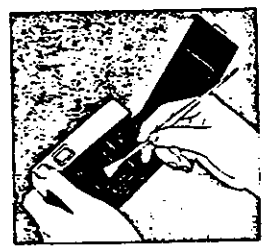
Take good care of your camera. If sand or dirt gets into it, or you leave your fingerprints on the lens, the camera won't work properly and you won't be happy with the pictures you take. To keep your camera clean you need:

- a soft, clean cloth or camera lens-cleaning paper and
- a new, soft paintbrush or camelhair brush made specially for cameras.

1. Using one of the brushes, lightly brush the dirt off the lens or use an air blower.
2. When all the dust is off the lens, gently wipe it with camera lens-cleaning paper or a soft, clean cloth.
3. Open the camera back and use the brush to remove any dust or lint. Never touch the shutter.
4. Remove the batteries and, with a clean cloth, rub the battery contacts (metal ends of the battery) and the camera contacts (metal parts inside the camera that touch the battery ends). If there are any marks on the contact points, use a pencil eraser to rub them off. Be sure to brush off the eraser dust.







Storing Your Camera

Storing your camera and other equipment the right way can help keep things organized and clean. Although it's best to store your camera in the box or carrying case that it came in, you can use a shoe box or a desk drawer where it will be out of the way until you need it. Of course, there are also lots of camera bags you can buy.

If you don't plan on using your camera for several months, remove the batteries and keep them in a plastic bag. This way, if the batteries leak, they'll leak inside the bag, not inside your camera, where they can cause damage.

When you're travelling in the summer, don't put your camera on the dashboard, in the glove compartment or in the trunk of the car — they're all too hot. Set the camera somewhere on the floor in the shade. In the winter, an unheated trunk is too cold.

Put your name on your camera and to copy down the make, model and serial number to help you identify it if you lose it.

Before The Next Meeting

Bring in an animal photograph that you like. It could be from a book, a magazine, a calendar, the newspaper or your own photograph album.

ANIMAL HOUSE

Roll Call

Show the animal picture you brought and explain why you like it. What animal would you most like to take a picture of?

Animal Shots

You don't have to travel to exotic places to take interesting photographs of animals. The animals in city parks, conservation areas, a small wooded area or even your own backyard can make exciting photographs. Take pictures of your 4-H project, a horse at the plowing match or the robin splashing in your birdbath. Photographing animals requires planning, a lot of patience, good techniques and practice but with a little effort, you can get great pictures.

Setting Up

When you are taking pictures of animals it's important to remember that animals don't always do what you want them to do when you want them to do it. The first requirement for taking good pictures of animals is a lot of patience. The second is a couple of assistants to help you get things ready.

First, figure out where you are going to take the picture. Set your camera up for the right light and focus it before you bring the animal in. Then you will only have to adjust it a little when you are ready to snap the shot.

Think about what sort of picture you want to take. Would you like to have the horse looking out of the barn? Would you like a picture of the cow in the milking parlour? You love it when your dog chases after a ball or sits up and begs. Have your assistants help you set up the picture. Make sure the animal is well groomed.

If you are taking pictures of animals in a zoo or at a fall fair or in a barn, carefully choose your camera angle so that you don't have moats, railings or bars in your picture. The best kind of animal picture to take in a zoo is a close-up shot.

Before The Next Meeting

Bring in the funniest picture you can find of a person. Look in books, magazines, calendars, newspapers and your own photograph collection.

SAY CHEESE

Roll Call

What makes a picture funny? Show the funniest picture that you found of a person.

People Pictures

When you take photos of a person you can change the pose, lighting and the background to get many different effects.

Where You Stand

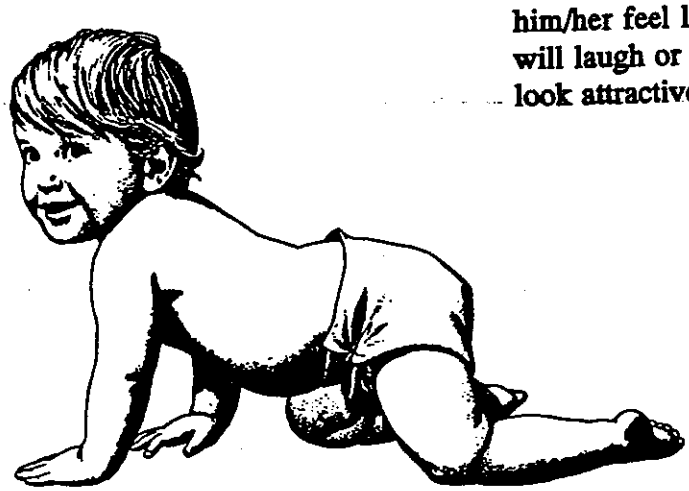
You need to stand at least 1m away from your subject. If you come too close the picture will look distorted. Always focus on the eyes of the subject.

- A person's face appears different depending on the angle you are looking at it from. Take the time to look at your subject from different viewpoints or move around your subject and choose the angle you think is most flattering.
- Get down to the same level as a baby or small child. If you take photos of them from above they will appear shorter than normal. If you take photos of people from below they appear taller.
- If you're taking a picture of someone sitting down, try to avoid including his/her knees. These will be closer to the camera than the rest of the body and will look too large.
- If a background is much lighter or darker than your subject, an automatic camera may set the right exposure for the background but under or overexpose the subject.
- Look at what's behind your subject. You don't want a cluttered background.

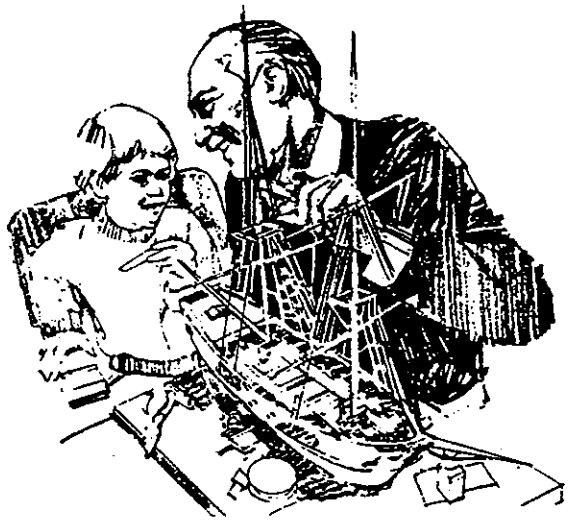
Keep it Natural

People should look relaxed and natural in portrait photos. Here are some tips on how to make this happen.

- Photograph people in places that they know, for instance in their home or garden. This will help them relax and feel more comfortable.
- Sit your subject in a comfortable chair and let him/her choose a natural sitting position so that he/she will look more relaxed.
- Talk to your subject. This will make him/her feel less awkward and he/she will laugh or smile naturally. This will look attractive in a photo.



- You could ask your subject to do something such as read a book or work on a hobby. That way he/she will forget about the camera.



- Take two shots one right after the other. Sometimes people relax as soon as that camera click is heard. You could get a more natural photo on the second shot.

Small Groups

- If you are photographing a small group, perhaps your family or friends, you don't have to have them sit in a formal group. Try to arrange people so that their heads are at different levels. This makes the picture more interesting. Fill the photo with the people, to cut out unnecessary background.

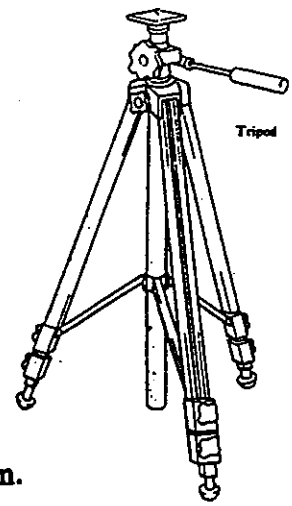
- You might want to use a tripod or rest your camera on something like a pile of books. You can then move people around to get the picture to look like you want it to, without moving the camera.

- Get everyone's attention on the camera by calling or talking to them, or use a signal such as whistling. While you have got everyone together take more than one shot so you can choose the one you like the best.

Steady Does It

When taking indoor shots without flash you may need a slow shutter speed because of the light. If the setting goes below 1/60 the shutter will be open for a long time. It is difficult, if not impossible, to hold the camera still in your hands while taking such a shot.

To avoid camera shake, you need to support your camera on a tripod and attach a cable release. This allows you to take a photo without pushing down on the camera and jerking it. You can set the camera up, walk away, and then press the cable release mechanism.

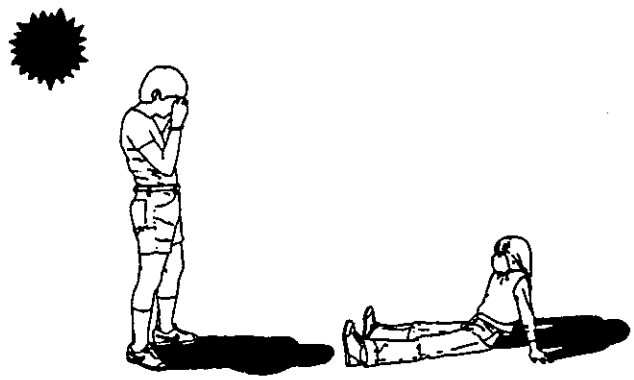


If you don't have a tripod, perch the camera on a pile of books. If you have a self-timer use it to avoid moving the camera. Cock the self-timer lever and then move away. The shutter will click in about ten seconds.

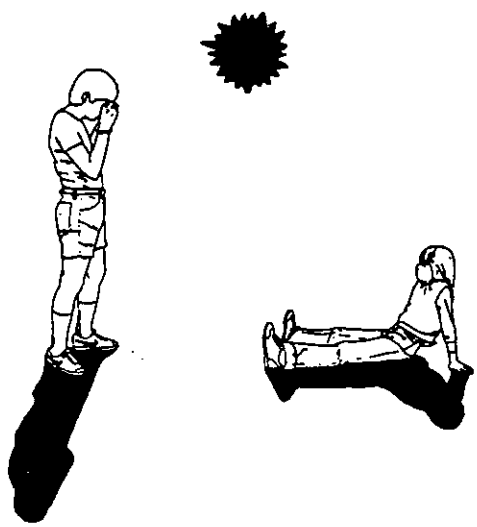
Let There Be Light

There are three directions light can come from in a picture: from the front, from the back or from the side.

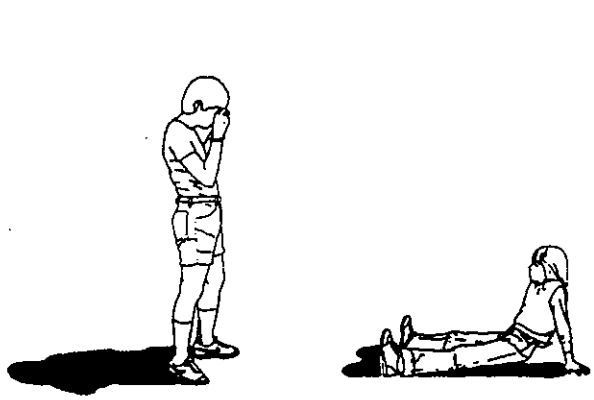
Frontlighting is when the sun is behind you when you take a picture. This means that your subject (if it is a person) is usually squinting into the camera. Pictures taken with frontlighting have colours that look normal but, since all shadows are cast behind the subject, they look flat.



Sidelighting – lighting the object from one side makes better pictures of both people and objects.

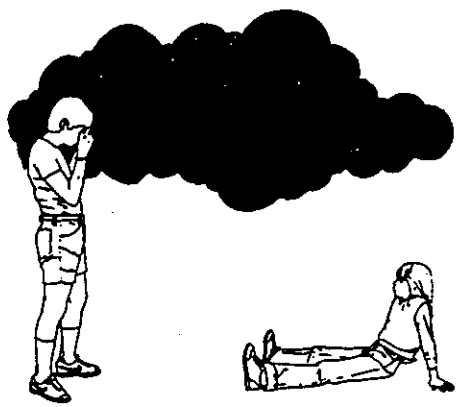


Backlighting is when the sun comes from behind the subject. It is tricky to use but the results can be amazing. If the light is strong, the subject turns into a silhouette. If it is weak and balanced by reflections or other light from the front or side, the effect may be like a halo of light.



Overhead lighting, which is what happens when the sun is directly overhead at noon, doesn't give great pictures. The shadows it creates are almost always unflattering to both people and scenes.

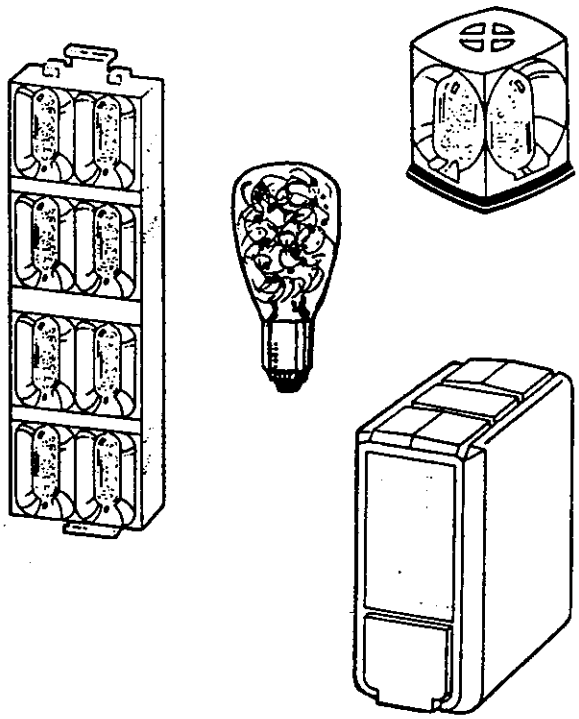
Diffuse lighting comes from overcast skies or shaded areas. It softens the differences between light and dark and is the best for taking pictures.



Flash Point

If there isn't enough natural light to take a picture, you can add light by using a flash.

There are two main sources for flash — flash bulbs or electronic flash. An electronic flash can be a separate unit or built into the camera.



Flash bulbs can only be used once. Electronic flashes use batteries and can be used again and again.

Flash is best used for subjects that are about 1-3m from the camera. Anything closer and the subject looks bleached out. Farther away and everything will be too dark.

Flashes are great for taking pictures indoors. Flash light is much like daylight, so you can use it with your normal film and get a natural effect, even under electric lighting.

Common Mistakes With The Flash

Have you ever taken a photo in which everyone's eyes turned out red? "Red eye" is common in portraits taken with flash. It is most likely to happen in low light when the eye is wide open, allowing the flash to light up the blood vessels inside the eye. To stop "red eye" turn on the lights and ask your subject not to look straight into the camera. Or remove the flash from the camera and hold it slightly higher and/or to one side. Some flashes can be tilted to bounce the light off the ceiling or wall.

Bright spots in flash photos are caused by the flash bouncing off a reflective surface. This happens with things like mirrors, windows or people's glasses. To take the photo, stand some place where you are not directly facing a reflective surface.

Before The Next Meeting

Bring in a picture of something moving. Look in books, magazines, calendars, newspapers and your own photograph collection.

ACTION!

Roll Call

Show the picture you brought of something moving. How do you know it is moving?

Action Shots

Even though it's called "still" photography you can still take a fast-movement action photo with your camera. One of the ways to do this is to "freeze" the action either by using a flash or by taking a picture at the peak of action.

First of all you need to use fast film and a fast shutter speed. If your camera has manual controls you can set the shutter speed to match the action: the faster the action, the faster the shutter speed you need to set. If you have an automatic camera, you can get a fast shutter speed if you take the picture in bright light.

You can capture a moment of action more easily if the subject is coming towards you or moving away from you, rather than taking a side shot as it moves past you.

Most often, you will want the subject moving into the scene. For example, if a person is running from your left to your right, place the person in the left one third of your picture. But here again, there may be times when the results are more dynamic if this guideline is broken.

If you are taking an action shot in an arena or a gym where the lighting conditions are dark, use a flash. A flash will freeze quick movements here, but remember that you can only use flash on subjects within a few metres distance.

Some movements have a "peak of action," where everything stops for a fraction of a second. If you take a picture of a person at the "peak of action" you will get a great action photograph.

For instance, if you want to take a picture of a person doing the high jump, focus your camera at the place where he/she reaches the top of his/her jump and wait for the action to happen. Taking a peak of action picture takes patience and planning. You also have to be at the right spot at the right time.

Before The Next Meeting

Plan your trick photographs and bring any props you might need.

SPECIAL FX

Roll Call

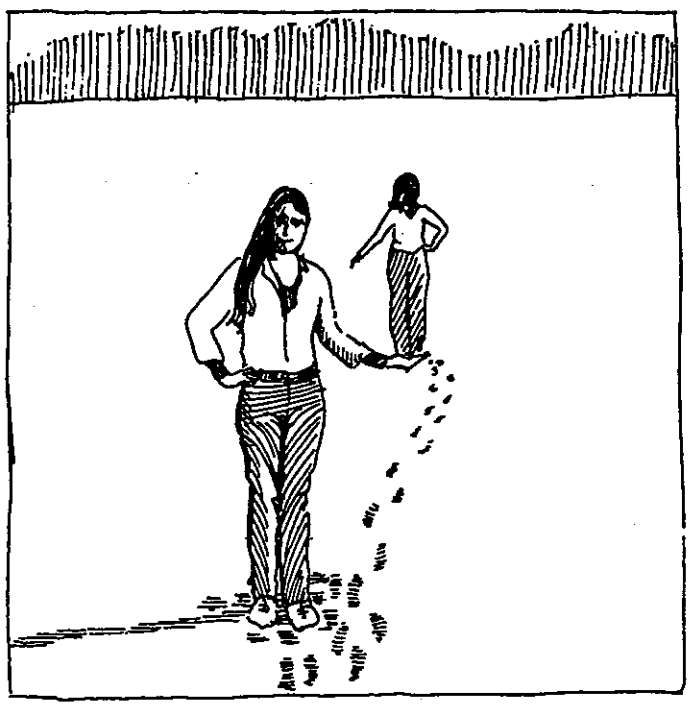
What is your favourite special effect from a movie?

