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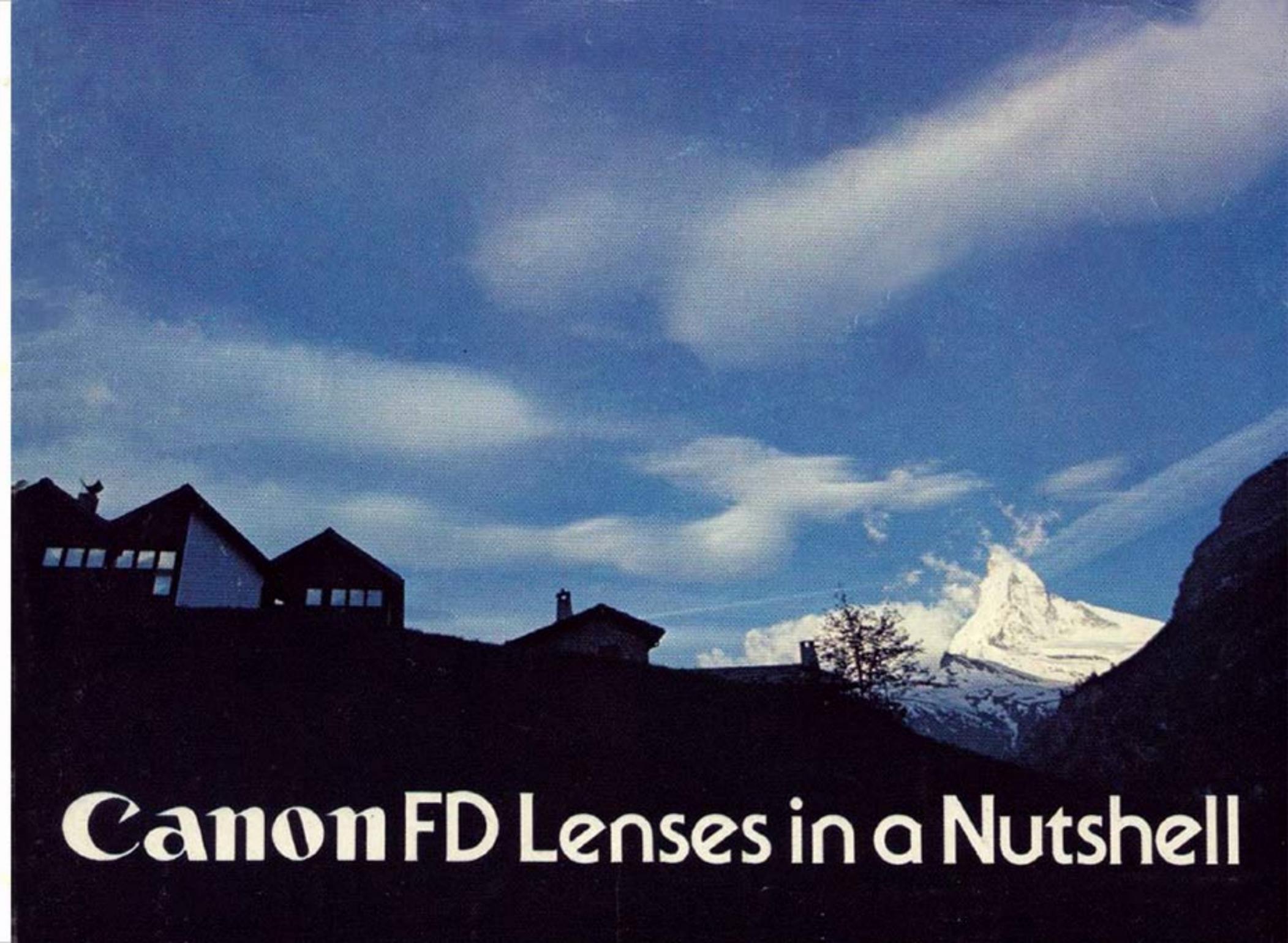
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Canon FD Lenses in a Nutshell



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As a visual form of information, photography is very much a part of modern life. It requires only a glance at ordinary, everyday phenomena — daily newspapers, billboards, advertisements and shop decorations to mention only a few — to realize that this is no exaggeration. In your hands, it can be an invaluable source of instant communication.

Canon FD Lens Series

Canon's renowned single-lens reflex cameras are designed to provide the most encompassing possibilities of expression in any photographic field. The FD lens series, the core of Canon's SLR system, is the key to this overwhelming task.

The FD lens series was originally developed with the Canon F-1 and has been expanding ever since. That all FD lenses featured the necessary signals for AE photography as well as full-aperture metering and automatic diaphragm from the very beginning is a monument to Canon's forethought. All FD lenses are as viable for Canon's latest SLR model, the A-1, as they are for the F-1 and all other recent Canon SLRs.

Included in the series are several special non-FD lenses: the 7.5mm Fish-eye, the FL 1200mm lens, the Macrophoto lenses, the tilt and shift lens and the Reflex Lens 500mm. Today the series consists of about 40 lenses. All are characterized by acknowledged excellence in resolution, contrast and color balance. But, far from resting on these laurels, Canon is continually expanding and improving the series to meet new consumer and technological demands.



The Need for Lens Interchangeability

You can use all of the nearly 40 Canon interchangeable lenses with any of Canon's SLR cameras. Their interchangeability stems from the fact that the more a photographer becomes involved in photography, the less satisfied he can be with only one, permanently fixed lens. The whole idea of interchangeable lenses is to relieve the photographer of the restrictions in his vision and creativity which he runs up against when using only one lens. When taking pictures of a large crowd indoors, for instance, it may be impossible to get everybody in a single shot unless a special lens for the situation is used. Dividing the people into two or three groups would mean a loss of impact over the original composition. But, with a wide-angle lens, you can take a picture of everyone together and retain the continuity of subject material. Furthermore, in a dark room, a fast lens without flash can be used to capture the natural effect of the room. Flash would bring light into the picture even in the dark and fail to reproduce the natural atmosphere of the room.

And if you wish to catch the natural expression of people unaware of the fact that they are being photographed or if you want to photograph something inaccessible, you can do so from a distance quite easily with

Types of Interchangeable Lenses

a telephoto lens.

Interchangeable lenses make it possible to make good photographs in numerous circumstances and under difficult conditions. And if you make the most of the lenses' individual characteristics and experiment in their applications, the creative possibilities are infinite.

With the eyes fixed straight ahead, the angle within which the human eye is able to see clearly is about 46° . The kind of lens capable of catching an image within this angle is called a standard lens, and it has a focal length of about 50mm.

Lenses having a wider angle of view are called wide-angle lenses. Among them, Canon classifies those lenses with a focal length of 20mm or less as super wide-angle lenses. A telephoto lens is one that has a smaller angle of view but a more magnified image than the 50mm lens. A telephoto lens of a focal length of 400mm or more is called a super telephoto lens.

There are also special lenses such as zoom lenses that enable free variation of the focal length, the fish-eye lens that covers a 180° angle of view, the tilt and shift lens enabling easy control of perspective and depth of field, and macro lenses for close-ups with high magnification, etc.

How to Select Lenses

When you select interchangeable lenses, you should have a good understanding of their characteristics and select the one most suited to your photographic purposes and conditions.

Some points to keep in mind are:

- Focal Length and Lens Speed
- Angle of View
- Perspective
- Depth of Field
- Subject and Shooting Distance

• Focal Length and Lens Speed

Focal lengths and lens speeds are clearly specified in the designations of all Canon FD

lenses. For instance, in the designation of the FD 50mm 1:1.4 standard lens, 50mm stands for its focal length and 1:1.4, usually expressed as f/1.4, is the lens speed or maximum aperture. As the focal length of the lens increases, the more magnification of the subject becomes possible; the shorter the focal length, the smaller the subject becomes in the picture. The magnification of the image compared to that of the standard lens can be obtained by dividing the focal length of a given lens by that of the standard lens. For example, the magnification of a 200mm telephoto lens is 4 times ($200\text{mm} \div 50\text{mm}$) the magnification of the standard lens.