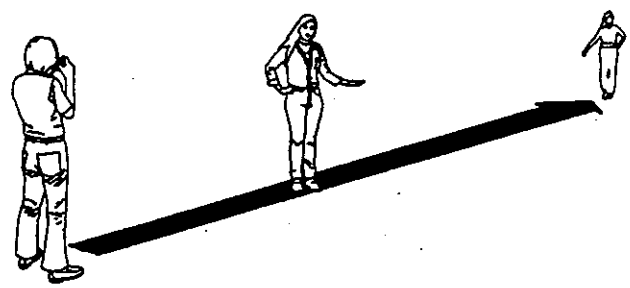
Trick Photography

P.T. Barnum, the man who started the Barnum and Bailey Circus, said you could fool all of the people some of the time and some of the people all of the time. And now that you have a camera, here's your chance!

You don't need fancy equipment to take trick pictures, just an active imagination and an understanding of perspective. Perspective is how you see things in relation to one another. Perspective makes a person who is standing far away from you (Beth) look smaller than a person who is standing right in front of you (Madeleine).

But what if Madeleine held her hand out and made it look like Beth was a tiny person, standing on her hand? That would be a simple trick photograph.

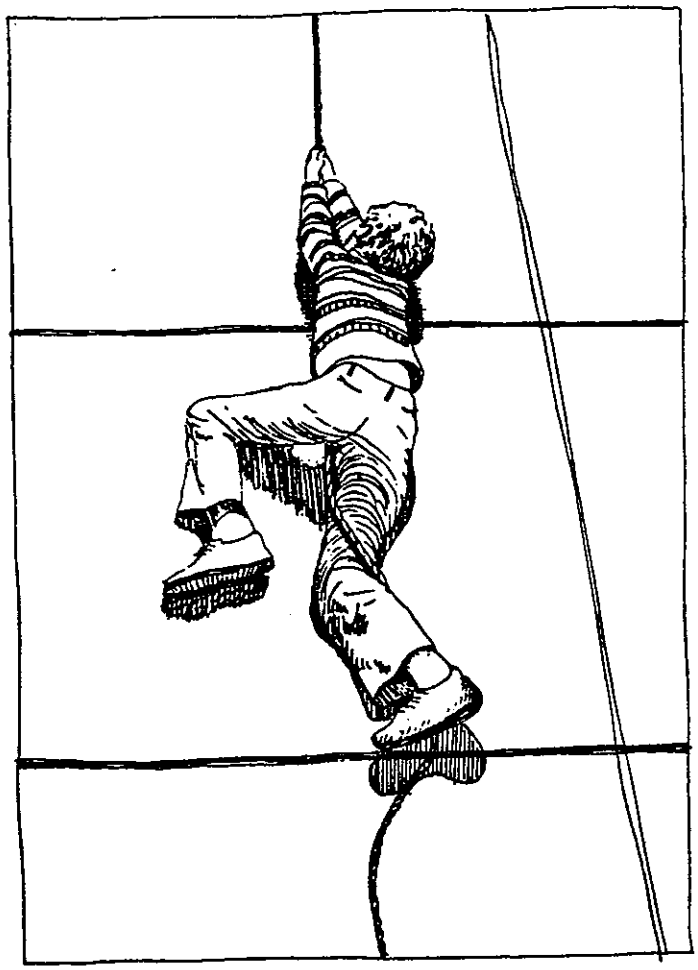


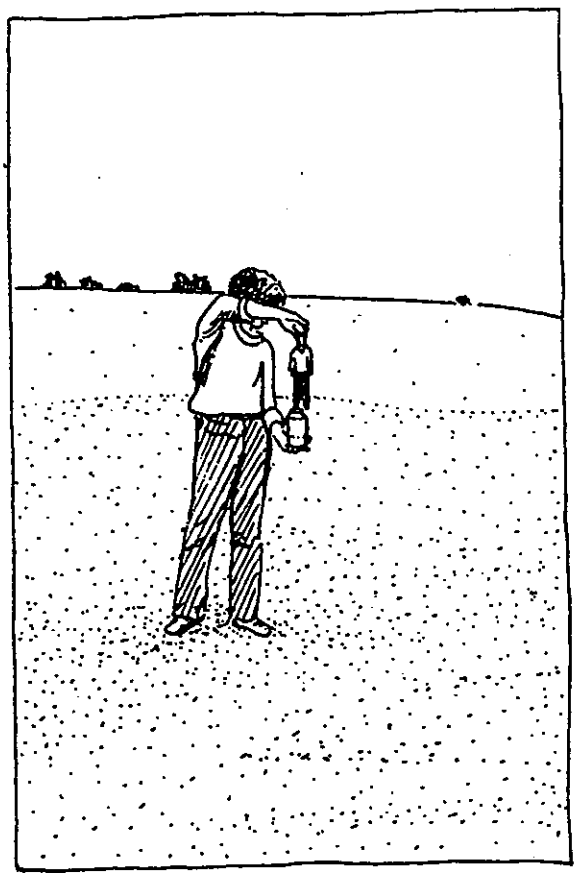


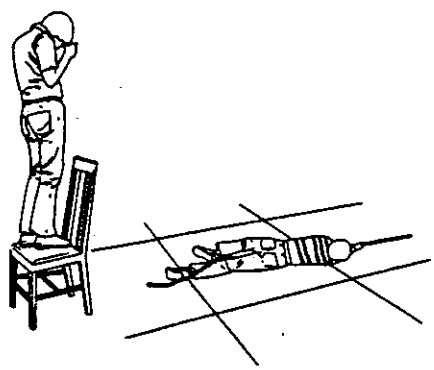
There are others you can try. Most of them involve tricks of perspective.

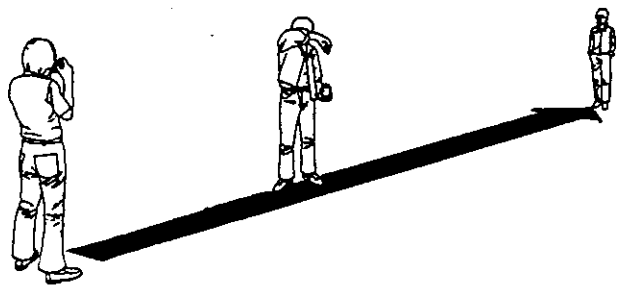
- Have someone lie on the sidewalk and "climb" a rope up the side of a building.
- Have someone "crush" a building with her foot.
- Have someone balance a telephone pole on his forehead.
- Have someone put a friend into a jelly jar.

What else can you think of?









GLOSSARY

Aperture: a hole behind a camera lens, surrounded by a circle of moveable metal blades. The hole size can be enlarged or reduced to vary the amount of light that can pass through it on to the film.

ASA: initials standing for the American Standards Association. A system of showing film speeds.

Autofocus: an automatic focusing system, which bounces a beam of infra-red light off a subject in front of the camera lens, measuring its distance from the camera. The camera focus is then automatically adjusted.

Bracketing: taking several shots of the same subject using different exposure settings, in order to be sure of getting at least one correct exposure.

Composition: The arrangement of objects or elements which appear in a picture.

Depth of field: The distance in a photo from the nearest point that is in focus to the furthest point away that is still in focus.

Exposure: Total amount of light reaching the film in a camera. This is controlled by the brightness of the subject, the shutter speed and the size of the aperture.

Film: a flexible transparent base with a coating which reacts to light, and which is used to record a photographic image.

Film speed: a measurement used to describe how sensitive a film is to light.

Flash: an instrument which creates an artificial burst of light, to illuminate a dark scene so that an image can be recorded on film.

Focusing: making an image appear sharply on a film by moving the camera lens backwards or forwards.

F-stop: the size of a camera aperture is measured in numbers called f-stops. The smaller the f-stop number, the larger the aperture.

ISO: initials standing for International Standards Organization. A system of showing film speeds.

Lens: a curved glass or plastic disc which bends light rays coming into the camera so that they form an image on the film.

Light meter: a mechanism for measuring the amount of light coming from an object.

Negative: a photographic image on film where the normal tones are reversed - the light parts of a scene appear dark and the dark parts appear transparent.

Shutter: a barrier positioned behind the camera lens. When a picture is taken it opens to let light through. The speed at which it opens and shuts helps to control the amount of light allowed on to the film.

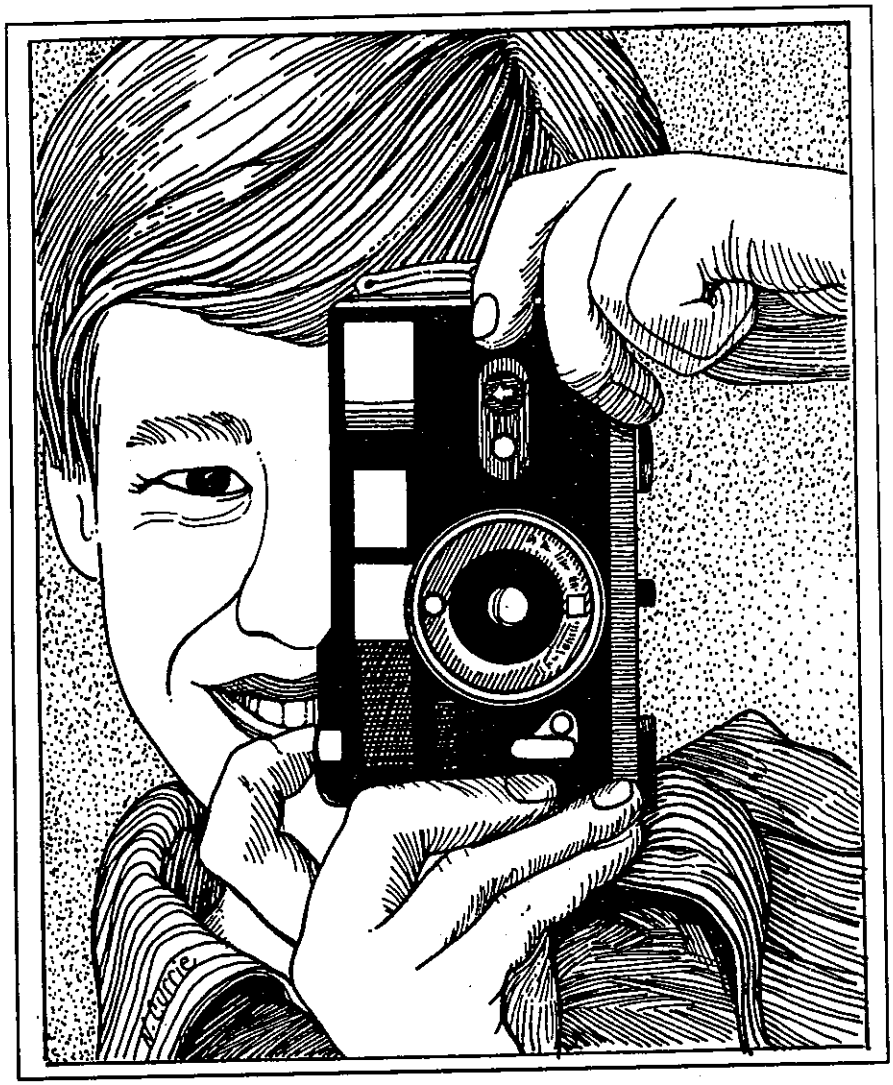
Single lens reflex camera (SLR): a camera with a built-in mirror system which enables viewing and focusing to be carried out through the camera lens itself, instead of through a separate viewfinder.

Subject: whatever you are taking a picture of. The subject of a picture could be a sunset, your pet, your best friend, a building or a field of corn.

Viewfinder: a camera window you can look through to compose a picture before taking a shot.

Exploring Photography

Intermediate



Name _____ Age ____

Club _____

Ontario 4-H Council

Ministry of Agriculture and Food

Ontario

4-H 1800 94 IE

THE 4-H PLEDGE

"I pledge:
My Head to clearer thinking
My Heart to greater loyalty
My Hands to larger service
My Health to better living
For my club, my community and my country."

TABLE OF CONTENTS

This project was prepared by
Vivian Webb, Guelph
for the Ontario 4-H Council and the Ontario Ministry of Agriculture and Food
with Special Thanks to the Advisory Committee:

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Agriculture and Food and Agriculture Canada.

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PURPOSE OF THE 4-H PROGRAM

The primary purpose of the 4-H program is the personal development of youth in rural Ontario.

In 4-H, members will be:

- encouraged to develop self-confidence, a sense of responsibility, and a positive self-image;
- helped to develop their skills in communications, leadership, problem solving, and goal setting; and
- offered the opportunity to learn about the food production, processing, and marketing systems and the heritage and culture of Ontario through projects such as livestock and crop production, financial management, food preparation, nutrition, recreational activities, and career development.

Introduction

The most important thing you can do with your camera is to use it. Practice makes perfect in many skills and this is especially true in photography. The more pictures you take, the better you will become at taking them. Regular practice allows you to handle your camera with ease and improves your ability to see and capture good images.

Try shooting, or at least looking for, interesting images for 10 or 15 minutes every day. As you become more aware of your surroundings, appealing subjects will be easier to spot and the quality of your photographs will improve.

Your goal in this project should be to improve your skill in focusing your mind as well as your camera. Enjoy!

Objectives

1. To provide opportunities for hands-on practice of photography skills.
2. To help members gain an appreciation of photography as an art, as a science and as a communications tool.
3. To help members to observe and appreciate their surroundings.
4. To provide experience in recording events, ideas and situations in picture form to use for later reference.
5. To have fun!

General Requirements

A member will complete a project satisfactorily by:

1. participating in at least 2/3 of his/her own club meeting time;

2. completing the project requirements to the satisfaction of the club leader(s);

3. taking part in an Achievement Program.

Photograph Logbook

You should have a small notebook or pad to record information about each picture you take, including: location, light conditions, film type and speed, f-stop, exposure settings and accessories used (flash, filters, etc.). Depending on the type of camera you use, you may not be able to record this much detail.

You might think this is a waste of time, but once your film is processed, you will find this information very valuable. It will help you figure out what you did that worked well in capturing the images and what didn't work.

Activity Ideas

1. Take a series of photographs in colour and a similar series in black and white. Display your results.

2. Take individual portraits of the members of your 4-H club and present the photos to them at the end of the club.

3. Do a photo story on another 4-H club and display it at a 4-H event.

4. Take a series of pictures that capture something of the history of your area. Display the pictures in a public place — library, hospital, community centre, museum, restaurant.

5. Take a series of landscape shots showing the same scene at different times of the day or different weather conditions. Prepare a display.

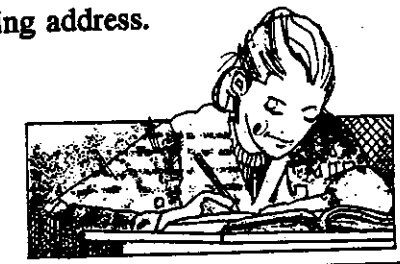
6. Invent your own idea and have it approved by your leader.

Meeting Schedule

	DATE	TIME	PLACE
MEETING ONE			
MEETING TWO			
MEETING THREE			
MEETING FOUR			
MEETING FIVE			
MEETING SIX			
ACHIEVEMENT PROGRAM			

The 4-H Resource Development Committee of the Ontario 4-H Council reviews and evaluates 4-H resources. Comments and suggestions about 4-H manuals and guides are always welcome. They may be sent to the following address.

4-H Resource Development Committee
c/o Guelph Agriculture Centre
P.O. Box 1030
Guelph, Ontario
N1H 6N1



Get Involved

Be willing to let your name stand for an executive position. It is a rewarding and fun experience. Following your club's elections, complete this club executive chart.

CLUB EXECUTIVE:	Name	Phone
PRESIDENT	_____	_____
VICE-PRESIDENT	_____	_____
SECRETARY	_____	_____
TREASURER	_____	_____
PRESS REPORTER	_____	_____
OTHER	_____	_____

CLUB MEMBERSHIP:

Members, Phone	Members, Phone
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Leaders, Phone	Leaders, Phone
_____	_____
_____	_____

4-H Association Contact, Position, Phone

_____

OMAF Contact, Position, Phone

_____

KNOWING YOUR TOOLS

Roll Call

If you could only take one picture, what would it be?

Depth Of Field

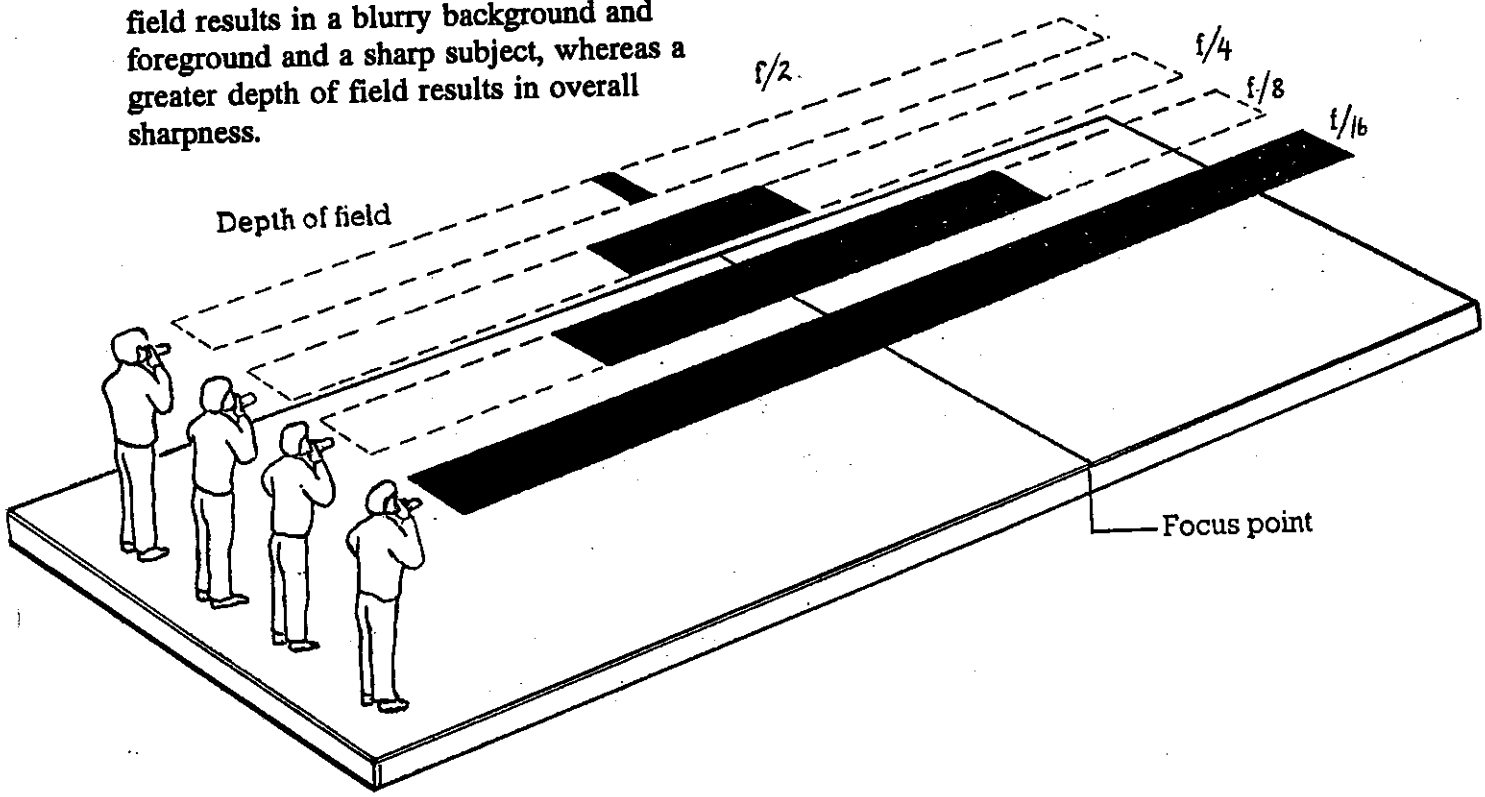
Proper focusing is one of the two fundamental steps in taking a good picture, the other being setting the correct exposure.

Whatever type of focusing system you have, it is important to know that when you focus on a subject, the depth of field — the zone in acceptably sharp focus in front and back of the subject — varies enormously depending on the size of the aperture, the subject's distance from the camera, and the focal length of the lens. With a working knowledge of how to control depth of field, you can heighten the effect of any picture. A limited depth of field results in a blurry background and foreground and a sharp subject, whereas a greater depth of field results in overall sharpness.

Aperture is the most important consideration in determining depth of field. The smaller the aperture, the greater the depth of field. At f/16, for example, most normal lenses focused on a subject sixteen feet away will show everything in focus from about 2.4m in front of the camera to infinity. At f/2, only the subject will be sharp; both the foreground and the background will be blurred. Midway between, at f/5.6, sharpness will extend from about 1m in front of the subject to about 1.8m behind.

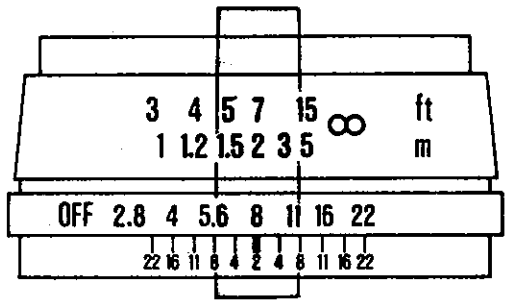
In general, the closer your subject, the shallower the depth of field.

The focal length of the lens plays a role in depth of field, too. The shorter the focal length, the more depth of field you'll get at the same aperture. Thus a wide-angle lens gives more depth of field at f/11, say, than a normal lens, and a normal lens gives more depth of field than a telephoto lens.



Determining Depth of Field

To help you determine the depth of field, many cameras have a simple depth-of-field scale inscribed on the lens barrel next to the focusing ring. The scale usually has two lines for each aperture between f/4 and f/16, and, as you turn the focusing ring, the distances on the ring falling between those lines are in acceptable focus. Once you've experimented with this scale a few times and feel comfortable using it, you'll find it a very handy aid.

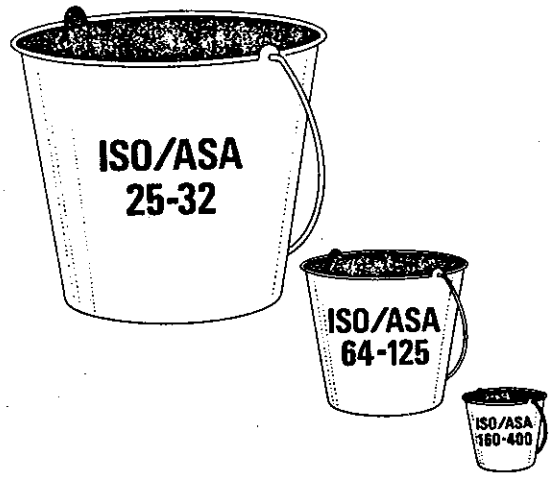


To determine the depth of field for a specific aperture, say f/8, find the left-hand and right-hand 8s on the bottom row of numbers. Make imaginary lines from those 8s to the distance scale on top. The distance between those imaginary lines on the distance scale is the depth of field. In this case from 1.4m to 4.5m.

Controlling Light

Films differ greatly in their sensitivity to light. Some require a lot of light for proper exposure, while others need much less. If the film gets too much light, the image will be washed out (overexposed); and if it gets too little light, the image will be dark (underexposed). To avoid either situation it is important to understand how to use the two controls on your camera that adjust the amount of light reaching the film — the shutter speed and the aperture.

Exposing film to light is like filling a bucket with water. The size of the "bucket" is determined by the film speed. Slow film is like a big bucket because it needs a lot of light to fill it for a picture. Fast film is like a small bucket. It needs only a little bit of light to make a picture.



How fast the bucket fills depends on how much you open the faucet and how long you leave it on. The two exposure controls on the camera work in much the same way. Like the valve in the faucet, the aperture controls the size of the opening in the lens that admits light, while the shutter speed determines the length of time that the shutter will stay open to let light pass through.

The exposure meter in your camera reads the total quantity of light that the film receives from both settings. You will usually want a combination of a relatively small aperture and a moderately fast shutter speed.

When a scene includes a strong, direct light source, it is crucial that your reading take into account more than just the dominant light. To record as much as possible of the bright and dark elements in a contrasty scene, take a reading of both and then choose an exposure midway between.

To be on the safe side in tricky lighting situations, you should bracket — that is, take extra pictures that give you one-half or one full stop more and less exposure than your meter reading indicates. A logbook is a necessity for remembering what you did when bracketing.

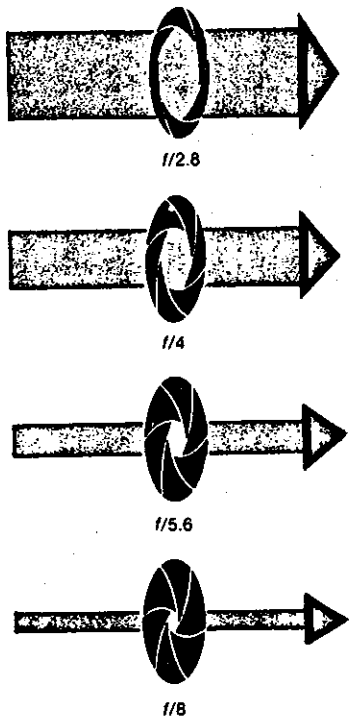
A sidelit subject, or one against a bright background, may require one extra stop of exposure for flesh tones to look normal. A backlit subject is likely to require two more, and a subject against a dark background may need one less.

The best solution in all cases is to move close to take a reading of only the subject, then set your camera for that reading and resume your original picture taking position. The same approach may be used when the lighting is uneven or when the element you wish to emphasize is small.

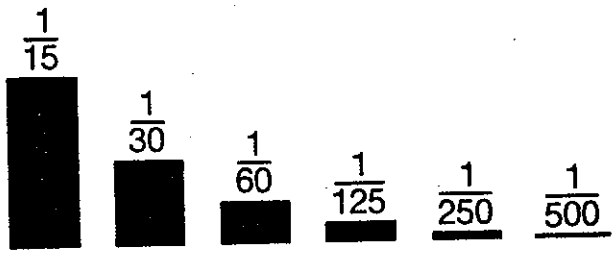
Setting the Aperture

The aperture is normally adjusted using a ring on the barrel of the lens. It is marked with a series of numbers (such as 5, 6, 8, 11) called F-stops. The lower the number, the larger the size of the aperture. Opening the aperture wider is often called "opening up," and closing it is called "stopping down."

In altering exposures, remember that a one-stop change in shutter speed is the equivalent of one f-stop change in aperture. Thus if you want to increase the exposure of a scene by one stop, you can either open the aperture one f-stop or switch to a slower shutter speed. In either case you are doubling the amount of light reaching the film. If you want to decrease the exposure, then close the aperture or use a faster shutter speed to halve the light reaching the film.



Each increase in *f*-number cuts the amount of light in half. Example: An aperture of f/5.6 lets in half the light of an aperture of f/4. An aperture of f/8 lets in half the light of f/5.6.



This bar graph shows that each longer shutter speed lets in twice as much light as its faster neighbor.

Choosing Film

Different films react to light at different speeds. Slow film reacts slowly, so you need good lighting or long exposure times. Fast film is good for moving subjects or bad light because it reacts quickly to small amounts of light.

Cartridge and 35mm films are marked with an ISO/ASA number to show their speed. The higher the number, the faster the film. Disc film only comes in 200 ISO.

Setting the Film Speed

When you load your camera you normally need to set the film speed dial to the speed of the film you are using. The speed appears in a window on the dial.

Some 35mm cameras can set the correct film speed automatically. They do this by reading a pattern of metallic squares, called a DX code, on the film cassette.

The Right Film For the Shot

The chart below will give you some tips on which speed of film to choose for specific conditions. If you will be using the same film in different situations, choose a general purpose speed.

	Colour Prints	Colour Slides	Black and White
General purpose	100-200	100-200	400
Dull or overcast weather	200-400	200	400
Bright, sunny weather Beach and snow scenes	100-200	25-100	50-125
Sport and action shots	400-1000	400-1000	400-1000
Indoor portraits with natural light	400-1000	400-1000	400-1000
Night scenes	400-1600	400-1000	400-1000
Flash pictures	100-200	200	125
Close-ups	200-400	100-400	125-400
Indoor shots under electric light bulbs	400-1600	400-1000	400-1000

Composition Tips

- Decide whether you want the focus of interest in the foreground (front of the picture) or the background. Check to see that the picture is not too cluttered.

- Check for background objects that shouldn't be there. Is there a branch growing out of someone's head? A pile of stuff cluttering the picture?

- Avoid cutting off the tops of heads or arms and legs. Look at the whole scene in the viewfinder, not just your main subject.

- Don't always take a picture standing up. A new viewpoint will make a big difference. Move around and try out several views before you take a photo.

- Try framing your pictures by using a tree branch, an archway, a pair of legs or arms. This makes it look like you are looking through a window to the scene that is stretching out beyond.

- If you are taking pictures of a person's profile (side view), leave more room in front of the person's head than behind.

Useful Accessories

Lens cap: Always leave the lens cap on (or close the front of an automatic camera) when you are not using it. This protects the lens from smears and scratches.

Camera bag: This is used for carrying your camera and equipment about.

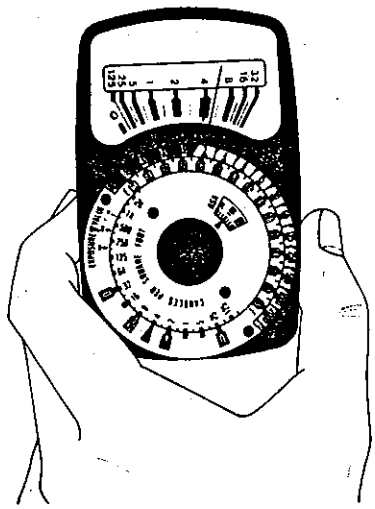
Camera case: This protects your camera from knocks when you are carrying it about, as well as keeping the outside of the camera clean. Choose a case that opens easily, so that your camera can be quickly ready for use.

Light meter: most cameras have a built-in light meter to help you set the exposure, but a hand-held light meter can still be useful. Most built-in meters take a general reading from the whole scene. A hand-held meter can measure the amount of light being reflected from the actual subject, allowing you to set a very accurate exposure.

What to look for in a light meter:

- How sensitive is it? Selenium meters, which may be cheaper, often do not work well in low light levels. Cadmium sulphide (CdS) meters use a cell that is many times more sensitive to light.

- Easy to use. Are the dials easy to read?



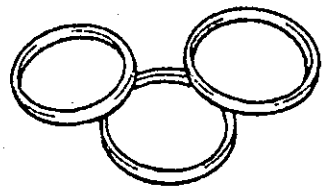
Lens box: Any additional lenses need to be protected when they are not in use. Keep them in a lens box or in a camera bag.

Body cap: This is used on an SLR camera to prevent dust from getting into its body when a lens is not fitted.

Filters: These are used to improve colours and to achieve special effects. Filters reduce the amount of light coming into the camera. On manual cameras other than SLRs, you must open the aperture wider to let more light in. The manufacturer's instructions will tell you how many stops to open the aperture.

Colour-improving filters, such as polarizers or UV filters, are used to reduce haze and make colours look richer.

Special filters are available for black and white film. These come in bright colours such as red and green, and are used to increase contrast. You can also use them with colour film for some dramatic effects.



Batteries: Built-in light meters, automatic cameras, motor drives and separate flash units are all powered by batteries. These need replacing regularly — check using the camera's battery test button or, for a flash, when the "flash ready" light takes longer than usual to come on. It is a good idea to find out what size of battery your camera uses and to keep a spare set. If you are taking pictures at a special event, you might want to change all batteries first. It's cheap insurance! Use alkaline or rechargeable batteries. If you aren't using the camera on a regular basis, remove the batteries.

Electronic Flash

An electronic flash will help you take a well-lit picture on the darkest night or the dullest day, within the distance range of the flash.

There are two types of electronic flashes: manual and automatic. A manual flash always puts out the same amount of light. An automatic flash puts out different amounts of light, depending on how close you are to the subject of the picture. Light from a flash lasts no longer than 1/100 of a second and can be as short as 1/50,000 of a second for an automatic unit.

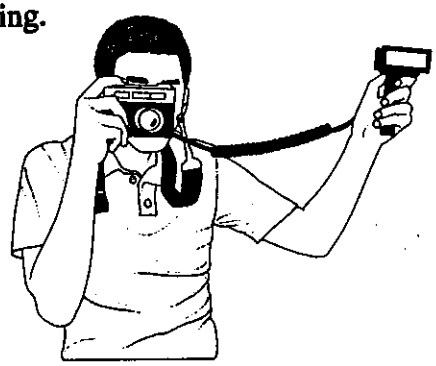
How a Flash Works

Electronic flashes are usually powered by two or four AA (1.5 volt) batteries. After each flash of light, the unit takes a few seconds to recharge before it has enough electricity for the next flash of light.

The light from the flash spreads out and dims as it travels away from the flash. A subject 2.5m from the flash receives four times more light than a subject 5m away.

How to Use Your Flash

A flash mounted on top of the camera gives straight, head-on lighting that leaves your subject looking rather flat. If you use an extension synch cord, you can hold the flash off to the side and above the camera to get a sort of sidelight, which makes your subject look more normal. Some flashes can be tilted to bounce the light off the ceiling.



The timing of the aperture opening of your camera must be synchronized with the flash going off. If you accidentally use a shutter speed that is faster than the flash synch shutter speed, part of the picture will be cut off. The speed that can be used will be marked on the shutter speed dial. Look for a lightening bolt arrow or a speed that's in a different colour.

There are a great variety of flashes and cameras. Many of them work in slightly different ways. Read the instructions that come with the flash and with the camera to learn how they work together.

Lenses

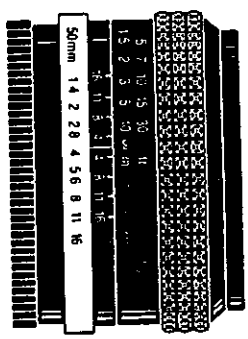
There are lenses that make faraway subjects seem close; make close subjects seem far away; make very close subjects appear in sharp focus. Each lens contains several pieces of glass called elements. The elements are shaped and arranged in a special way to make things seem closer or farther or to achieve other special effects.

Camera lenses are known by their focal length, which is measured in millimetres and is usually marked on the front of the lens barrel. The focal length is the distance from the optical centre of the lens to the film when the lens is focused on a distant subject. The focal length determines the magnification of the lens. The longer the focal length, the greater the magnification. A lens with a focal length twice as long as another lens has twice the magnification.

Before purchasing additional lenses, think carefully about your photographic interests and what you can easily carry.