The aperture, in conjunction with the shutter speed, functions to adjust the exposure by regulating the amount of light allowed in to expose the film. The larger the maximum aperture or the faster the lens speed, the more the light allowed in and the more the possibility of shooting subjects without flash in dimmer conditions. When the aperture is reduced by one f/stop, the amount of light let

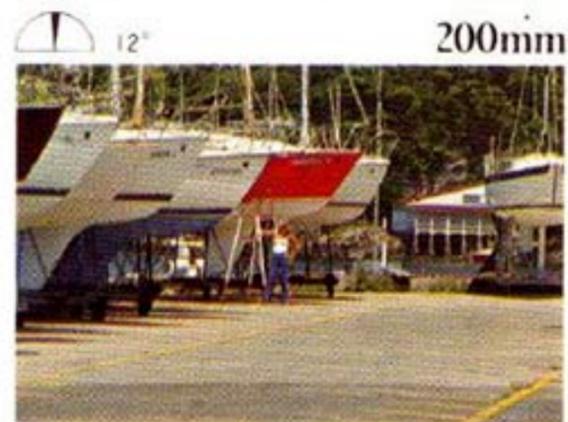
in is halved. Using an aperture of f/1.4 as the standard, the following reductions of light take place.

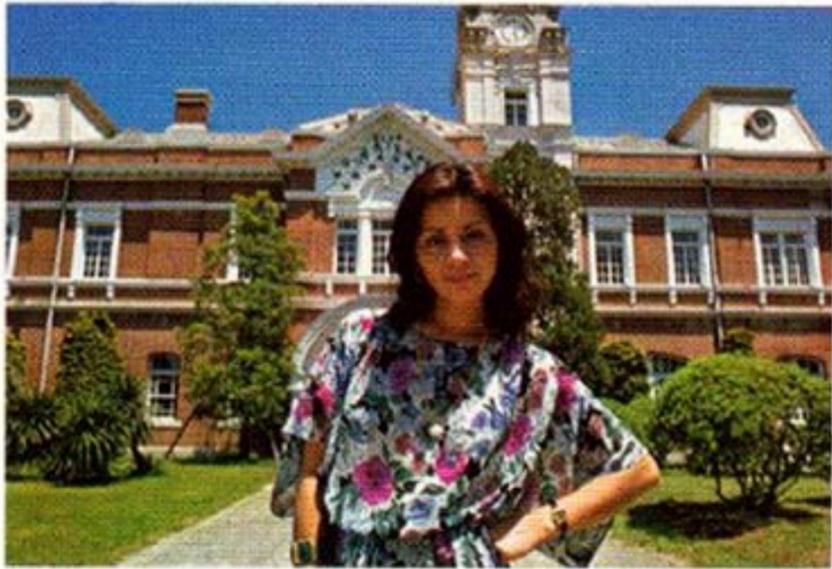
Lens Aperture	1	1.4	2	2.8	4	5.6	8	11	16
Amount of Light	2	1	1/2	1/4	1/8	1/16	1/32	1/64	1/128

• Angle of View

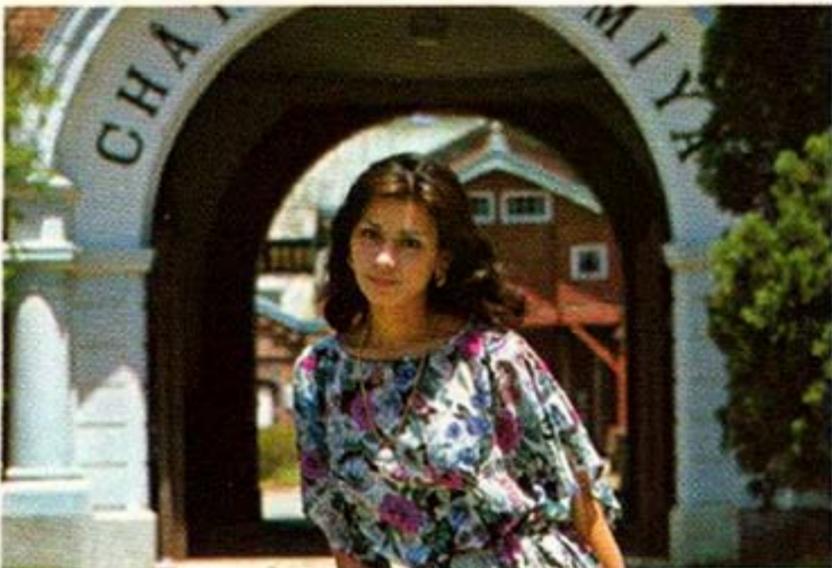
The angle of view changes according to the focal length of each interchangeable lens. It dictates the range of photography for each lens and the image size at a given distance. The series of photographs on the following pages shows the effect of focal length upon angle of view in a sequential change from the fish-eye to the super telephoto while the shooting distance remains the same. The shorter the focal length, the wider the range and the smaller the subject. Thus, with a lens of short focal length, such as a wide-angle lens, the angle of view is wide and the magnification small, while telephoto lenses have narrow angles of view and large images. Angle of view is the basic factor in the selection of a lens. It should be chosen in consideration of the subject to be photographed most often.

Changes in Angle of View





▲ 28mm



▼ 100mm

● Perspective

Is the photographic effect different when you make the main subject look the same size using a wide-angle and a telephoto lens? A careful study of the illustrations on the left will make the difference clear. When photographed with a wide-angle lens, more background can be seen as compared to the result of using a telephoto lens. In the upper one, the background is smaller and looks more distant. In the other, using a telephoto lens, the background is enlarged and so close to the main subject that there seems to be no distance between them.

The relationship between subject and background is called perspective. Perspective in photography is more stressed the wider the angle of the lens becomes, and less as the lens begins to approach the telephoto range. Consequently, when selecting interchangeable lenses, you should also remember that you can better control the way you express your subject by choosing a lens of suitable perspective qualities.

Lens perspective is also influenced by the shooting angle. If an adult photographs a child from eye level, the child's head looks larger and the feet smaller in the photographic image than in reality because of the perspective effect of the lens. For the same reason, if you photograph a building from street level, the upper part of the building will look smaller and appear to lean backwards.

To avoid distortion when using a wide-angle lens, the film plane and the subject should be parallel. If the subject is a child, the camera should be at the same level as the child's head for the picture to look normal. In the case of a building, it is impossible to shoot from a height equivalent to the middle of the building, so, if possible, you should try to place yourself at more of a distance from it. The farther you are from the building, the less the difference between the distances from the camera to the upper part of the building and the camera to the lower part of the building, so the less the noticeable distortion.

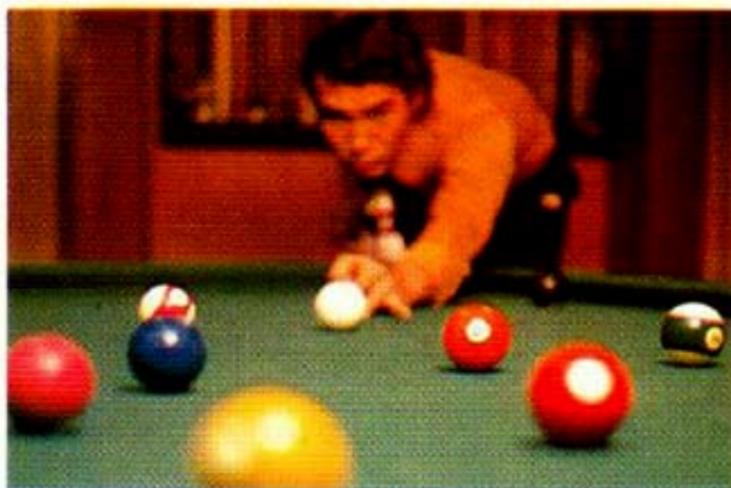
● Depth of Field

Another important factor of photographic expression is depth of field.

Depth of field is the range that is sharp in the photograph when you focus on a given subject. When the area of focus is wider, we say that the depth of field is deep as opposed to the contrary when we say it is shallow. The depth of field is easily controlled by adjusting the aperture.

Depth of field has the following characteristics:

1. With the aperture unchanged, the shorter the focal length of the lens, the deeper the depth of field. Telephoto lenses have relatively shallower depth of field. This is one reason why wide-angle lenses are used for snapshots.
2. The smaller the aperture, the deeper the depth of field. Therefore, if the lens' focal length remains unchanged, the depth of field will be shallower at f/4 than at f/11.
3. With the aperture remaining constant, depth of field becomes deeper the farther you are from the subject.

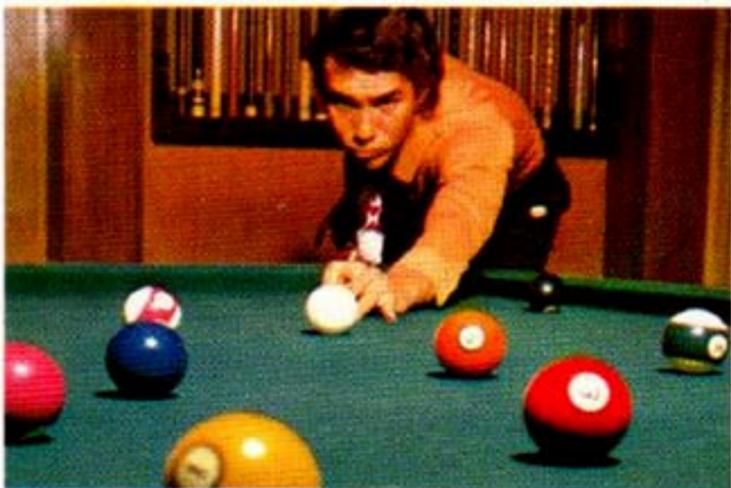


f/4



4. Generally, at any given aperture, when one point is focused, depth of field is shallower in the foreground and deeper in the background, but it becomes relatively shallower in both areas as the aperture is opened wider.

A shallow or increased depth of field can help to create additional dimensions in the picture. For instance, at a large aperture, it may be used to stress the subject by blurring the surroundings. At a small aperture, you can get a pretty sharp picture from the closest to the farthest distance.



f/16



● Subject and Shooting Distance

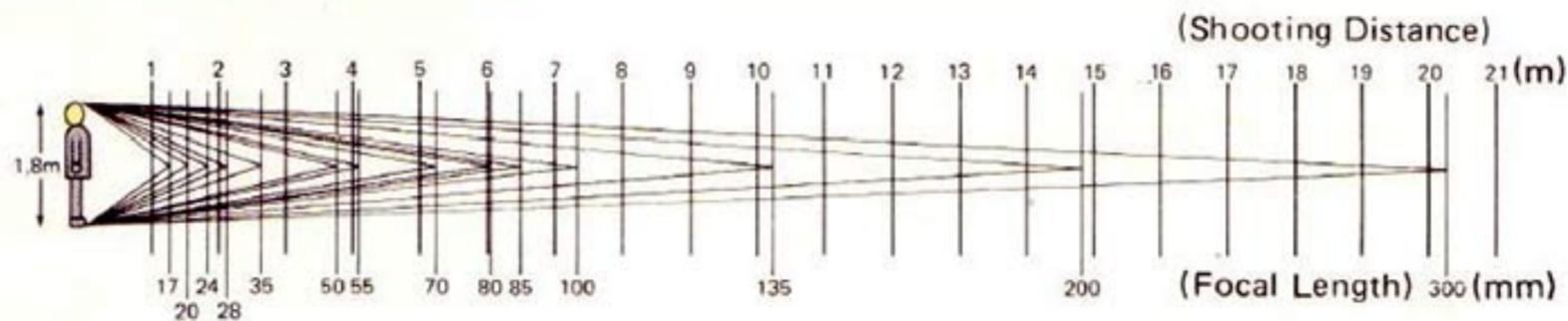
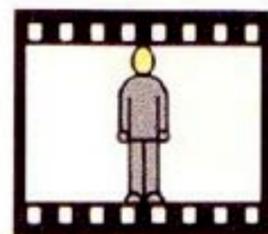
Select the lens most appropriate for your subject. Although there is a wide range of subjects, try to select a lens suitable for the coverage of photographic subjects and distances that you will be using most of the time.

A telephoto lens is especially useful in instances where distance from the subject is an advantage. While children tend to become affected when they know they are being photographed, you can catch them in all their innocence, unnoticed, from a distance with a telephoto lens. Telephoto lenses are also use-

ful in sports photography where obtaining pictures with variety and impact from a close shooting distance would be difficult.

Wide-angle lenses are convenient for photographing everything in a limited space, such as in a room, while the reliable standard lens is suitable for most ordinary situations.

Concerning the relationship between subject size and shooting distance, the chart below indicates the shooting distances for given focal lengths necessary for the subject to take up the picture frame.



*The height of the subject is 1.8m (6 feet).

*The camera is being held horizon-

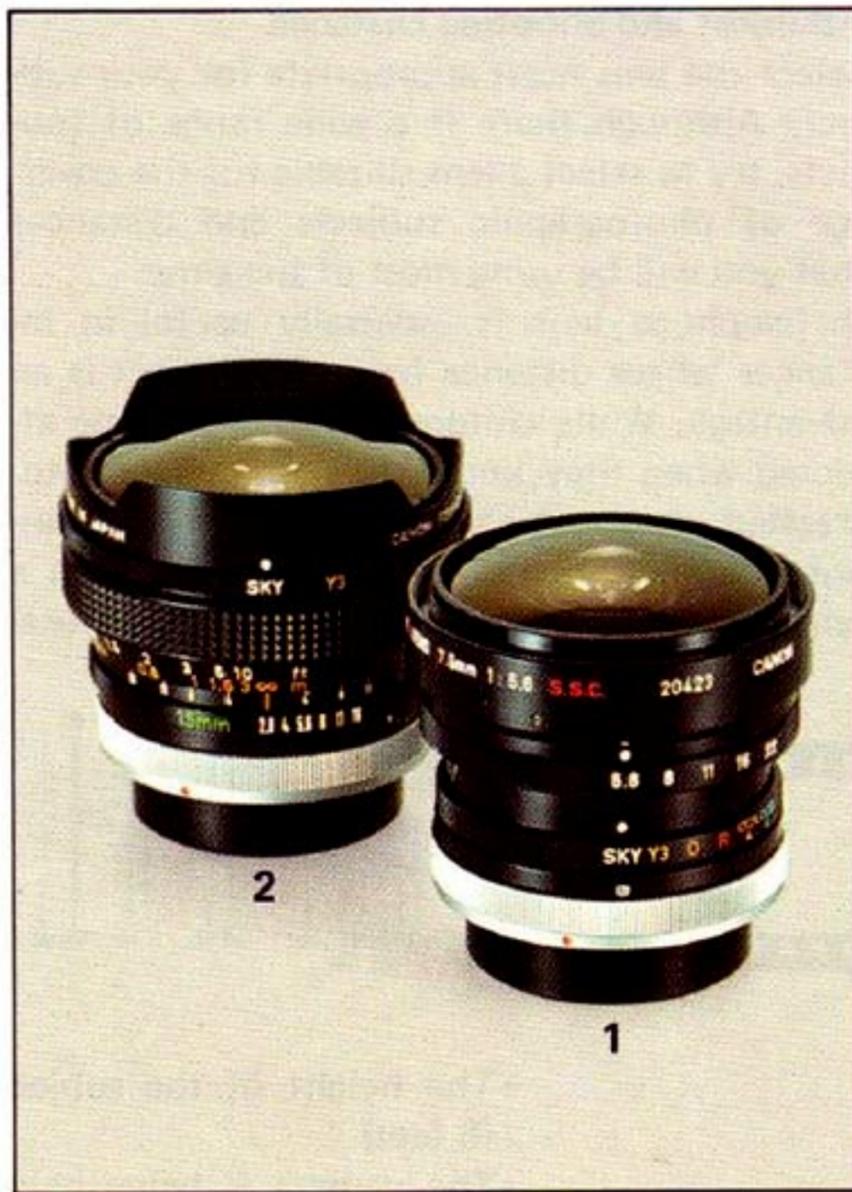
tally.

*The camera angle is equivalent to the center of the subject.