Standard Lenses

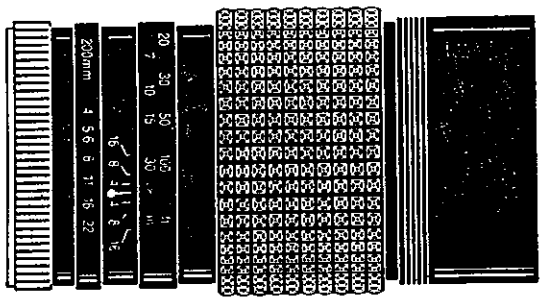
A standard or normal lens is the one that usually comes with a camera. Normal means that it sees your subject in the same perspective that your eyes see it. For 35mm cameras, a 50mm lens is normal, although it can range from 45-55mm on some older lenses.



50 mm Lens

Telephoto Lenses

Telephoto lenses make distant subjects seem closer. They are available with varying degrees of power or magnification. A 135mm lens has a magnification of almost 3x. A 200mm lens gives 4x magnification, and a 300mm lens gives 6x magnification. Generally speaking, the longer (in focal length) and more powerful the lens is, the less light it lets in. A telephoto lens is great for candid shots of people or wildlife.

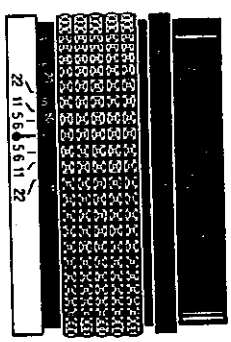


200 mm Telephoto Lens

Wide-angle Lenses

Wide angle lenses make subjects appear farther away than they really are. In doing so, they let you include more of a scene without moving. A wide-angle lens is great for taking pictures of things like landscapes, buildings or bridges.

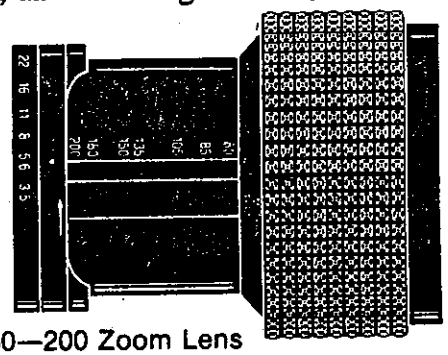
The focal length measurement of wide-angle lenses is less than that of a normal lens. A moderate wide-angle lens might be 35mm, while an extreme wide-angle lens would be 18mm or even less.



28 mm Wide-Angle Lens

Zoom Lenses

Zoom lenses let you stand in one place and zoom in on your subject. Without moving you can go from a full figure shot to a closeup of the face. Although other lenses have one focal length or magnification, zoom lenses feature a range of focal lengths. A typical zoom lens has a focal length range of 80-200mm. This is equivalent to a magnification range of 1.5-4x. There are telephoto zooms, wide-angle zooms, and wide-angle-to-telephoto zooms.



80—200 Zoom Lens

Before The Next Meeting

Bring in a landscape photo that you like. Look in books, magazines, newspapers, calendars and your own photography collection.

THE LIE OF THE LAND

Roll Call

Show your landscape photograph and explain why you like it. Where would you most like to travel to take pictures?

Tips for Landscape Pictures

- Is your scene well lit, or would it be better to come back when the lighting is different? Early morning and evening are often the best times, as the light is soft and casts interesting shadows. What are the differences between morning and evening shadows?

- Large, dramatic landscapes can be more effective if you include something to give an idea of the scale, such as a human figure or a tree. This emphasizes the size of the surrounding scenery, as well as providing a focus of interest for the photo.

- Patterns — of roofs, windows, tree stumps, flowers or barn boards — can hold a picture together. But be on the lookout for a break in the pattern, too. It can make a surprising picture.

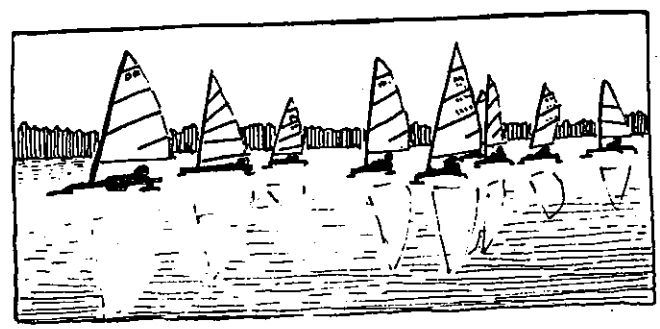
- Another way to show scale is to frame your landscape with something in the foreground, such as overhanging branches. This can also be used for hiding a boring sky or any unattractive details. But don't let the frame detract from the main point of interest.

- Water can damage your camera, so protect it in damp weather conditions. Stay under cover, or put the camera in a plastic bag with a hole for the lens and, if necessary, the viewfinder.

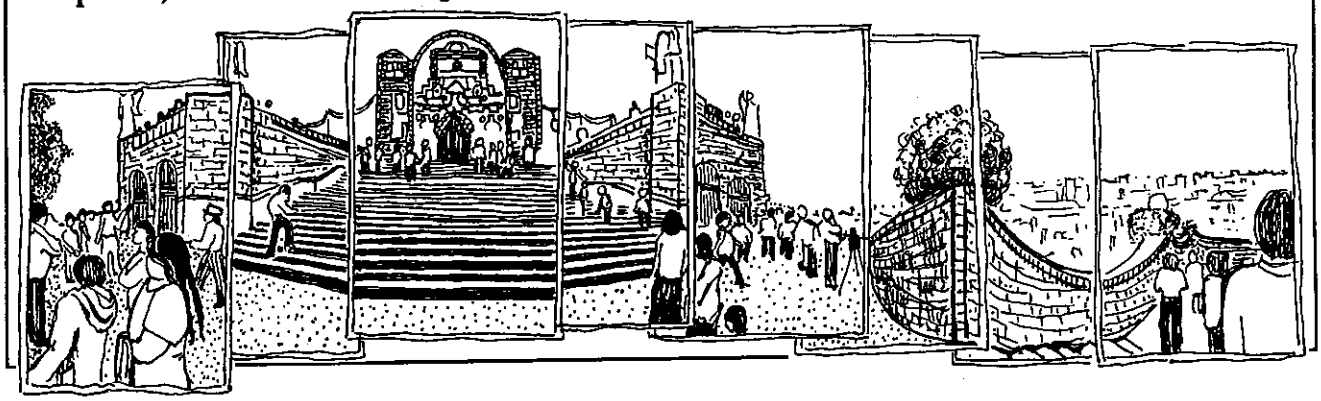
- Pay attention to colour. Bright colours can make a subject stand out, like a boy in a red shirt playing baseball on a dirt field. But a white barn fades away into a cloudy sky, which is fine if you want to portray a subtle scene.

  Pictures with few contrasting colours are often delicate and muted. Mists from fog or rain subdue and blend colours. Pictures with low contrast seldom have a dominant subject but they can still be very strong photos.

- Consider the rule of thirds. A picture is more interesting if the horizon falls either one-third from the bottom or one-third from the top or if your subject takes up one third of the picture and the background takes up two thirds.



- If you want to capture an entire landscape, try taking a series of photos — a panorama. Make sure you have some overlapping areas between the photos, so that the finished pictures will fit together. The best way to keep the photos level is to use a tripod. If you don't have one, you could rest the camera on any convenient support, such as a fence or post.



Using Natural Light

Bright Light

In bright light conditions, the main problem is the intensity of the light, much of which is reflected up off the pale surfaces such as sand, water or snow. In these conditions, it is a good idea to choose a slow film (about 100 ISO) and to use a polarizing filter to reduce reflected light and give deeper colours.

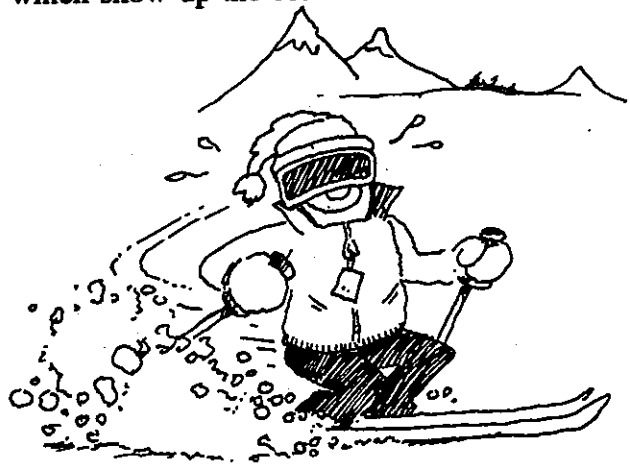
Automatic meters often set the exposure for the background if there is a strong contrast between the subject and its background. This leaves the subject over or under exposed. This problem can occur in photos such as portraits of people in the snow or on a beach, or people posed in front of windows (dark subjects, light backgrounds), or pictures of brides in white dresses (light subjects, dark backgrounds).

If your camera has a film speed dial you can overcome this problem by setting the dial to a speed faster for a dark background (to let less light in) or a speed slower for a light background (to let more light in). For example, for a change of one stop, a film of 200 ISO would be set to 400 ISO for a dark background, or 100 ISO for a light background. Some automatic cameras have a special back lighting button to cope with bright backgrounds.

Snow Photos

Snow often has a blue tinge in pictures, caused by reflected ultra violet (UV) light. Use a special UV filter to screen out reflected light and make snow look white.

Front lighting often makes snow look rather dull and flat. Side or back lighting is much more effective as it casts shadows which show up the contours of the snow.

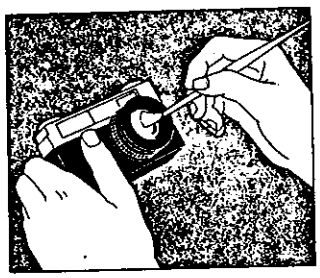


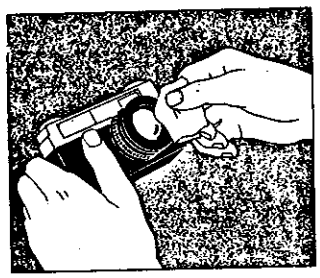
Taking Care of Your Camera

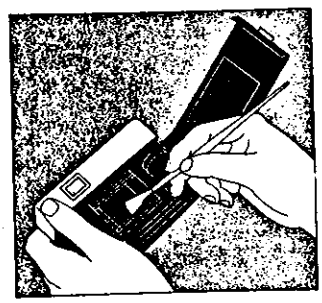
Take good care of your camera. If sand or dirt gets into it, or you leave your fingerprints on the lens, the camera won't work properly and you won't be happy with the pictures you take. If you can put a filter on your camera, leave an ultraviolet or skylight filter in place to protect the lens from rain, dirt and scratches. To keep your camera clean, you need:

- a soft, clean cloth or camera lens-cleaning paper and
- a new, soft paintbrush or camelhair brush made specially for cameras.

1. Using one of the brushes, lightly brush dirt off the lens or use an air blower.
2. When all the dust is off the lens, gently wipe it with camera lens-cleaning paper or a soft, clean cloth.
3. Open the camera back and use the brush to remove any dust or lint. Never touch the shutter.
4. Remove the batteries and, with a clean cloth, rub the battery contacts (metal ends of the battery) and the camera contacts (metal parts inside the camera that touch the battery ends). If there are any marks on the contact points, use a pencil eraser to rub them off. Be sure to brush off the eraser dust.







Storing Your Camera

Storing your camera and other equipment the right way can help keep things organized and clean. Although it's best to store your camera in the box or carrying case that it came in, you can use a shoe box or a desk drawer where it will be out of the way until you need it. Of course, there are also lots of camera bags you can buy.

If you don't plan on using your camera for several months, remove the batteries and keep them in a plastic bag. Then, if the batteries leak, they'll leak inside the bag not your camera, where they can cause damage.

When you're travelling in the summer, don't put your camera on the dashboard, in the glove compartment or in the trunk of the car — they're all too hot. Set the camera somewhere on the floor in the shade. In the winter, an unheated trunk is too cold.

Put your name on your camera and to copy down the make, model and serial number to help you identify it if you lose it.

Before The Next Meeting

Bring in the best animal photograph you can find. Look in books, magazines, calendars, newspapers and your own photograph collection.

ANIMAL HOUSE

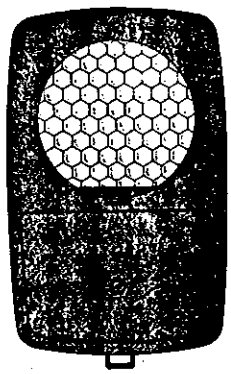
Roll Call

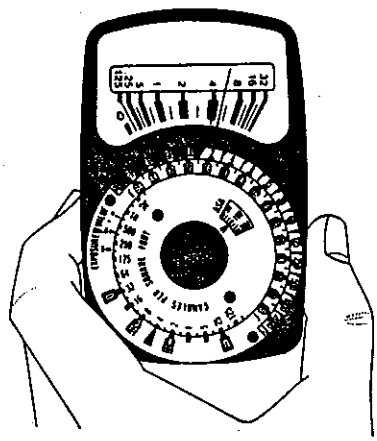
Show the animal photograph you selected. What kind of animal would you most like to photograph?

Using An Exposure Meter

Exposure meters measure light and recommend several combinations of shutter speed and aperture for that scene.

Most automatic and adjustable cameras have built-in exposure meters and this includes most 35mm cameras. If your camera is automatic, you generally set either the aperture or the shutter speed; the exposure meter gauges scene brightness and then sets the other adjustment automatically. An adjustable camera with a built-in meter requires you to set both adjustments, but the meter tells you when you've got the exposure right. Until built-in meters were made, hand-held meters were almost always used with an adjustable camera. To use a handheld exposure meter, first set the film speed on the meter. Then you simply aim the light-sensitive window at the scene to get recommendations for camera settings.





Even if your camera has a built in exposure meter you may want to use a handheld exposure meter in certain situations. When the background of your photograph is dark but you want a lighter object in the foreground to be properly exposed use a handheld meter. In this case you would take an independent light reading of the object in the foreground and set your camera to the recommended setting.

Wildlife Shots

Since nearly all wild creatures are both timid and fast, taking pictures of them requires a combination of quick reflexes, planning and perseverance. As a general rule, most animals come out early in the morning or late in the afternoon to feed, not at midday. Think about taking along food or seed to attract them to the spot you want.

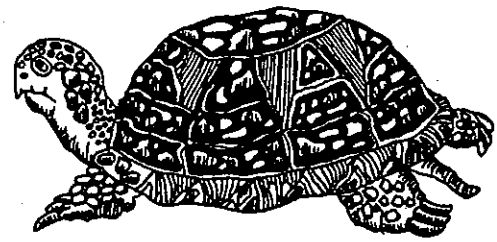
Before you start looking for wildlife in any one spot, take a light reading so that you are prepared for the unexpected and will only have to quickly focus if something — or someone — interesting comes across your path. Don't be afraid to get down on your stomach, either. Not many animals are more than five feet tall.

A telephoto lens is useful if you are taking pictures of wild animals. But it is just as important to keep your movements to a minimum. When you do move, move slowly and carefully so you don't scare everything away.

Look for a location that you can set up your camera and wait quietly for wildlife to come into your area. If possible, set your camera up on a tripod in a location that gives you clear visibility, natural cover to prevent your subjects from sensing your presence and keeps you a safe distance from any real danger. If you can't find any natural cover, build a blind and stay there for several hours.

It is sometimes a good idea to wrap the camera in dark cloth to muffle the sound of the shutter and prevent reflections.

Wildlife doesn't have to be an exotic animal to make a great photograph. Groundhogs, mice, rabbits, spiders, frogs, birds, butterflies and snakes can all be captivating subjects.



Before The Next Meeting

Bring in a picture of a person that tells you something about that person. Look in books, magazines, newspapers, calendars and your own photograph collection.

SAY CHEESE

Roll Call

Show the photograph you brought of a person and tell what you learned about the person from the photo. Who would you most like to photograph?

People Pictures

When you take photos of a person you can change the pose, lighting and the background to get many different effects.

If you take an indoor picture lit with ordinary electric lighting and you use a normal colour film without a flash, the photo will have an orange glow to it. To avoid this type of glow, you need to use special tungsten slide film or a flash.

Keep it Natural

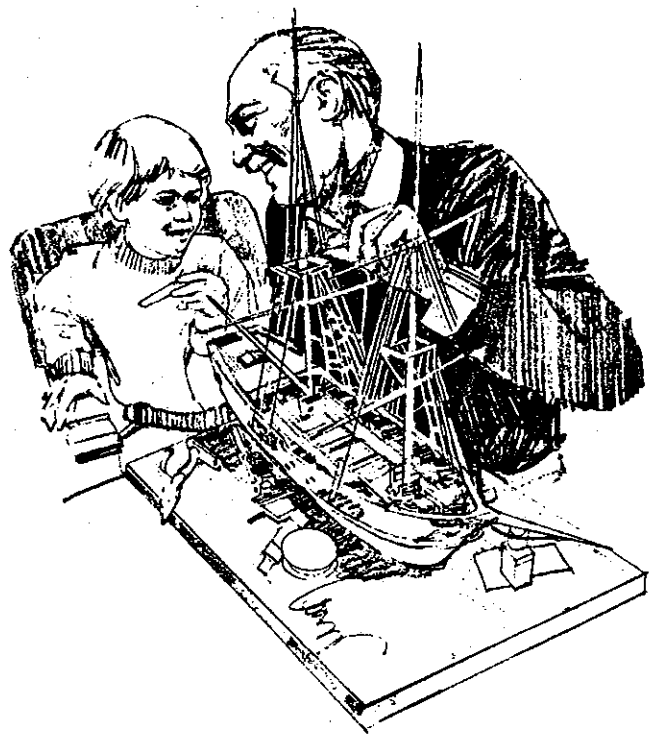
People should look relaxed and natural in portrait photos. Here are some tips on how to make this happen.

- Photograph people in places that they know, for instance at work or in their home or garden. This will help them relax and feel more comfortable.

- Sit your subject in a comfortable chair and let him/her choose a natural sitting position so that he/she will look more relaxed.