Fish-eye Lenses

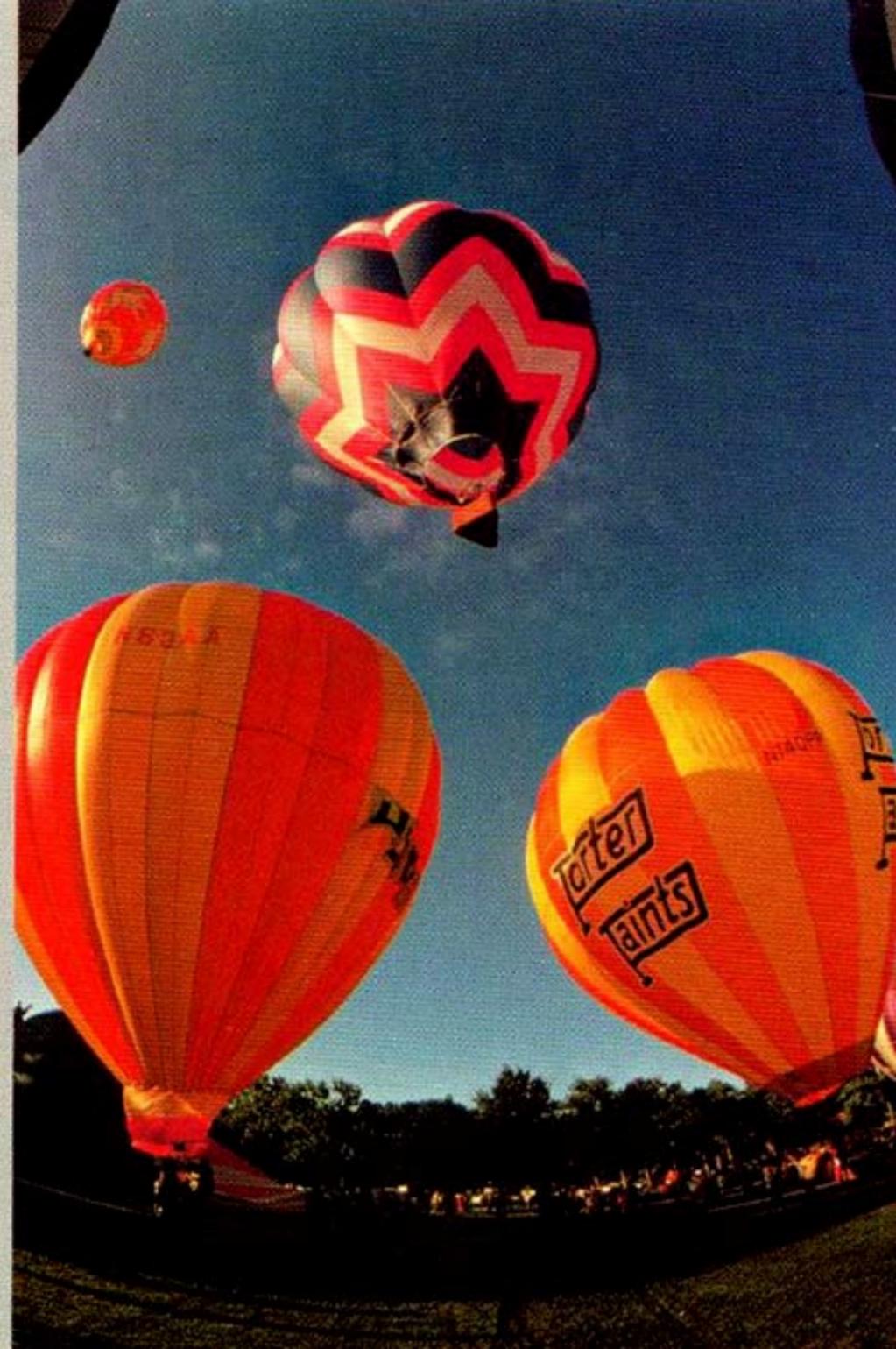
With a fish-eye lens, you can photograph a 180° angle of view similar to the eye of a fish, which gives this lens its name. The two Canon fish-eyes have the shortest focal lengths and widest angles of view of the entire Canon line. With equi-distant projection over the entire 180° angle of view, they deliver a circular image. The fish-eye lens was originally developed for academic and research purposes such as astronomical and aerial photography. Since then, photographers have discovered that their unique perspective lends extraordinary artistic effects in creative photography.

1. Fish-eye 7.5mm f/5.6 S.S.C.
2. Fish-eye FD 15mm f/2.8 S.S.C.



Fish-eye Lens 7.5mm f/5.6 S.S.C., 1/125 sec. at f/8, ASA25.

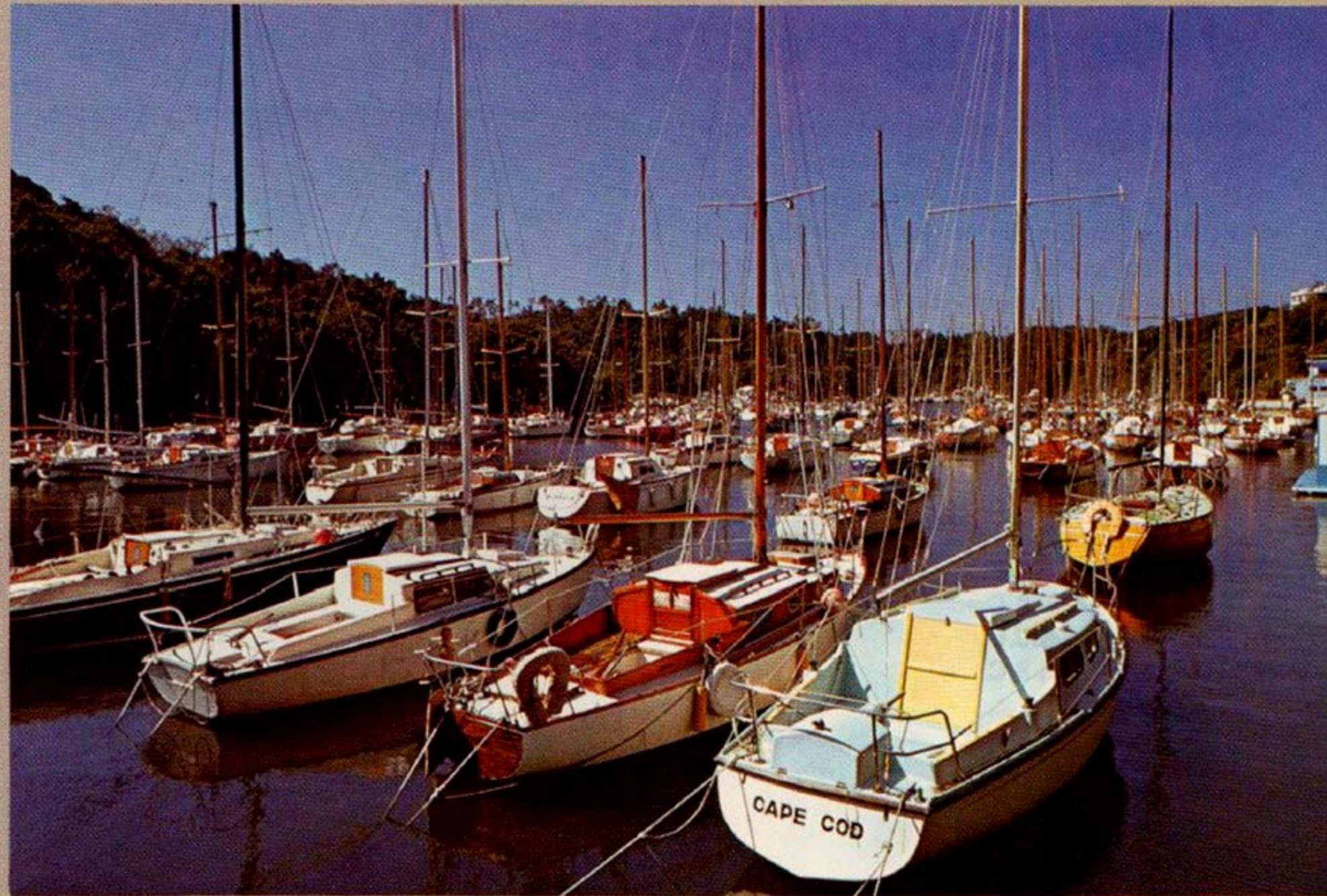
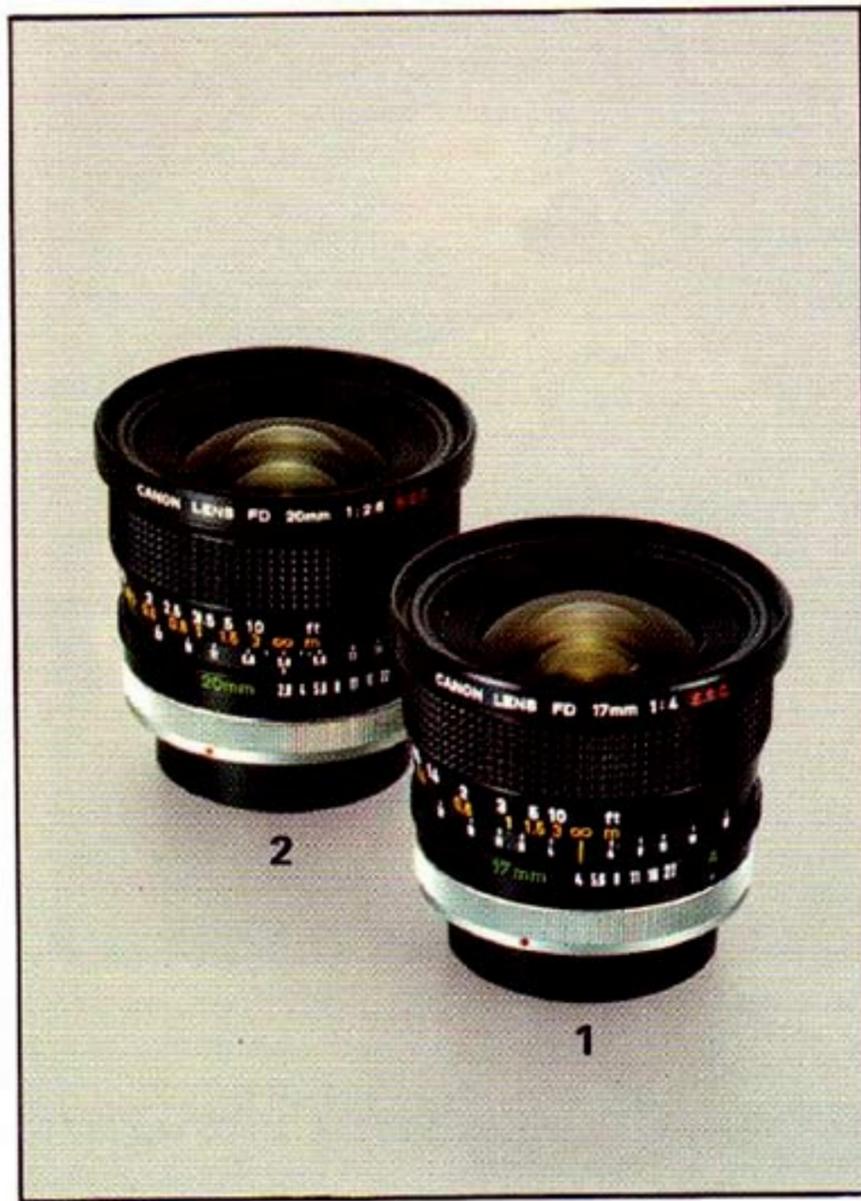
Fish-eye Lens FD 15mm f/2.8 S.S.C., 1/500 sec. at f/4.5, ASA25, by Lewis Portnoy.



Super Wide-angle Lenses

Wide-angle lenses of a focal length of 20mm or less are called super wide-angle lenses. Because super wide-angle lenses have a marked perspective effect, they can exaggerate the main subject in the image or express special effects by distortion. They are also very convenient when taking pictures in a small room or for photographing landscapes and buildings.

1. FD 17mm f/4 S.S.C.
2. FD 20mm f/2.8 S.S.C.



FD 20mm f/2.8 S.S.C., 1/125 sec. at f/8, ASA25.

Wide-angle Lenses

Wide-angle lenses are suitable for a wide range of purposes. Because of their deep depths of field, they are very convenient for snapshots and press photography as well as for shooting in confined places. Their perspective effect can be used to exaggerate distances to make a close subject appear unusually large or a distant subject appear unusually small. You can use these lenses to intentionally distort the subject image to give a dynamic, three-dimensional effect.

1. FD 24mm f/2.8 S.S.C.
2. FD 28mm f/2 S.S.C.
3. FD 28mm f/2.8 S.C.
4. FD 35mm f/2 S.S.C.
5. FD 35mm f/3.5 S.C.



FD 24mm f/2.8 S.S.C., 1/125 sec. at f/8, ASA25.

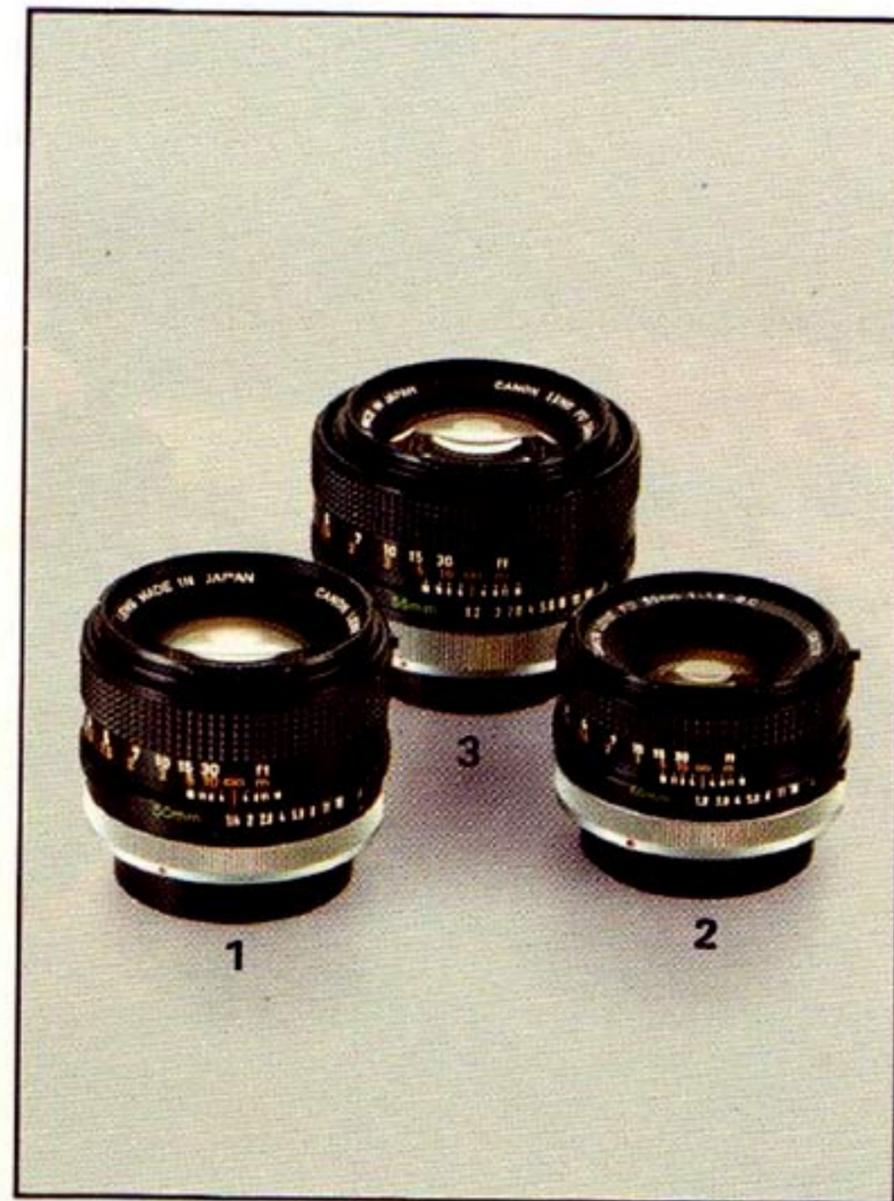


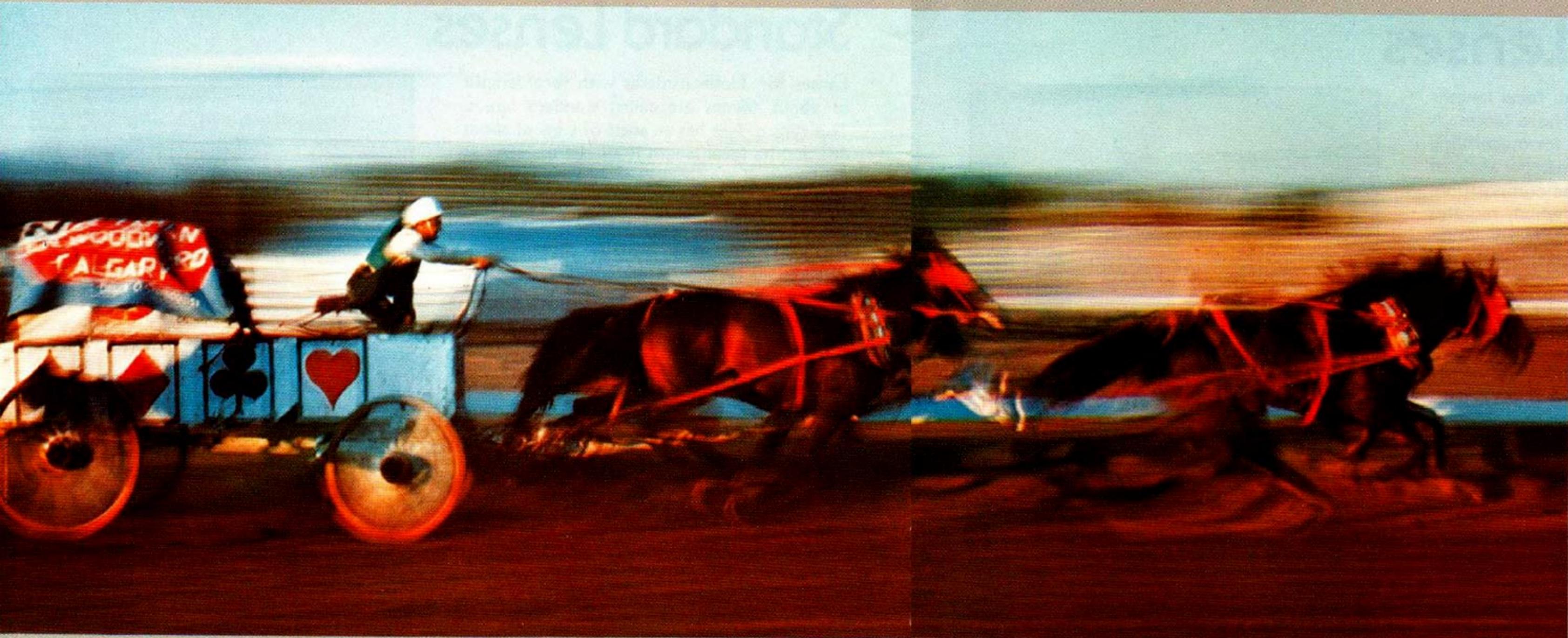
FD 35mm f/2 S.S.C., 1/60 sec., AE Flash with Canon Speedlite 155A, ASA25.