- Talk to your subject. This will make him/her feel less awkward and he/she will laugh or smile naturally. This will look attractive in a photo.

- You could ask your subject to do something such as read a book or work on a hobby. That way he/she will forget about the camera.



- Take two shots one right after the other. Sometimes people relax as soon as that camera click is heard. You could get a more natural photo on the second shot.

Small Groups

Here are some additional things to consider if photographing a small group of people.

- If you are photographing a small group, perhaps your family or friends, you don't have to position them very formally, but try to arrange people so that their heads are at different levels. This gives a more interesting composition. Fill the photo with the people, to cut out unnecessary background.

- You might want to use a tripod or rest your camera on some other support such as a pile of books. You can then move people around to get the picture to look like you want it to, without moving the camera and changing adjustments.

- Get everyone's attention on the camera by calling or talking to them, or use a signal such as whistling. Have everyone focus on the same thing so that their eyes are looking in the same direction. While you have got everyone together take more than one shot so you can choose the one you like the best.

Candid Camera

Everybody loves candid pictures — that surprised look on your friend's face when he opened his birthday present, your niece's toothless grin, a thoughtful moment captured on film. We all treasure pictures like this.

But good candid photographs are rare. It takes patience, knowledge of your subject, quick reflexes and focusing skills — and lots of film.

You can practice taking candid shots by just walking around with your camera for a period of time and snapping whatever takes your fancy. The first thing to do is set your camera for existing light conditions so that when you are ready to take a shot, you won't have to adjust your camera much.

Quickly check your composition before you snap that first shot but don't be afraid to take several pictures of the same scene. If you have time, bracket your shots by changing the f-stop up one and then down.

Throwing Light on the Subject

Light can create shadows or highlights on someone's face depending on the direction it is coming from. These variations can affect the photograph in different ways.

Natural light is most flattering for portrait shots. Even if you are taking a picture indoors, have the person sit near a window. Don't take the picture with the window appearing behind them, because then you won't be able to see the person's face. Take the shot so the light from the window is coming from the side or the front.

Try to avoid strong colours, bright lights or busy details behind your subject. Watch out for background shadow, especially if you use a flash. Make sure the person is 1-2m in front of the background to avoid this.

If someone stands sideways to the light source, half of his/her face will be in shadow. You can overcome this by bouncing light back on to the side in shadow by using a piece of white card positioned near the face.

The white card acts as a subtle "reflector," giving a subtle natural lighting effect. Get someone to hold it, or prop it up on a table near the subject's face, but make sure it does not appear in the finished photo.

For outdoor portraits light shadow is best, because then you won't get people squinting. You could use a reflector here too if you want to reduce shadows on faces.

Stopping the Shakes

When taking indoor shots without flash you may need a slow shutter speed because of the light. If the setting goes below 1/60, you will need to support the camera for a sharp image.

To avoid camera shake, you could mount your camera on a tripod and attach a cable release. This allows you to take a photo without pushing down on the camera and jerking it. You can set the camera up, walk away, and then press the cable release mechanism.

If you don't have a tripod, perch the camera on a pile of books. If you have a self-timer use it to avoid moving the camera. Cock the self-timer lever and then move away. The shutter will click in about ten seconds.

Using a Self-Timer

If you have a self-timer on your camera you can include yourself in a group picture or take your self-portrait. When you set up the shot, decide where you are going to position yourself in the picture.

Have someone stand in for you to take appropriate light readings and compose the picture properly.

Once you set the self-timer, usually by pushing down a lever on the front of the camera, you will have about ten seconds to position yourself before the shutter clicks.

The Beauty of Black and White

In a black-and-white photograph, the colours produced by light are recorded on film in terms of their intensity or brightness and in the final print we see them as black, white or shades of grey.

Many people believe that portraits of people are best done in black and white because qualities that do not depend on colour can be better portrayed – for example, highlights and shadows, contrasts between lightness and darkness, and certain shapes, textures and planes.

For these reasons, poses and lighting arrangements that may appear quite ordinary in a colour photograph can become very striking when shown as a play of light and dark tones.

Before The Next Meeting

Bring in a photograph of animals or people showing fast action. Look in books, magazines, newspapers, calendars and your own photograph collection.

ACTION!

Roll Call

Show your action photograph and explain how motion is shown in the still photograph.

Action Shots

There are several different ways to take an action photograph that give different effects: some techniques halt movement so that the picture is as sharp as can be, other techniques make the movement blurred.

Freezing Movement

To freeze actions you need to use fast film and fast shutter speeds. On manual cameras the faster the action, the faster the shutter speed you need to set. If you have an automatic camera, you can get a fast shutter speed if you take the picture in bright light.

A flash will freeze quick movements in dark lighting conditions, for instance in an arena or gym, but remember that you can only use flash on subjects within a few metres distance.

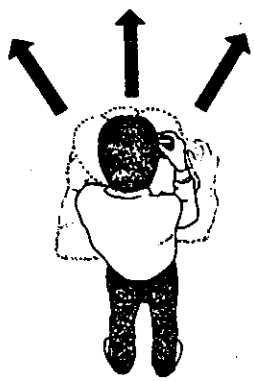
Some movements have a "peak of action," where everything stops momentarily, for instance at the top of an upward leap. To capture this, pre-focus on the place where the peak will occur and wait for the right moment. To do this, you have to know your game and plan to be at the right spot at the right time.

Panning

Panning is another way of freezing movement. It means swinging the camera around to keep a moving subject in the viewfinder and taking a shot as you move. On a panned photo the background will appear as blurred streaks, giving an idea of speed. Here's how you do it.

1. Hold the camera firmly by tucking your elbows into the sides of your body. Pre-focus on the point where you want to take the picture. It helps to choose a point which has a clear landmark.

2. As the subject moves across your line of vision keep it in camera view by swinging around smoothly from the waist. Take a photo when it reaches the point you chose earlier and focused on. Continue moving to follow the subject through.



Using Blur

Everything in your photographs doesn't have to be sharply focused. Blur can be used to create or show movement. Use these techniques to reinforce the movement taking place or to create movement in a still subject.

- You can move your camera deliberately to create blur. Focus on the main subject. Then, as you press the shutter, move the camera smoothly and quickly away to create blurry streaks. If you have a zoom lens you can move the camera lens in or out as you take a photo. You could also try jumping up and down.

- You can also create blur by keeping your camera steady and taking a shot of something crossing your field of vision. Focus the camera on the background, and press the shutter as the subject moves across the frame. The background will come out clearly and the moving subject will be blurred.

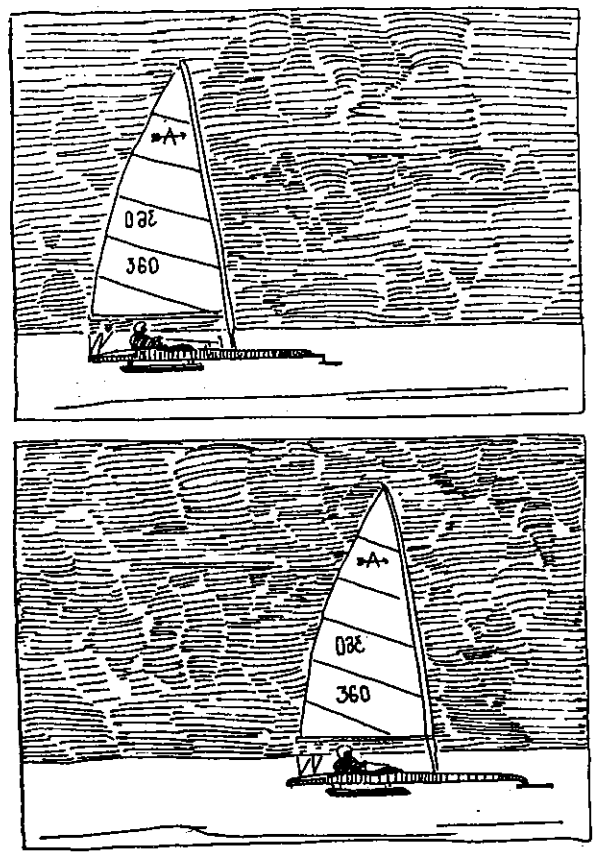
- Use a slow shutter speed to blur any object that moves faster than the shutter. The longer the exposure, the more pronounced the blur.

Direction and Distance of Motion

When motion is toward or away from you you can use a slower shutter speed than if it is crossing your field of vision. And the further away it is, moving in any direction, the slower it appears to be. Through your viewfinder, watch a friend on a bicycle heading toward and away from you and then moving at right angles.

Composition of Movement

Composing a scene with a moving subject is not different from composing a still scene, except for one thing. Usually a picture will be more pleasing if the subject appears to be headed into the picture, rather than out of it. Give your subject some room to continue in the picture. It's especially important when panning.



Before The Next Meeting

Think about the special effects you would like to try at the next meeting and organize any equipment or props you will need.

SPECIAL FX

Roll Call

What do you think is the greatest challenge about taking pictures at night?

Night-time Photography

You cannot use flash for night-time photos, if the subjects are too far away. Instead, use a fast film (about 400 ISO) to cope with the low light levels. You will also need a long exposure to let in as much light as possible.

Night-time pictures which include bright lights can be taken with any camera. A good time to take these photos is at dusk, when the dark blue sky gives the impression of night but there is enough light left to record foreground details.

On a manual camera you can set very slow exposures, which let you take a wider range of night shots. Many manual cameras have a B setting on the shutter speed dial for night-time shots. It holds the shutter open as long as the release button is pressed. To prevent camera shake, use a cable release and a tripod for these shots.

Sunset photos will look more exciting if you include some foreground interest which will be effective in silhouette, such as a tree, an interesting skyline or water, which will mirror the sky.

If you can adjust the exposure on your camera you can get some dramatic night-time pictures of moving lights. Car headlights, for example, will create bright lines if you use very long exposures. Or you could focus on stationary lights and then move your camera to get a streaked effect. In both cases you will need to use a fast film such as a 400 ISO.

Suggested Exposures for Night-time Shots

400 ISO	
Dusk shots	1/60 f2.8
Shop window and neon signs	1/60 f2.8
Street lights	1/15 f2.8
Floodlit buildings	1/8 f2.8
Candle light	1/4 f2.8
Fireworks	3-4 secs. f11
Car light trails	10 secs. f22

GLOSSARY

Angle of view: the amount of a scene that a camera can fit into a photo. This varies with different lens types.

Aperture: a hole behind a camera lens, surrounded by a circle of moveable metal blades. The hole size can be enlarged or reduced to vary the amount of light that can pass through it on to the film.

ASA: initials standing for the American Standards Association. A system of showing film speeds.

Autofocus: an automatic focusing system, which bounces a beam of infra-red light off a subject in front of the camera lens, measuring its distance from the camera. The camera focus is then automatically adjusted.

Bellows unit: an extension which can be fitted between a lens and a camera body. Its length can be extended or reduced to vary the focusing distance of the camera, so that it can focus on close-up subjects.

Bracketing: taking several shots of the same subject using different exposure settings, in order to be sure of getting at least one correct exposure.

Cable release: an extension cable which can be connected to the shutter release button on a camera. A switch on the end of the cable allows you to take a picture without touching your camera, avoiding camera shake.

Close-up lens: a lens that looks like a filter which enables a camera to focus on close-up subjects. It can be mounted in front of an ordinary camera lens.

Composition: The arrangement of objects or elements which appear in a picture.

Darkroom: a light-tight room used when developing and printing film.

Depth of field: The distance in a photograph from the nearest point that is in focus to the furthest point away that is still in focus.

Developing: the process of making an image appear on film or on photographic paper.

Diffuser: translucent material, such as fabric or tracing paper, placed in front of a light source. It has the effect of spreading out the light and softening its effect.

DIN: initials standing for Deutsche Industrie Norm. A system of showing film speeds.

DX coding: a pattern of metallic squares on a 35mm film cassette case, which some cameras can read to enable them to automatically set the film speed.

Enlarger: a vertically mounted projector, which is used to enlarge negatives and project them on to photographic paper to print a picture.

Exposure: the total amount of light that reaches the film in a camera. This is controlled by the brightness of the subject, the shutter speed and the size of the aperture.

Extension tube: a tube which fits between the lens and the body of a camera, to allow the camera to focus on close-up objects.

Fill-in flash: a technique using flash outdoors to soften shadows cast by strong sunlight.

Film: a flexible transparent base with a coating which reacts to light, and which is used to record a photographic image.

Film speed: a measurement used to describe how quickly or slowly a film reacts to light.

Filter: a tinted glass or plastic disc or square which fits on to a camera lens. A filter alters light reaching the film, for instance to enhance colour or achieve an unusual effect.

Flash: an instrument which creates an artificial burst of light, to illuminate a dark scene so that an image can be recorded on film.

Focal length: a lens measurement - the distance needed between a camera lens and the film in order for a distant object to be sharply focused.

Focusing: making an image appear sharply on a film by moving the camera lens backwards or forwards.

F-stop: the size of a camera aperture is measured in numbers called f-stops. The smaller the f-stop number, the larger the aperture.

Hot shoe: a clip on the top of a 35mm camera for attaching a separate flash unit.

ISO: initials standing for International Standards Organization. A system of showing film speeds.

Lens: a curved glass or plastic disc which bends light rays coming into the camera so that they form an image on the film.

Light meter: a mechanism for measuring the amount of light coming from a subject.

Macro lens: a lens which can be used for magnifying subjects on very close-up shots or for normal photography. It can be fitted on to cameras which have detachable lenses.

Motor drive: an electric motor which winds a film on automatically and then triggers the camera shutter release to take another picture. Motor drives normally take 4-6 frames a second. A slower version is called an autowind (2-4 frames a second).

Negative: a photographic image on film where the normal tones are reversed - the light parts of a scene appear dark and the dark parts appear transparent.

Rangefinder: a focusing aid used on 35mm cameras. A double image or a split image is shown in the viewfinder until the camera is properly focused when only one image appears.

Safelight: a working light used when printing photos in a darkroom. It emits coloured light, usually red or orange, which does not affect photographic paper.

Self-timer: a camera mechanism which operates a camera shutter automatically after about ten seconds delay, to enable the photographer to move in front of the camera and appear in the picture.

Shutter: a barrier positioned behind the camera lens. When a picture is taken it opens to let light through. The speed at which it opens and shuts helps to control the amount of light allowed on to the film.

Single lens reflex camera (SLR): a camera with a built-in mirror system which enables viewing and focusing to be carried

out through the camera lens itself, instead of through a separate viewfinder. This eliminates any differences between the viewfinder and lens views.

Telephoto lens: a lens which makes objects appear closer than they really are.

Tripod: a camera support with three legs, which can be adjusted to different heights. A camera can be attached to the tripod head.

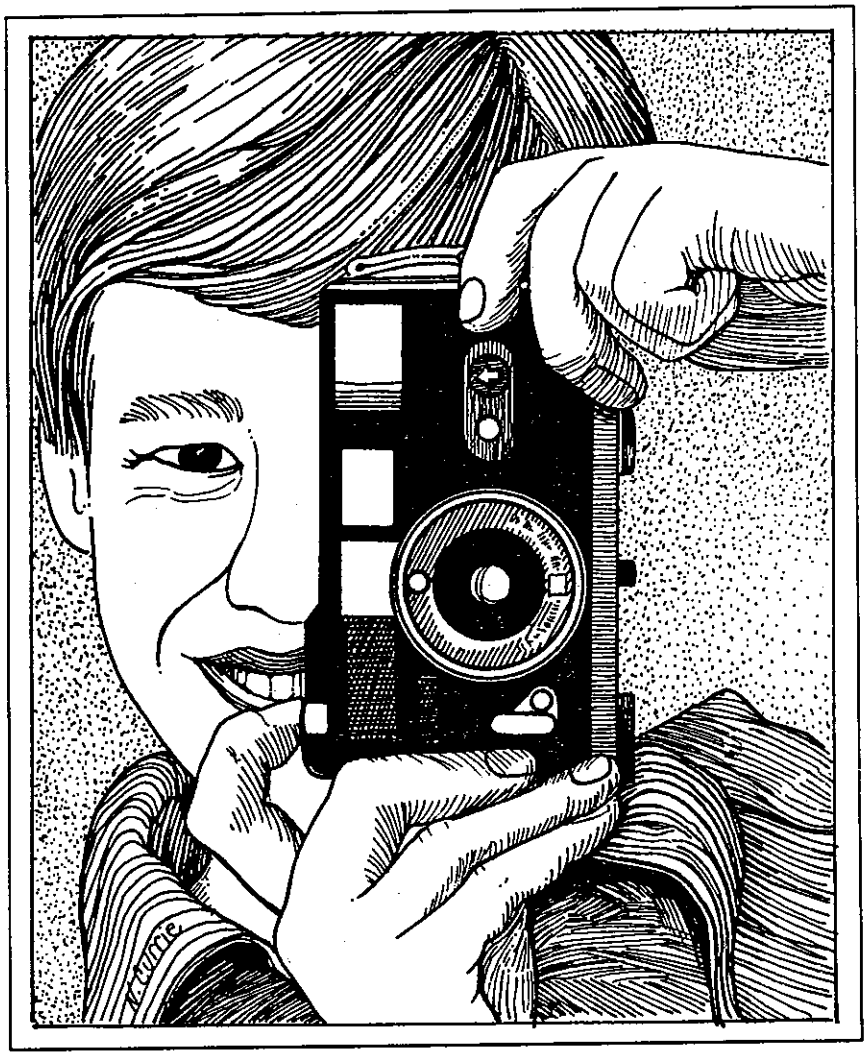
Viewfinder: a camera window you can look through to compose a picture before taking a shot.

Wide-angle lens: A lens which has a wider angle of view than an ordinary lens.

Zoom lens: a lens which has an adjustable focal length so that its effect can be varied.