Standard Lenses

Lenses for 35mm cameras with focal lengths of about 50mm are called standard lenses. This type of lens has an angle of view of about 46° and its focal length is almost the same as the length of the diagonal of the picture frame. It is called a standard lens, because it yields natural perspective and is the most versatile of the lenses. Not only is it the most popular type of lens for general photography, but it can be manipulated to give effects similar to those of wide-angle and telephoto lenses, and it performs well in close-up photography as well. It is the most frequently used lens and the standard lens for this interchangeable lens series. Canon offers the following standard lenses:

1. FD 50mm f/1.4 S.S.C.
2. FD 50mm f/1.8 S.C.
3. FD 55mm f/1.2 S.S.C.





FD 50mm f/1.4 S.S.C., 1/15 sec.
at f/22, ASA25, by Lewis Portnoy.

Telephoto Lenses

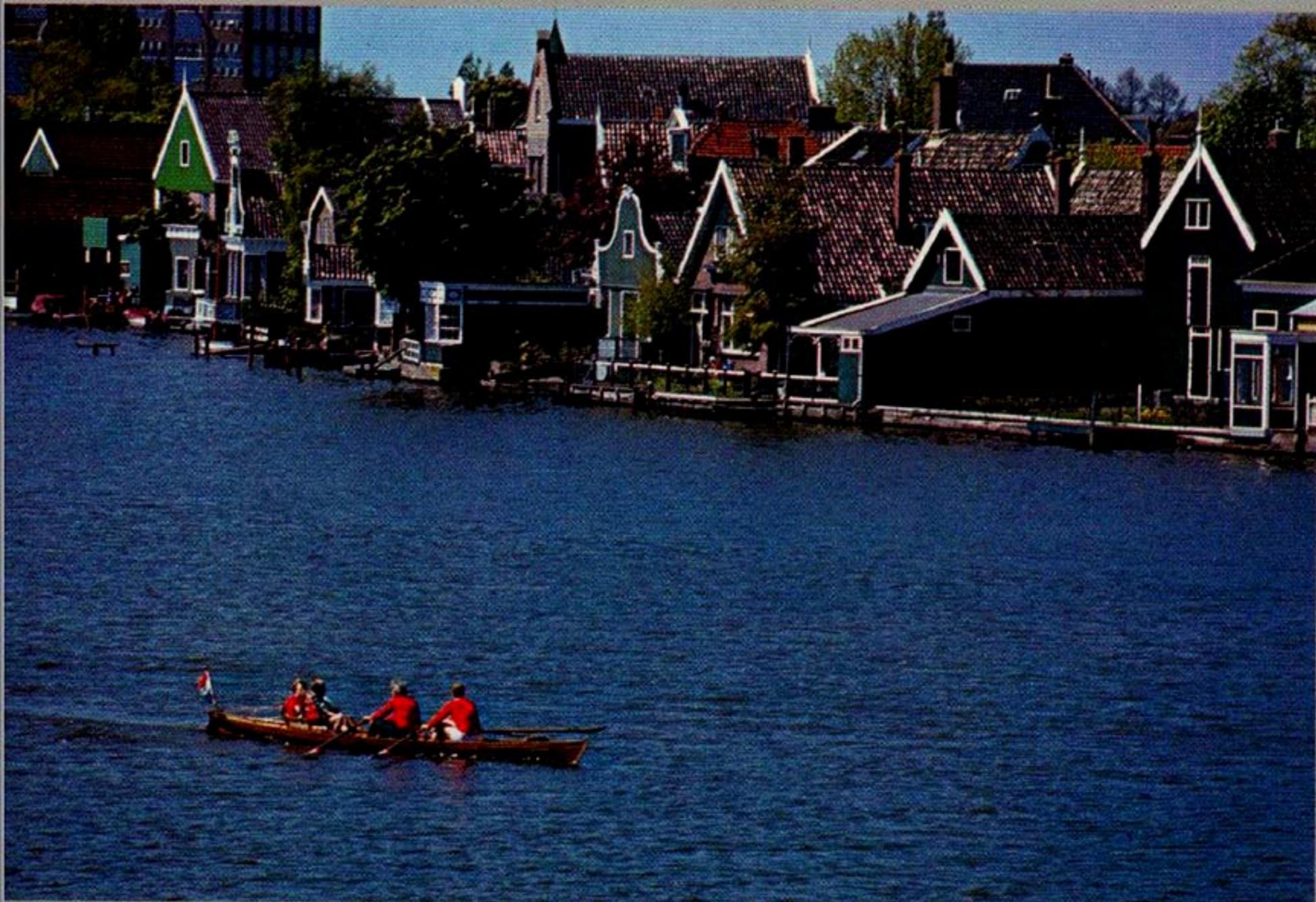
Lenses having from 85–300mm focal lengths are generally classified as telephoto lenses. A telephoto lens is very effective for magnifying a subject at a distance, and its narrow angle of view makes it easier to trim the composition. Their shallow depth of field, which requires precision focusing, can be turned to advantage to emphasize the subject by blurring the surroundings. They remain remarkably light in view of their focal lengths—light enough, in fact, for hand-held shooting at fast shutter speeds. When slow shutter speeds are necessary, a tripod is recommended.

1. FD 85mm f/1.8 S.S.C.
2. FD 100mm f/2.8 S.S.C.
3. FD 135mm f/2.5 S.C.
4. FD 135mm f/3.5 S.C.
5. FD 200mm f/2.8 S.S.C.
6. FD 200mm f/4 S.S.C.
7. FD 300mm f/4 L
8. FD 300mm f/5.6 S.S.C.



FD 85mm f/1.8 S.S.C., 1/250 sec. at f/4, ASA25. by Lewis Portnoy.





FD 100mm f/2.8 S.S.C., 1/250 sec. at f/5.6, ASA25.

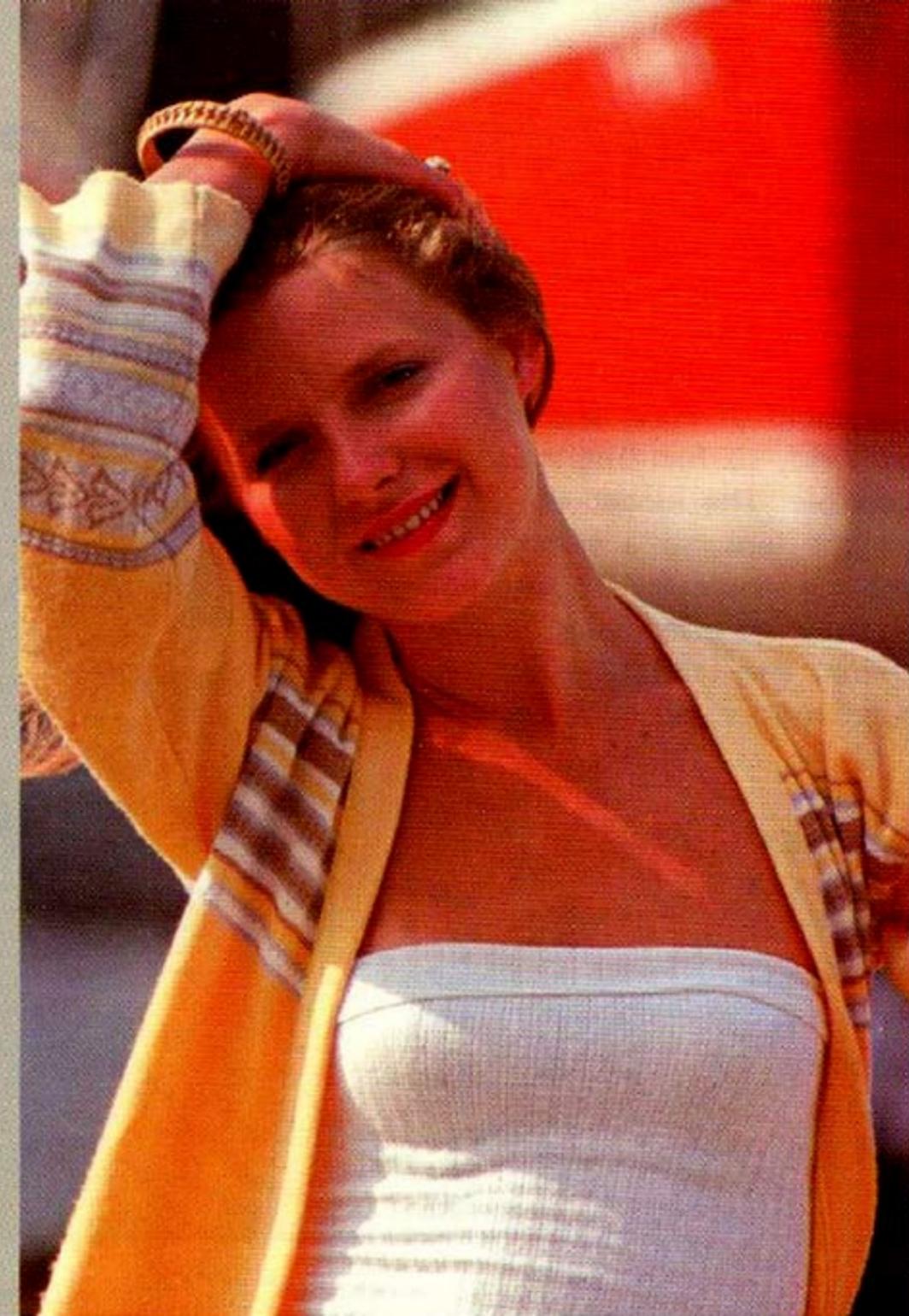


FD 135mm f/2.5 S.C., 1/60 sec., AE Flash, ASA25.



FD 200mm f/2.8 S.S.C., 1/15 sec. at f/16, ASA25, by Lewis Portnoy.

FD 300mm f/5.6 S.S.C.,
1/125 sec. at f/5.6, ASA25.



Super Telephoto Lenses

Super telephoto lenses are those that have a focal length of 400mm or more. With a super telephoto lens, the characteristics of a telephoto lens are all the more apparent. It has an extremely narrow angle of view and a very shallow depth of field, so focusing must be as accurate as possible. The longer the focal length, the larger the lens, so a tripod and cable release become necessary to prevent blurred pictures. They are effectively used in sports, press, wildlife and landscape photography and, for that matter, all outdoor photography.

1. FD 400mm f/4.5 S.S.C.
2. Reflex Lens 500mm f/8 S.S.C.
3. FD 600mm f/4.5 S.S.C.
4. FD 800mm f/5.6 S.S.C.
5. FL 1200mm f/11 S.S.C. with Focusing Unit



FD 400mm f/4.5 S.S.C., 1/250 sec.
at f/4.5, ASA25.



FD 800mm f/5.6 S.S.C., Double exposure: 1/500 sec. at f/8 for the moon and 20 sec. at f/5.6 for the building, ASA 64.

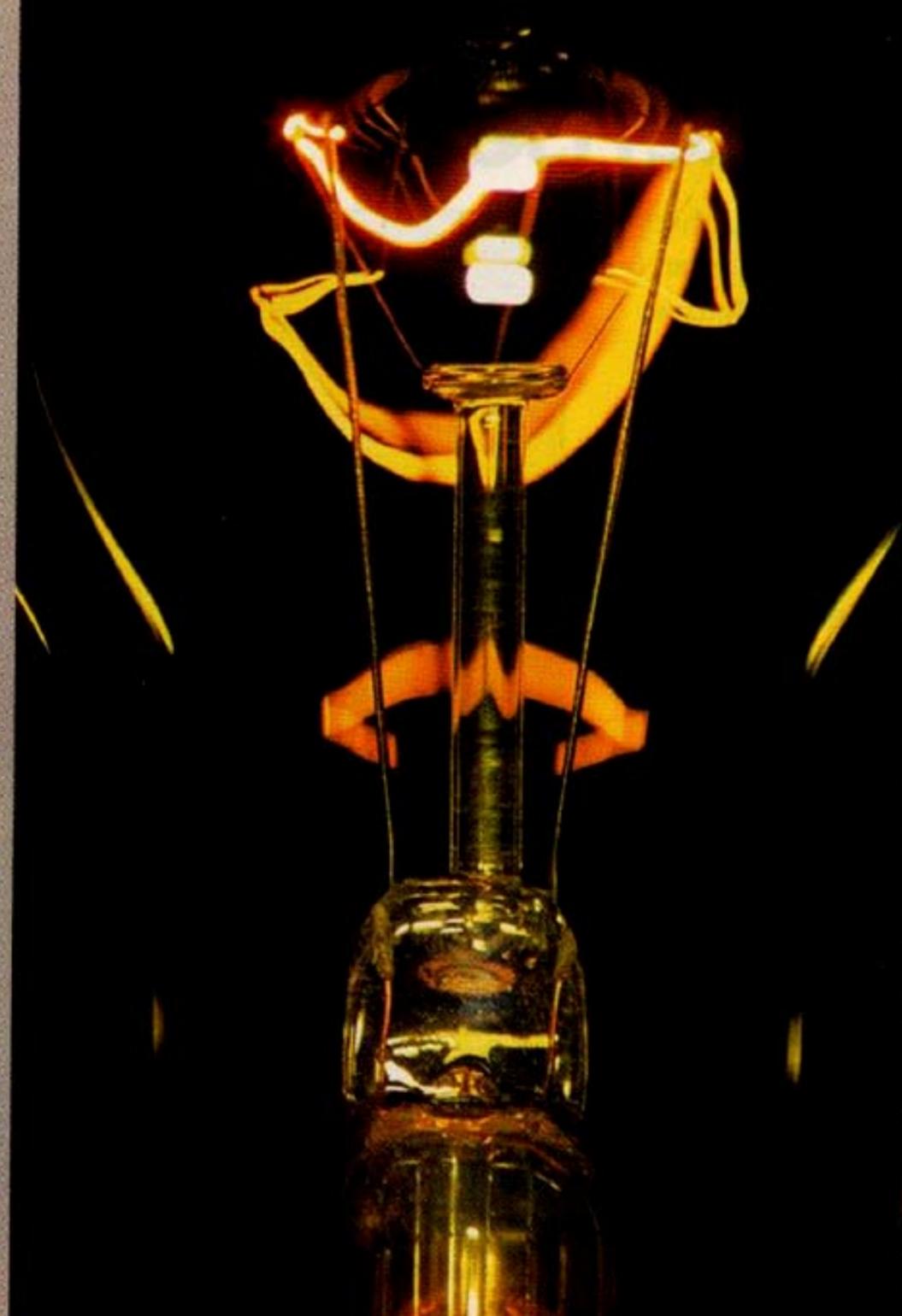


FL 1200mm f/11 S.S.C., 1/500 sec. at f/16, ASA25.

Macro Lenses

Photomacrography involves magnifications from 1x up to about 10x which are usually accomplished by means of a bellows and/or extension tubes to extend the lens. The special Canon macro lenses are especially designed to give excellent image results in photomacrographic magnifications at close shooting distances which would affect the performance of a normal lens. Alone, the FD 50mm f/3.5 S.S.C. Macro or FD 100mm f/4 S.C. Macro will give magnifications up to 1/2x. When combined with one of the FD extension tubes, life-size magnifications are possible with all of the FD lens functions preserved. These multi-functional lenses can be used in general photography with shooting distances up to infinity while they are perfect for photomacrography and especially recommended for the rigorous requirements in copying.