Exploring Photography

Advanced



Name _____ Age ____

Club _____

Ontario
4-H Council

Ministry of
Agriculture
and Food
Ontario

4-H 1800 94 AE

THE 4-H PLEDGE

"I pledge:
My Head to clearer thinking
My Heart to greater loyalty
My Hands to larger service
My Health to better living
For my club, my community and my country."

TABLE OF CONTENTS

This project was prepared by
Vivian Webb, Guelph
for the Ontario 4-H Council and the Ontario Ministry of Agriculture and Food
with Special Thanks to the Advisory Committee:

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Agriculture and Food and Agriculture Canada

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PURPOSE OF THE 4-H PROGRAM

The primary purpose of the 4-H program is the personal development of youth in rural Ontario.

In 4-H, members will be:

- encouraged to develop self-confidence, a sense of responsibility, and a positive self-image;
- helped to develop their skills in communications, leadership, problem solving, and goal setting; and
- offered the opportunity to learn about the food production, processing, and marketing systems and the heritage and culture of Ontario through projects such as livestock and crop production, financial management, food preparation, nutrition, recreational activities, and career development.

Introduction

The most important thing you can do with your camera is to use it. Practice makes perfect in many skills and this is especially true in photography. The more pictures you take, the better you will become at taking them. Regular practice allows you to handle your camera with ease and improves your ability to see and capture good images.

Try shooting, or at least looking for, interesting images for 10 or 15 minutes every day. As you become more aware of your surroundings, appealing subjects will be easier to spot and the quality of your photographs will improve.

Your goal in this project should be to improve your skill in focusing your mind as well as your camera. Enjoy!

Objectives

1. To provide opportunities for hands-on practice of photography skills.
2. To help members gain an appreciation of photography as an art, as a science and as a communications tool.
3. To help members to observe and appreciate their surroundings.
4. To provide experience in recording events, ideas and situations in picture form to use for later reference.
5. To have fun!

General Requirements

A member will complete a project satisfactorily by:

1. participating in at least 2/3 of his/her own club meeting time;

2. completing the project requirements to the satisfaction of the club leader(s);

3. taking part in an Achievement Program.

Photograph Logbook

You should have a small notebook or pad to record information about each picture you take, including: location, light conditions, film type and speed, f-stop, exposure settings and accessories used (flash, filters, etc.). Depending on the type of camera you use, you may not be able to record this much detail. You might think this is a waste of time, but once your film is processed, you will find this information very valuable. It will help you figure out what you did that worked well in capturing the images you wanted and what didn't work.

Activity Ideas

1. Photograph and display a story on the showing of a 4-H animal.

2. Record the opening ceremonies or another aspect of a special event in your area, such as a fair. Submit your photographs to the local newspaper or present them to the event organizers.

3. Compose a photo essay on a day in the life of someone important to you or your community. It could be a farmer, a truck driver, a nurse, teacher, mayor or a 4-H leader. Display the essay for the club to see and invite the subject to attend the showing.

4. Take a series of close up "mystery" photographs. Display the photos and see if your club members can figure out what they are.

5. Take a series of photographs using special effects. Display your results and explain how they were achieved.

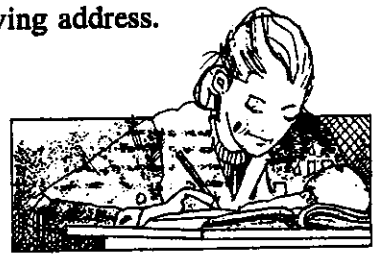
6. Invent your own idea and have it approved by your leader.

Meeting Schedule

	DATE	TIME	PLACE
MEETING ONE			
MEETING TWO			
MEETING THREE			
MEETING FOUR			
MEETING FIVE			
MEETING SIX			
ACHIEVEMENT PROGRAM			

The 4-H Resource Development Committee of the Ontario 4-H Council reviews and evaluates 4-H resources. Comments and suggestions about 4-H manuals and guides are always welcome. They may be sent to the following address.

4-H Resource Development Committee
c/o Guelph Agriculture Centre
P.O. Box 1030
Guelph, Ontario
N1H 6N1



Get Involved

Be willing to let your name stand for an executive position. It is a rewarding and fun experience. Following your club's elections, complete this club executive chart.

CLUB EXECUTIVE:

	Name	Phone
PRESIDENT	_____	_____
VICE-PRESIDENT	_____	_____
SECRETARY	_____	_____
TREASURER	_____	_____
PRESS REPORTER	_____	_____
OTHER	_____	_____

CLUB MEMBERSHIP:

Members, Phone	Members, Phone
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Leaders, Phone	Leaders, Phone
_____	_____
_____	_____

4-H Association Contact, Position, Phone

_____

OMAF Contact, Position, Phone

_____

KNOWING YOUR TOOLS

Roll Call

If you could only take one picture, what would it be?

Controlling Light

Films differ greatly in their sensitivity to light. Some require a lot of light for proper exposure, while others need much less. If the film gets too much light, the image will be washed out (overexposed); and if it gets too little light, the image will be dark and muddy (underexposed). To avoid either situation it is very important to understand how to use the two controls on your camera that adjust the amount of light reaching the film — the shutter speed and the aperture.

Exposing film to light is like filling a bucket with water. The size of the "bucket" is determined by the film speed. Slow film is like a big bucket because it needs a lot of light to fill it for a picture. Fast film is like a small bucket. It needs only a little bit of light to make a picture.

How fast the bucket fills depends on how much you open the faucet and how long you leave it on. The two exposure controls on the camera work in much the same way. Like the valve in the faucet, the aperture controls the size of the opening in the lens that admits light, while the shutter speed determines the length of time that the shutter will stay open to let light pass through.

The exposure meter in your camera reads the total quantity of light that the film receives from both settings. You will usually want a combination of a relatively small aperture and a moderately fast shutter speed.

When a scene includes a strong, direct light source, it is crucial that your reading take into account more than just the dominant light. To record as much as possible of the bright and dark elements in a contrasty scene, take a reading of both and then choose an exposure midway between.

To be on the safe side in tricky lighting situations, you should bracket — that is, take extra pictures that give you one-half or one full stop more and less exposure than your meter reading indicates. A logbook is an absolute necessity for remembering what you did when bracketing.

A sidelit subject, or one against a bright background, may require one extra stop of exposure for flesh tones to look normal. A backlit subject is likely to require two more, and a subject against a dark background may need one less.

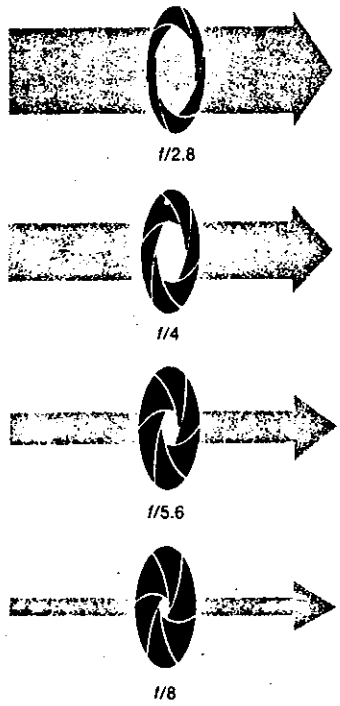
The best solution in all cases is to move close to take a reading of only the subject, then set your camera for that reading and resume your original picture taking position. The same approach may be used when the lighting is uneven or when the element you wish to emphasize is small.

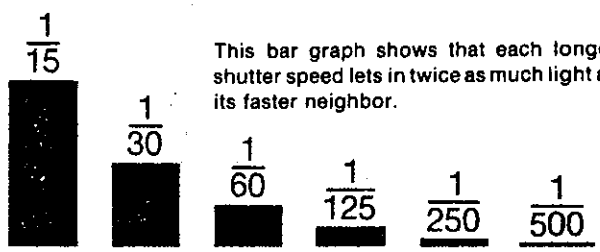
Setting the Aperture

The aperture is normally adjusted using a ring on the barrel of the lens. It is marked with a series of numbers (such as 5, 6, 8, 11) called F-stops. The lower the number, the larger the size of the aperture. Opening the aperture wider is often called "opening up," and closing it is called "stopping down."

In altering exposures, remember that a one-stop change in shutter speed is the equivalent of one f-stop change in aperture. Thus if you want to increase the exposure of a scene by one stop, you can either open the aperture one f-stop or switch to a slower shutter speed. In either case you are doubling the amount of light reaching the film. If you want to decrease the exposure by one stop, then close the aperture or use a faster shutter speed to halve the light reaching the film.

Each increase in *f*-number cuts the amount of light in half. Example: An aperture of f/5.6 lets in half the light of an aperture of f/4. An aperture of f/8 lets in half the light of f/5.6.





This bar graph shows that each longer shutter speed lets in twice as much light as its faster neighbor.

Useful Accessories

Filters: These are used to improve colours and to achieve special effects. Filters reduce the amount of light coming into the camera. On manual cameras other than SLRs, you must open the aperture wider to let more light in. The manufacturer's instructions will tell you how many stops to open the aperture.

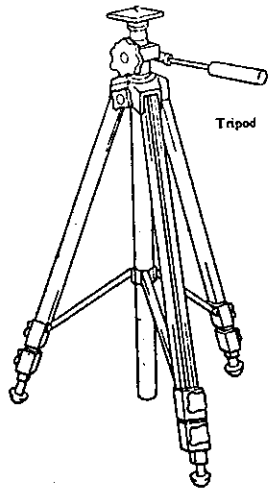
Colour-improving filters, such as polarizers or UV filters, are used to reduce haze and make colours look richer. A UV filter can also be left in place to protect the lens. A filter is far less costly to replace than a scratched lens.

Special filters are available for black and white film. These come in bright colours such as red and green, and are used to increase contrast. You can also use them with colour film for some dramatic effects.

Tripods: Most tripods have adjustable legs and an adjustable head to support the camera in different positions.

If you do not want to carry a full-sized tripod around with you, useful alternatives are a mini tripod, which can stand on any surface, or a camera clamp, which can be attached to a branch, post or railings.

What should you look for in a tripod?



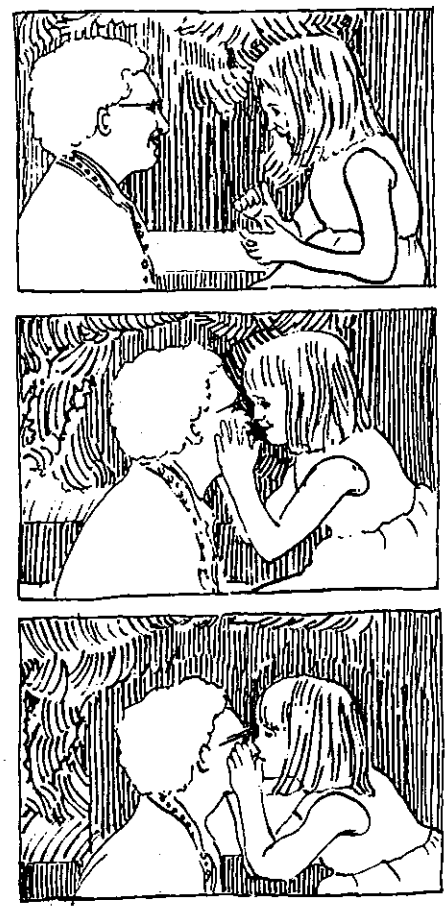
- Sturdiness: the tripod should be as heavy as you can carry. The heavier it is, the less the risk of camera shake. Set the tripod up and shake it to see how firm it is.
- Type of head: a ball and socket head or a pan and tilt head is available. Think about what you will use it for, the weight of your camera and the ease of adjustments to decide which head to buy.
- Adjustability: look for a tripod that can be set to a wide variety of different heights. Some tripods cannot be set to very low levels.

Motor drive: A motor drive winds on the film after each shot and is used to take a lot of pictures in quick succession — where scenes and subjects change rapidly. Ideal for example of a moving subject, candid shots or at a sports event.

Some cameras have a slower type of motor drive (called an auto-winder) built in. A separate motor drive can be fitted to an SLR camera. It lets you take between two and six pictures per second but the unit can also be set to fire single frames.

What to look for in a motor drive:

- How fast can it take pictures — how many frames can it take each second?
- Does it have automatic rewind to help you change films quickly?



Cable release: It is easy to jar the camera when you press the shutter release. To prevent this, use a cable release. This allows you to fire the shutter without touching the camera which is especially important for long exposures.

What to look for in a cable release:

- A long, flexible cable is best, but a short, cheaper cable can also be useful.
- Buy a cable with a locking device if you want to take very long exposures.

Electronic Flash

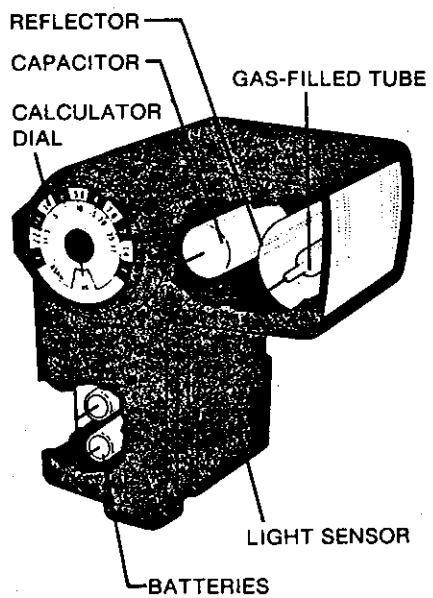
An electronic flash will help you take a well-lit picture on the darkest night or the dullest day.

There are two types of electronic flashes: manual and automatic. A manual flash always puts out the same amount of light. An automatic flash puts out different amounts of light, depending on how close you are to the subject of the picture. Light from a flash lasts no longer than 1/100 of a second and can be as short as 1/50,000 of a second for an automatic unit.

How a Flash Works

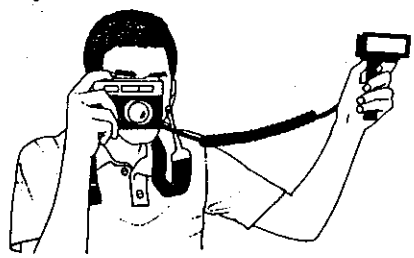
Electronic flashes are usually powered by two or four AA (1.5 volt) batteries. After each flash of light, the unit takes a few seconds to recharge before it has enough electricity for the next flash of light.

The light from the flash spreads out and dims as it travels away from the flash. A subject 2.5m from the flash receives four times more light than a subject 5m from the flash.



How to Use Your Flash

A flash mounted on top of the camera gives straight, head-on lighting that leaves your subject looking rather flat. If you use an extension synch cord, you can hold the flash off to the side and above the camera to get a sort of sidelight, which makes your subject look more normal.



The timing of the aperture opening of your camera must be synchronized with the flash going off. If you use a shutter speed that is faster than the flash synch shutter speed, part of the picture will be cut off. The fastest shutter speed that can be used will be marked on the shutter speed dial. Look for a lightening bolt arrow or a speed that is in a different colour.

There are a great variety of flashes and cameras. Many of them work in slightly different ways. Read the instructions that come with the flash and with the camera and learn how they work together.

LENSES

As a refresher – camera lenses are known by their focal length, which is measured in millimetres and which is usually marked on the front of the lens barrel. The focal length is the distance from the optical centre of the lens to the film when the lens is focused on a distant subject. The focal length determines the magnification of the lens. The longer the focal length, the greater the magnification. A lens with a focal length twice as long as another lens has twice the magnification.

Standard Lenses

The standard or normal lens usually comes with a camera. Normal means that it sees your subject in the same perspective that your eyes see it. For 35mm cameras, a 50mm lens is normal. If purchasing a new SLR camera, consider buying just the body and a more versatile lens than the standard lens. If you already have a standard lens, fully explore the capabilities of it before buying additional lenses.

Telephoto Lenses

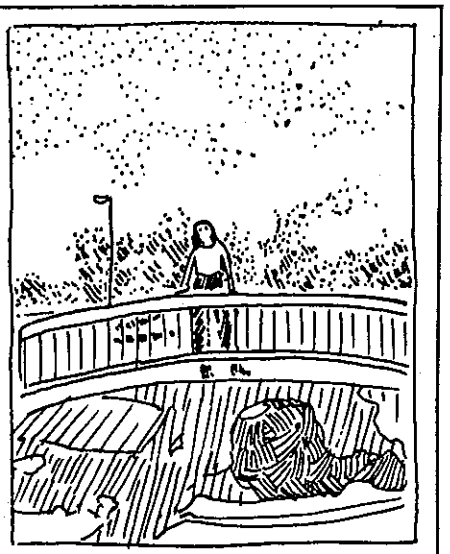
Telephoto lenses make distant subjects seem closer. They compress distance and diminish apparent perspective. Using the maximum aperture, shoot through foreground material — grasses, leaves, sheer curtains. The shallow depth of field makes the foreground soft and blurred in contrast to the sharp subject of interest.

These lenses can have varying degrees of power or magnification. A 135mm lens has a magnification of almost 3x. A 200mm lens gives 4x magnification, and a 300mm lens gives 6x magnification. Generally, the longer (in focal length) and more powerful the lens is, the less light it lets in. This lens is great for candid or wildlife shots.

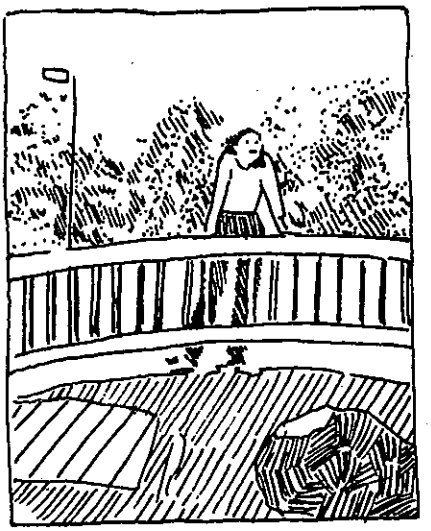
Wide-angle Lenses

Wide angle lenses make subjects appear farther away than they really are. In doing so, they let you include more of a scene without moving. A wide-angle lens is great for taking pictures of things like landscapes, buildings or bridges.

The focal length measurement of wide-angle lenses is less than that of a normal lens. A moderate wide-angle lens might be 35mm, while an extreme wide-angle lens would be 18mm or even less.



28 mm Wide-Angle Lens



50 mm Normal Lens

200 mm Telephoto Lens

Taken from the same spot, these three pictures show the angle of coverage for a wide-angle, normal, and telephoto lens.

When using a wide-angle lens, pay attention to the foreground. A strong, relatively large, foreground object helps the viewer to judge the scale of the other objects in the picture. Holding the camera vertically reduces the width of the picture but creates a tremendous sense of depth.

If you want to show the main subject in a typical environment, a wide-angle lens is a good choice. To photograph a farmer in front of the barn or some wild flowers growing from a rock crevice, move in close to the subject to give it prominence while capturing the setting as well.

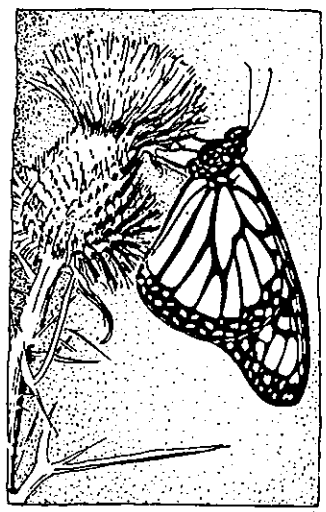
Zoom Lenses

Zoom lenses let you stand in one place and zoom in on your subject. Without moving you can go from a full figure shot to a closeup of the face. You can make minute adjustments over its entire range. Although other lenses have one focal length or magnification, zoom lenses feature a range of focal lengths. A typical zoom lens has a focal length range of 80-200mm. This is equivalent to a magnification range of 1.5-4x. There are telephoto zooms, wide-angle zooms, and wide-angle-to-telephoto zooms.

Macro Lens

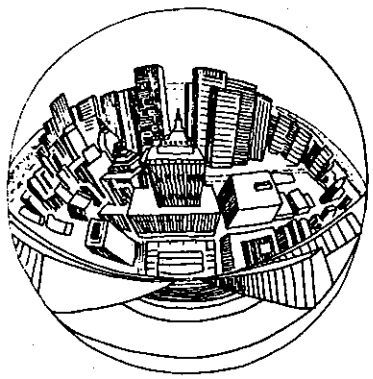
Most camera lenses will focus only as close as two or three feet. A macro lens or close-focusing lens allows you to focus within inches from the subject. They are excellent for photographing flowers, insects, stamps, coins or documents. The depth of field is very shallow so it is important to focus carefully on the main subject and keep the camera still. For camera steadiness and sharper results, use a tripod.

If you only take occasional close-ups, consider an alternative to a macro lens. The simplest, and least expensive, is a set of close-up lenses or rings. They look like filters and screw onto the standard lens. Bellows and extension tubes are hollow and fit between the camera body and the lens. Some loss of image quality will occur with these accessories but they are more economical than a macro lens.



Fisheye Lens

A fisheye lens is an ultra-wide angle lens. With a focal length of 6 to 17 mm it has great wide-field coverage. Some can take in 180° which is more than the unaided eye can see. As a result, the image is distorted with curved lines created from straight lines within the image.



Field Trip Preparations

A successful photography field trip, whether half a day or a long vacation, takes planning.

Before the Trip

Decide on your minimum requirements for camera equipment and clothes. Don't weight yourself down with extra clothing and equipment or you will quickly become exhausted from carrying them and lose your interest in taking great photographs. Remember to take spare batteries for your camera and a nutritious snack for yourself (fruit, nuts or raisins).

During the Trip

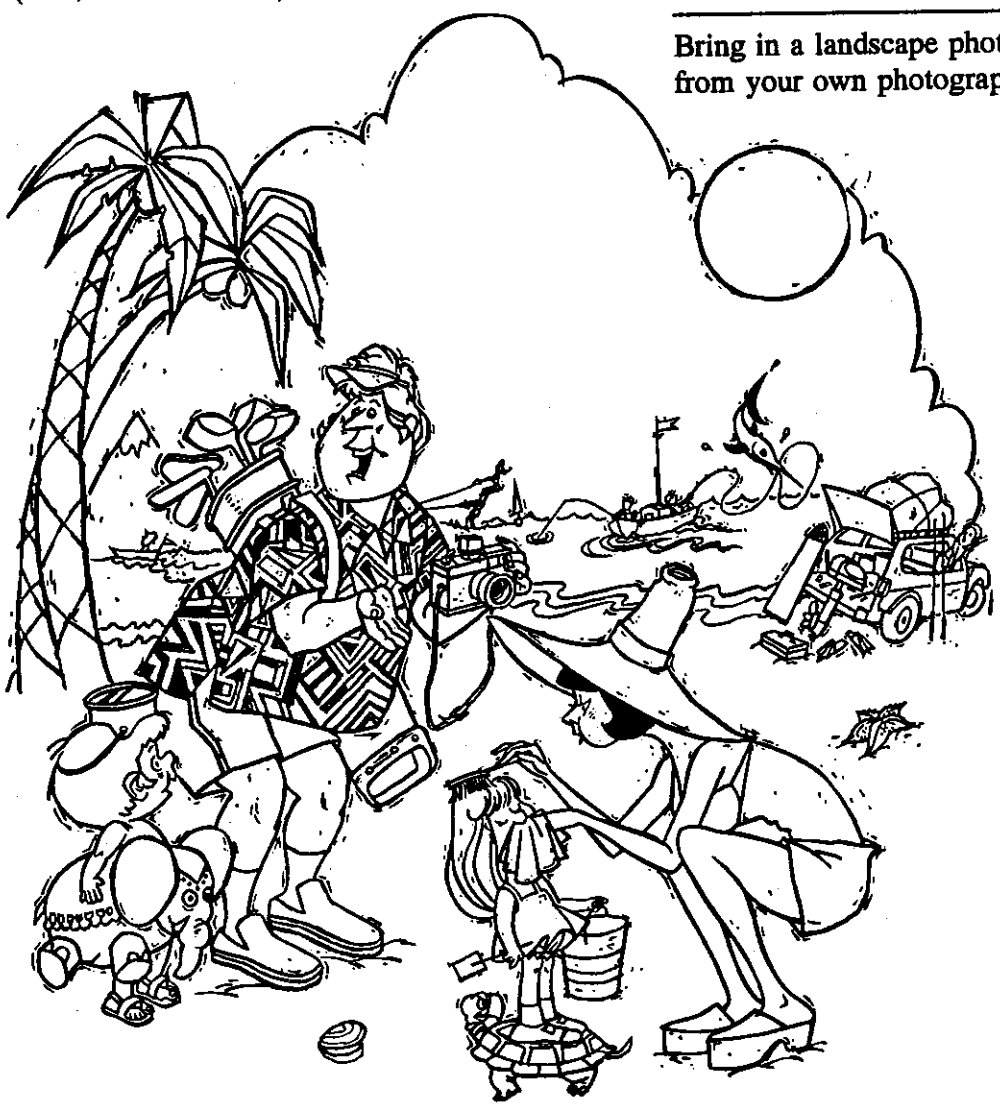
Go on a field trip with a purpose in mind – the subject you would like to photograph. But keep your mind open to explore other subjects.

After the Trip

Evaluate your negatives or slides as soon as they are processed. What were your successes or failures (from a visual and a technical viewpoint) – and why? Did you use all of the equipment you took? Did you need anything that you didn't take?

Before The Next Meeting

Bring in a landscape photo that you like from your own photograph collection.



THE LIE OF THE LAND

Roll Call

Show your landscape photo and explain why you like it. Who is your favourite landscape artist?

Tips on Taking Landscape Pictures

Photography involves getting an accurate image on film. Good pictures are also art. And like most art forms, you have to know the rules — how to focus properly, correct lighting procedures, composition, colour balance — in order to make good pictures.

But you have to be prepared to stretch the rules, even break them and see what effect it has on your pictures. Here are some suggestions.

- Pay attention to colour. Bright colours can make a subject stand out, like a boy in a red shirt playing baseball on a dirt field. But a white barn fades away into a cloudy sky.

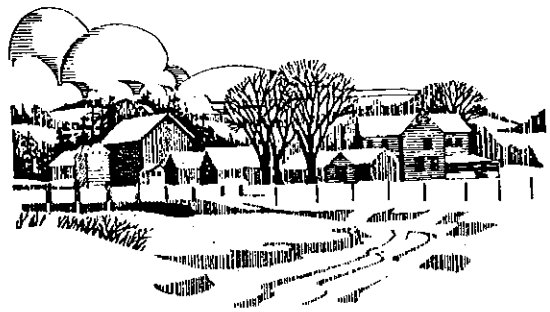
  But pictures with few contrasting colours are often delicate and muted. Mists from fog or rain subdue and blend colours. Pictures with low contrast seldom have a dominant subject to display but they can be very strong pictures all the same.

- Consider the rule of thirds. A picture may be more interesting if the horizon falls either one-third from the bottom or one-third from the top or if your subject takes up one third of the picture and the background takes up two thirds.

- Composition isn't an exact science. the rule of thirds doesn't always create the most dynamic composition. See what happens when you break the rule of thirds. What do you have to do to provide balance in your picture? Consider the feeling you want to portray, objects present and their relationship to each other.

- You can use a road, a fence or a line of trees to draw people's eyes into the picture. When you look at a picture your eye tends to follow the lines in it, so put your main subject at the place where the lines lead your eye.

- Don't be put off taking landscape photos by bad weather. Rainy days give soft effects and mist or fog can veil out unwanted background details. Use an umbrella or cover your camera with a plastic bag to protect it from the damp. .



- Photos taken in dull weather conditions look extremely effective if you include a splash of bright colour, such as someone wearing brightly coloured clothes.

- A piece of aluminum foil can be used to reflect light onto a dark subject.

- Use a wide-angle lens to shoot flowers and plants close up to show some detail as well as their habitat in the background.

- To show the presence of wind, use a slow shutter speed. This will blur the movement of leaves, flowers and branches, suggesting a windy day.

- Overcast days often improve the richness of colours in flowers and other natural things.

- City dwellers, remember that the landscape includes manmade structures as well. If you want to do some natural landscape shots, and live in a city, search for parks, ravines, vacant lots, streams, big backyards and zoos. You could also consider macro or close-up photography of plants.

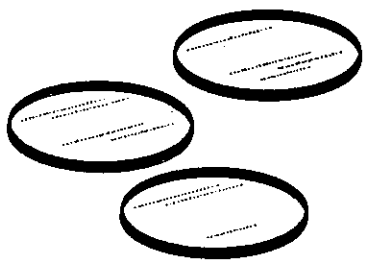
- Think small. If you want to take a closeup photograph you will need to work with a small depth of field, which can be as small as a centimetre or less. Movement is also greatly exaggerated at close range. A faint breeze can cause a flower to flutter in and out of focus. This problem is aggravated if you are using a slow-or medium-speed film (ASA 25-100) to capture fine details and a small aperture to get greater depth of field. In natural light, the combination requires slow shutter speeds.

A plant can be made to stand still by making a simple windscreen out of a couple of stakes and a plastic bag. If necessary, use a piece of white cardboard as a reflector or rig a piece of cloth on broomsticks to serve as a diffusing canopy. You can use flash in close-ups as either the main light source or for fill. It will be softest when diffused or bounced off a reflector.

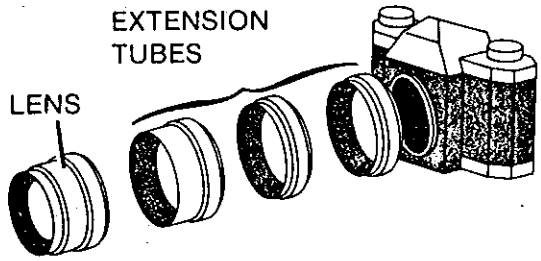
If you have an SLR camera, you can consider using:

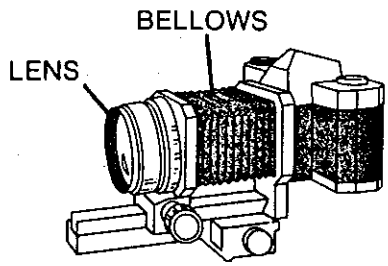
- Close-focusing or macro lens — specially designed to work at close distances. Many newer zoom lenses also have similar close-focusing capabilities.

- Close-up lenses — filter-like attachments that screw onto your camera's lens. They increase its magnifying power and decease its minimum focusing distance. They are often used for flowers, fungi and plants.



- An extension tube or bellows — which fit between the camera and its lens to permit close focusing.





- Tripod — necessary for long exposures but helps guard against camera movement during any shot. Ideally the tripod should have a reversible centre post for low-level subjects.

- Cable release — helps guard against camera movement on a closely focused shot.

Before The Next Meeting

Bring in a wildlife photograph that you like. If you don't have one in your collection, select one from a book, magazine or newspaper.

ANIMAL HOUSE

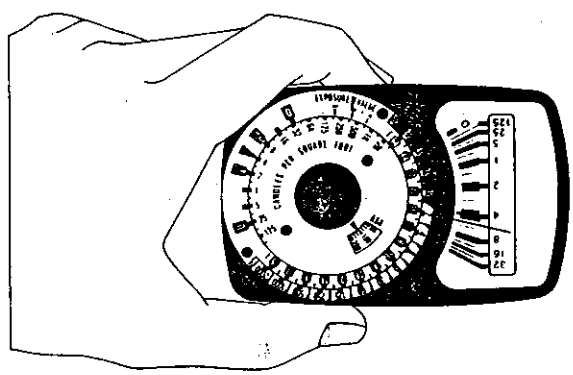
Roll Call

Show the wildlife photograph you have selected and explain why you like it. What kind of wildlife would you most like to photograph?

Using an Exposure Meter

Exposure meters measure light and recommend several combinations of shutter speed and aperture for that scene.

Most automatic and adjustable cameras have built-in exposure meters and this includes most 35mm cameras. If your camera is automatic, you generally set either the aperture or the shutter speed; the exposure meter gauges scene brightness and then sets the other adjustment automatically. An adjustable camera with a built-in meter requires you to set both adjustments, but the meter tells you when you've got the exposure right. Until built-in meters were made, hand-held meters were almost always used with an adjustable camera. To use a handheld exposure meter, first set the film speed on the meter. Then you simply aim the light-sensitive window at the scene to get recommendations for camera settings.



Even if your camera has a built in exposure meter you may want to use a handheld exposure meter in certain situations. When the background of your photograph is dark but you want a lighter object in the foreground to be properly exposed use a handheld meter. In this case you would take an independent light reading of the object in the foreground and set your camera to the recommended setting.

Wildlife Shots

Before photographing wildlife, think about how they seek food, obtain shelter, avoid predators, reproduce and rear their young. Read about animals that interest you. This will help you to decide where to look for wildlife and what behaviour to expect. Take pictures that tell a story about the wildlife — habitat, group and individual behaviour, portrait, etc.

Wear earth tone clothing and cover bright metal objects to reduce reflections which may startle animals. Look for some natural cover that still gives you good visibility. If possible, set your camera up on a tripod in a location that gives you clear visibility, natural cover to prevent your subjects from sensing your presence and keeps you a safe distance from any real danger. If you can't find any natural cover, build a blind and stay there for several hours.

Start photographing wildlife common to your area — mice, rabbits, raccoons or deer. You will gain experience in anticipating how other mammals may behave and it will better prepare you to capture them on film.

Resist the temptation to always fill the frame with the animal. More distant shots, including some habitat, may tell more about the animal than close-ups.

Be careful not to make sudden movements or loud noises. Communicate that you are not a threat. Try some sounds, calls or actions that the animal will recognize to put it at ease.

If you can't find any wildlife, watch for signs of wildlife. Tracks, droppings, rubbings and nesting areas can all be interesting subjects.

Don't overlook birds, insects and amphibians. Although they may be more common they can also provide challenging subject matter.

Before The Next Meeting

Bring in a candid photograph that you like of a person. Select one from your own photograph collection or a book, magazine or newspaper.

SAY CHEESE

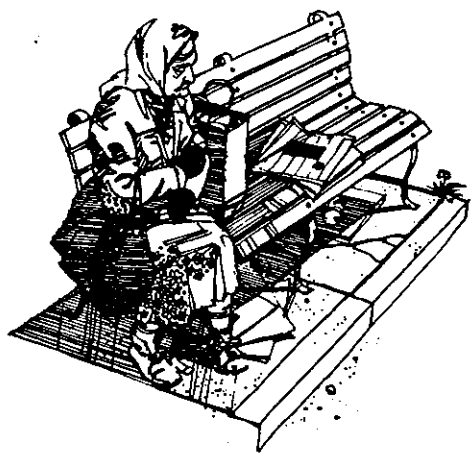
Roll Call

Show the photograph you selected of a person and explain why you like it. Can paintings be as 'candid' as a photograph?

Candid Photography

The subject does not prepare for a candid photograph, but the photographer must. Good candid pictures of people don't just happen. They require planning and good timing.

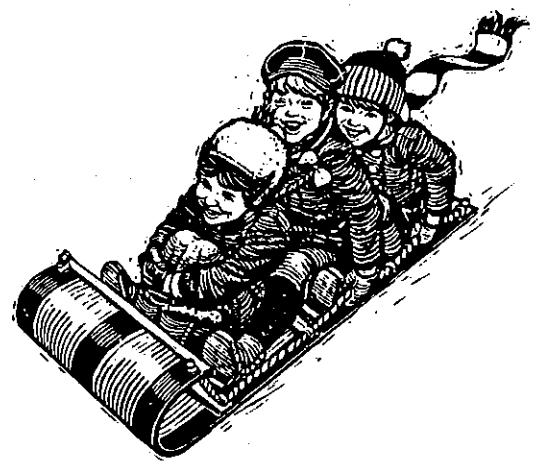
- Choose a lens that is easy to work with and hang the camera around your neck.
- Set the shutter speed you expect to use for most of your pictures. Then determine the lens openings you will need for sunny and shady locations. Selecting a medium depth of field gives you a margin for error in focusing, which is very useful when shooting quickly.
- Start with people with whom you feel comfortable and as you feel more confident, photograph people you don't know but whom you find intriguing.



- Let people see you. If you try to hide or sneak around, you will have fewer opportunities. Anyone who doesn't want to be photographed will tell you or move away.
- Anticipate a particular moment or activity and release the shutter at the moment a person becomes central to the design or has a captivating expression.

Photographing Children

To take great pictures of children — have fun with them. If you line them up or have them sit in front of the camera, good photographs will be few and far between. Don't contrive situations for picture taking or the children will appear tense and stiff. Take photographs wherever the children are doing whatever has captured their attention — for the moment.



Try shooting sequences of children to give a complete story. Use different techniques and points of view for the sequence. Above all, keep your attitude loose and free, going with the flow.

Posed Pictures

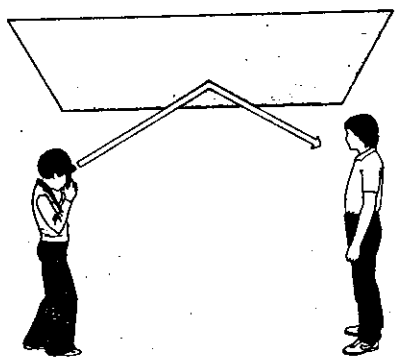
Both the subject and photographer have to prepare for a posed photograph. In a formal picture the subject and his/her surroundings are strictly arranged by the photographer. In an informal picture the subject has general instructions but responds to the surroundings and the photographer. The photographer must recognize the best moments to shoot.

- It is important that the photographer and subject both be at ease.
- For close up portraits the eyes are most often the important visual element. If using colour film be sure that intense colours don't divert the viewer's attention to the lips or the clothes.
- Placing the eyes above the centre of the picture is often best for vertical shots. Place to one side or the other for a horizontal format.
- To portray anticipation, excitement or pleasure show eyes looking up. Eyes looking down suggest embarrassment, modesty or sadness.
- Shoulders and arms can be used to create oblique lines, adding dynamics to the photograph.
- Use quality of light and direction of light to help portray the personality of the subject.
- Be flexible. Change or ignore guidelines when the subject or the moment requires it.
- To avoid stereotyped portraits, photograph subjects in their own environments — a cook in the kitchen, a farmer leaning against a tractor, a gardener in a greenhouse. Or pose the subject in a situation that seems to be contradictory — a wrestler holding a baby, a grandmother on a motorcycle, a toddler in an office.

Bounce Flash

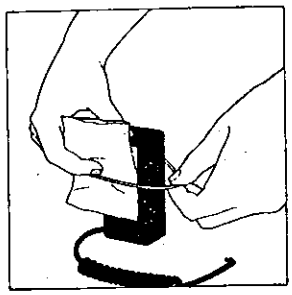
Direct flash light tends to be rather harsh and throws strong shadows, which are not very flattering in portraits. The light can be softened by bouncing or diffusing it.

Bouncing flash means directing the flash at a light-coloured wall or ceiling so it will bounce on to the subject. Use a separate flash unit or one with a tilting head.



When using bounce flash be sure to calculate the distance the light travels as it bounces and not the straight line distance to the subject.

Diffusing is a good way of softening built-in or non-adjustable flash units. You can buy a diffuser attachment or cover the flash with tissue or tracing paper.



Flashes are also useful outdoors for portrait shots. If the sun casts strong shadows or your subject is back lit, you can use fill-in flash to throw extra light on to the subject's face.

Fill-in flash needs to be quite gentle, so that it does not create an unnatural effect. Soften your flash with a diffuser or by holding a white handkerchief over the flash.

The Beauty of Black and White

In a black-and-white photograph, the colours produced by light are recorded on film in terms of their intensity or brightness and in the final print we see them as black, white or shades of grey.

Many people believe that portraits of people are best done in black and white because qualities that do not depend on colour can be better portrayed — for example, highlights and shadows, contrasts between lightness and darkness, and certain shapes, textures and planes.

For these reasons, poses and lighting arrangements that may appear quite ordinary in a colour photograph can become very striking when shown as a play of light and dark tones.

Before The Next Meeting

Bring in your favourite action photograph. Select one from your own work or a magazine, book or newspaper.

ACTION!

Roll Call

Show your action photograph and explain how motion is shown in the still photograph.

Action Shots

There are several different ways to take an action photograph that give different effects: some techniques halt movement so that the picture is as sharp as can be, other techniques make the movement blurred.

Freezing Movement

To freeze actions you need to use fast film and fast shutter speeds. On manual cameras the faster the action, the faster the shutter speed you need to set. If you have an automatic camera, you can get a fast shutter speed if you take the picture in bright light.

A flash will freeze quick movements in dark lighting conditions, for instance in an arena or gym, but remember that you can only use flash on subjects within a few metres distance.

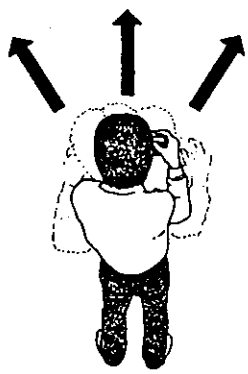
Some movements have a "peak of action," where everything stops momentarily, for instance at the top of an upward leap. To capture this, pre-focus on the place where the peak will occur and wait for the right moment. To do this, you have to know your game and plan to be at the right spot at the right time.

Panning

Panning is another way of freezing movement. It means swinging the camera around to keep a moving subject in the viewfinder and taking a shot as you move. On a panned photo the background will appear as blurred streaks, giving an idea of speed. Here's how you do it.

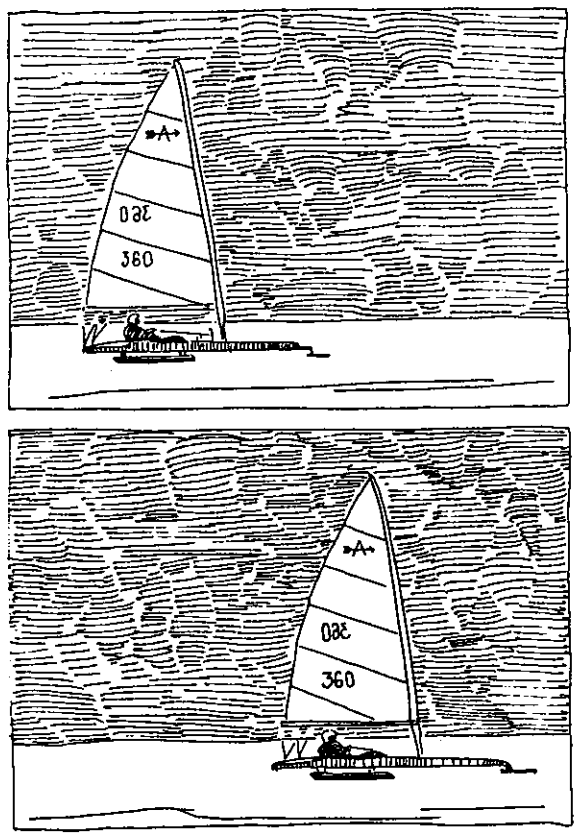
1. Hold the camera firmly by tucking your elbows into the sides of your body. Pre-focus on the point where you want to take the picture. It helps to choose a point which has a clear landmark.

2. As the subject moves across your line of vision keep it in camera view by swinging around smoothly from the waist. Take a photo when it reaches the point you chose earlier and focused on. Continue moving to follow the subject through.



Composition of Movement

Composing a scene with a moving subject is not different from composing a still scene, except for one thing. Usually a picture will be more pleasing if the subject appears to be headed into the picture, rather than out of it. Give your subject some room to continue in the picture. It's especially important when panning.



Rotating the Lens

Some long lenses come with a collar attached so the lens, rather than the camera body, can be screwed onto a tripod. The collar will allow you to rotate the lens and camera from a horizontal position to a vertical position without touching anything else. Although not meant for this purpose, try this rotation movement during an exposure. This will result in concentric circles of colour.

Oblique Lines

Oblique lines — lines that angle across the photograph — suggest movement. When photographing people running, watch for moments when their bodies are tilted, leaning forward or into a curve. Capturing the imbalance creates a strong sense of movement.

Shooting a Sequence

If you use slide film you can portray movement by projecting a sequence or series of shots. Take lots of photographs and select the images and the order that clearly portray the action. The speed at which the sequence is projected for viewing should reinforce the type of movement — fast and snappy or slow and graceful.

Before The Next Meeting

Decide on a location for the special effects meeting and organize any equipment or props you will need.

SPECIAL FX

Roll Call

Why do you think we are trying some special effects photography?

Painting With Flash

Yes, you can take a picture in the dark. Mind you, it has to be really dark so that the only light you use comes from your flash.

It's known as painting with flash and all you have to do is walk around and illuminate different parts of the scene, one at a time, while the camera's shutter is open.

Painting with a flash is an ideal method of lighting large interiors, such as auditoriums and churches. You can also shoot outdoors at night, making a snow or beach scene look as if it were bathed in moonlight. And you can be in the picture too, as many times as you want. Simply fire a flash at yourself in one part of the scene and then do it again in another spot in the picture.

You will need:

- A tripod
- A cable release that will let you leave the shutter locked open on the B setting for several minutes
- Slow-speed film (to protect against overexposure if there is any light at all)
- A flash unit. (It is not necessary to have the flash wired to the camera because you will be operating it manually.)

How to do it:

- Plan to light the scene as evenly as possible.
- Avoid overlapping flashed areas and stay the same distance from all the areas you are illuminating except where you might want to move in slightly to highlight a centre of interest.
- Use the average flash-to-subject distance to determine the correct f-stop as you normally would with a flash in manual mode.
- If the scene is so large that you have to set off the flash inside the scene itself, hide behind furniture, cars or shrubs so that you won't appear as a ghostly silhouette in the final picture — unless of course, that's the effect you're after. Always be aware of the camera's position and aim your flash unit away from the lens to avoid flare.

Electronic Flash

When you are painting with a flash and leaving the shutter open for several minutes, it is the duration of the burst of light from the flash which determines the exposure, not the shutter speed.

First you need a guide number, which is determined by the power of the flash and the sensitivity of the film. Sometimes you can figure out the guide numbers by using a table or calculator dial on the back of the flash unit. Or the guide numbers will be supplied by the flash manufacturer.

Once you have the guide number, you divide the flash-to-subject distance (in feet) into the guide number to find the f-stop you need for a good exposure.

For example, you might be using a film with a speed of ISO/ASA 100 and a flash unit that has a guide number of 80 for film of that speed. If your subject were 10 feet away, you would need an aperture of f/8 (80 divided by 10). If the flash-to-subject distance were 5 feet, you would use f/16 (80 divided by 5).

Multiple Exposures

Two or more images superimposed on the same frame of film is called a multiple exposure. The results can be extraordinary.

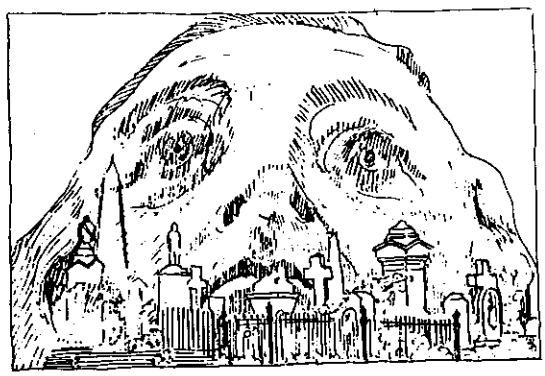
The exact mechanics of how to do this will vary from camera to camera, so consult your instruction manual. What you need to know is how to keep the film in place while you cock the shutter. This allows you to take another exposure without advancing to the next frame.

On some cameras, there is a special multiple exposure button, on others you press the film release button while cocking the shutter. Another method is to cock the shutter and then rewind the film by one frame.

When making multiple exposures you must be very careful not to overexpose the shot. Each shot should receive less exposure than the subject requires. The total amount of light reaching the film shouldn't exceed, and may be under, the correct amount of light for the dominant subject. Use the following chart as a guideline but, regular practice of the technique will make you more familiar with appropriate exposures.

No. of Exposures	No. of f-stops to decrease each exposure
2	1
3	1⅓
4	2
6	2½
8	3
16	4

Generally, you will want to use a slow or medium speed film (ASA 25 to 125). Subjects can complement or contrast each other. Pay particular attention to colours and light and dark tones. A tripod is necessary for precise alignment of images.



GLOSSARY

Angle of view: the amount of a scene that a camera can fit into a photo. This varies with different lens types.

Aperture: a hole behind a camera lens, surrounded by a circle of moveable metal blades. The hole size can be enlarged or reduced to vary the amount of light that can pass through it on to the film.

ASA: initials standing for the American Standards Association. A system of showing film speeds.

Autofocus: an automatic focusing system, which bounces a beam of infra-red light off a subject in front of the camera lens, measuring its distance from the camera. The camera focus is then automatically adjusted.

Bellows unit: an extension which can be fitted between a lens and a camera body. Its length can be extended or reduced to vary the focusing distance of the camera, so that it can focus on close-up subjects.

Bracketing: taking several shots of the same subject using different exposure settings, in order to be sure of getting at least one correct exposure.

Cable release: an extension cable which can be connected to the shutter release button on a camera. A switch on the end of the cable allows you to take a picture without touching your camera, avoiding camera shake.

Close-up lens: a lens that looks like a filter which enables a camera to focus on close-up subjects. It can be mounted in front of an ordinary camera lens.

Composition: The arrangement of objects or elements which appear in a picture.

Darkroom: a light-tight room used when developing and printing film.

Depth of field: The distance in a photograph from the nearest point that is in focus to the furthest point away that is still in focus.

Developing: the process of making an image appear on film or on photographic paper.

Diffuser: translucent material, such as fabric or tracing paper, placed in front of a light source. It has the effect of spreading out the light and softening its effect.

DIN: initials standing for Deutsche Industrie Norm. A system of showing film speeds.

DX coding: a pattern of metallic squares on a 35mm film cassette case, which some cameras can read to enable them to automatically set the film speed.

Enlarger: a vertically mounted projector, which is used to enlarge negatives and project them on to photographic paper to print a picture.

Exposure: the total amount of light that reaches the film in a camera. This is controlled by the brightness of the subject, the shutter speed and the size of the aperture.

Extension tube: a tube which fits between the lens and the body of a camera, to allow the camera to focus on close-up objects.

Fill-in flash: a technique using flash outdoors to soften shadows cast by strong sunlight.

Film: a flexible transparent base with a coating which reacts to light, and which is used to record a photographic image.

Film speed: a measurement used to describe how quickly or slowly a film reacts to light.

Filter: a tinted glass or plastic disc or square which fits on to a camera lens. A filter alters the light reaching the film, for instance to enhance colour or achieve an unusual effect.

Flash: an instrument which creates an artificial burst of light, to illuminate a dark scene so that an image can be recorded on film.

Focal length: a lens measurement - the distance needed between a camera lens and the film in order for a distant object to be sharply focused.

Focusing: making an image appear sharply on a film by moving the camera lens backwards or forwards.

F-stop: the size of a camera aperture is measured in numbers called f-stops. The smaller the f-stop number, the larger the aperture.

Hot shoe: a clip on the top of a 35mm camera for attaching a separate flash unit.

ISO: initials standing for International Standards Organization. A system of showing film speeds.

Lens: a curved glass or plastic disc which bends light rays coming into the camera so that they form an image on the film.

Light meter: a mechanism for measuring the amount of light coming from a subject.

Macro lens: a lens which can be used for magnifying subjects on very close-up shots or for normal photography. It can be fitted on to cameras which have detachable lenses.

Motor drive: an electric motor which winds a film on automatically and then triggers the camera shutter release to take another picture. Motor drives normally take 4-6 frames a second. A slower version is called an autowind (2-4 frames a second).

Negative: a photographic image on film where the normal tones are reversed - the light parts of a scene appear dark and the dark parts appear transparent.

Rangefinder: a focusing aid used on 35mm cameras. A double image or a split image is shown in the viewfinder until the camera is properly focused when only one image appears.

Safelight: a working light used when printing photos in a darkroom. It emits coloured light, usually red or orange, which does not affect photographic paper.

Self-timer: a camera mechanism which operates a camera shutter automatically after about ten seconds delay, to enable the photographer to move in front of the camera and appear in the picture.

Shutter: a barrier positioned behind the camera lens. When a picture is taken it opens to let light through. The speed at which it opens and shuts helps to control the amount of light allowed on to the film.

Single lens reflex camera (SLR): a camera with a built-in mirror system which enables viewing and focusing to be carried

out through the camera lens itself, instead of through a separate viewfinder. This eliminates any differences between the viewfinder and lens views.

Telephoto lens: a lens which makes objects appear closer than they really are.

Tripod: a camera support with three legs, which can be adjusted to different heights. A camera can be attached to the tripod head.

Unipod: a camera support with a single leg or pole, which can be adjusted to different heights. Very light weight. Most commonly used for fast action shots.

Viewfinder: a camera window you can look through to compose a picture before taking a shot.

Wide-angle lens: A lens which has a wider angle of view than an ordinary lens.

Zoom lens: a lens which has an adjustable focal length so that its effect can be varied.