1. FD 50mm f/3.5 S.S.C. Macro with Extension Tube FD25
2. FD 100mm f/4 S.C. Macro with Extension Tube FD50

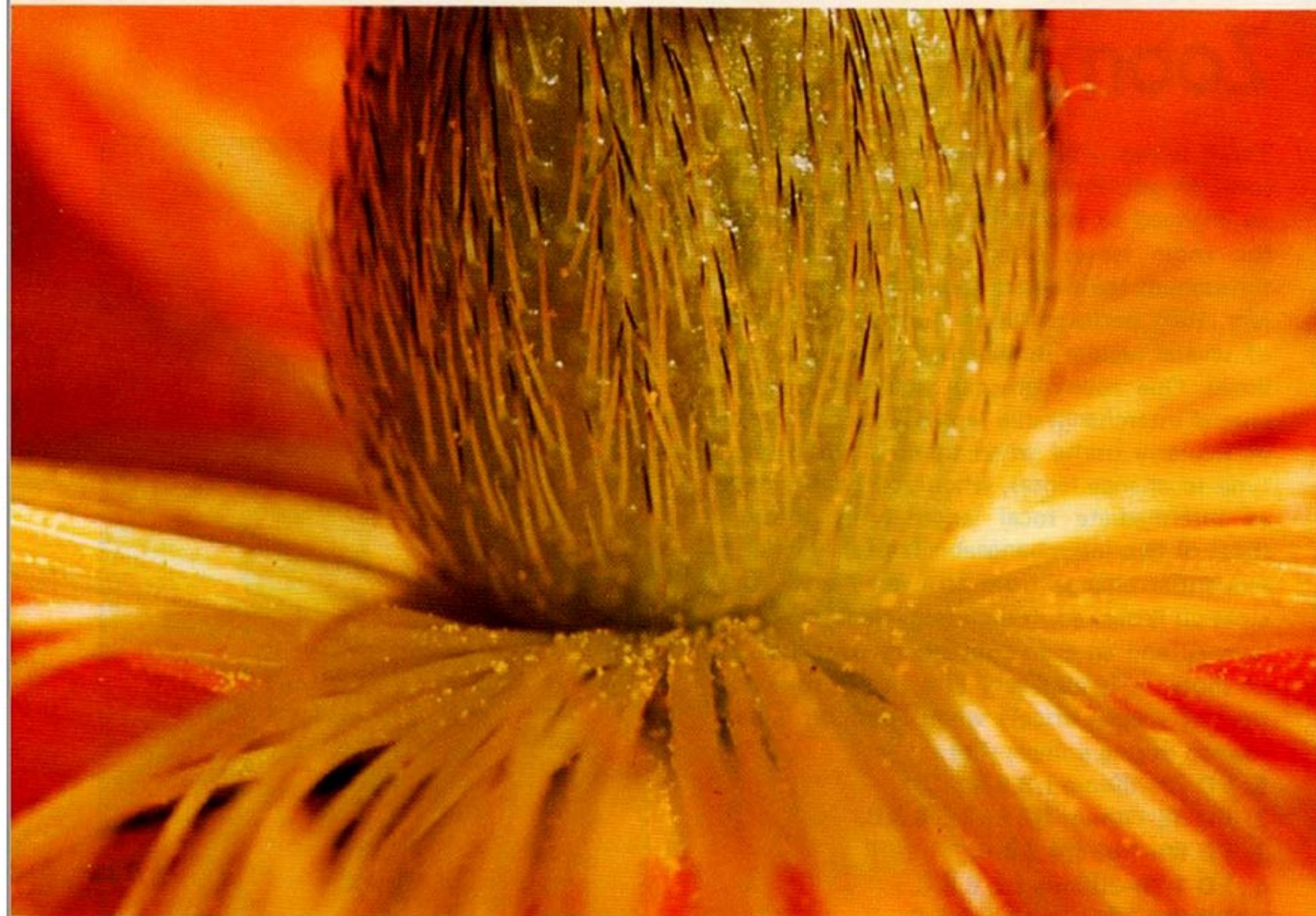
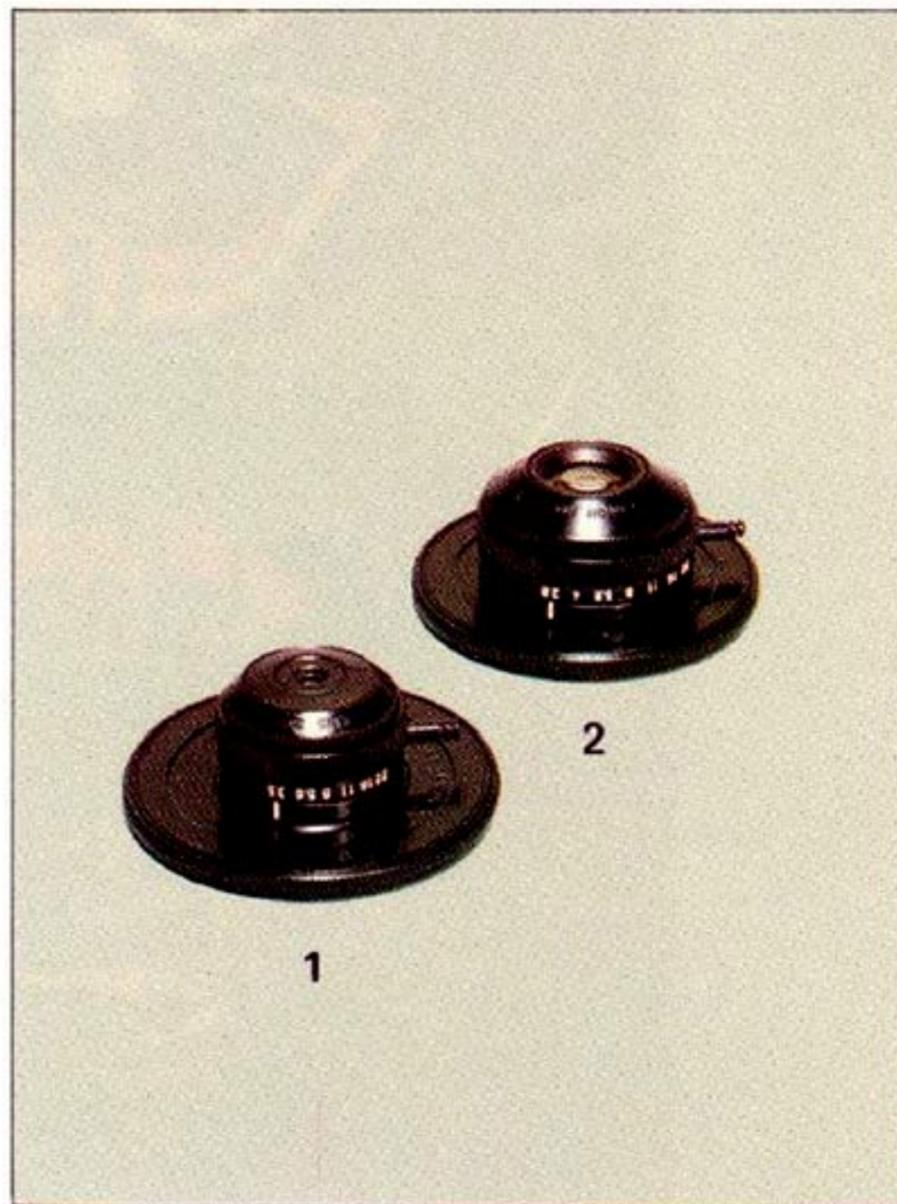


FD 100mm f/4 S.C. Macro, 1/4 sec.
at f/11, ASA25.

Macrophoto Lenses

To reach to the limits of photomacrographic magnifications, there is nothing easier than attaching one of Canon's Macrophoto lenses to a bellows. When mounted on a bellows, approximate magnifications of 2x to 10x are possible depending on the lens. And, like Canon's Macro lenses, these lenses are specially designed to handle the problems incurred by high magnifications and abnormally close shooting distances. Coma, in particular, is eliminated for extra sharp images. Their compact design with short lens barrel and gently tapered front end facilitates lighting control, and their short focal lengths permit high magnifications with comparably slight amounts of lens extension. Both have a minimum aperture of f/22 for maximum control over depth of field. Their characteristics make them particularly suited to producing a 35mm slide from movie film.

1. Macrophoto Lens 20mm f/3.5
2. Macrophoto Lens 35mm f/2.8

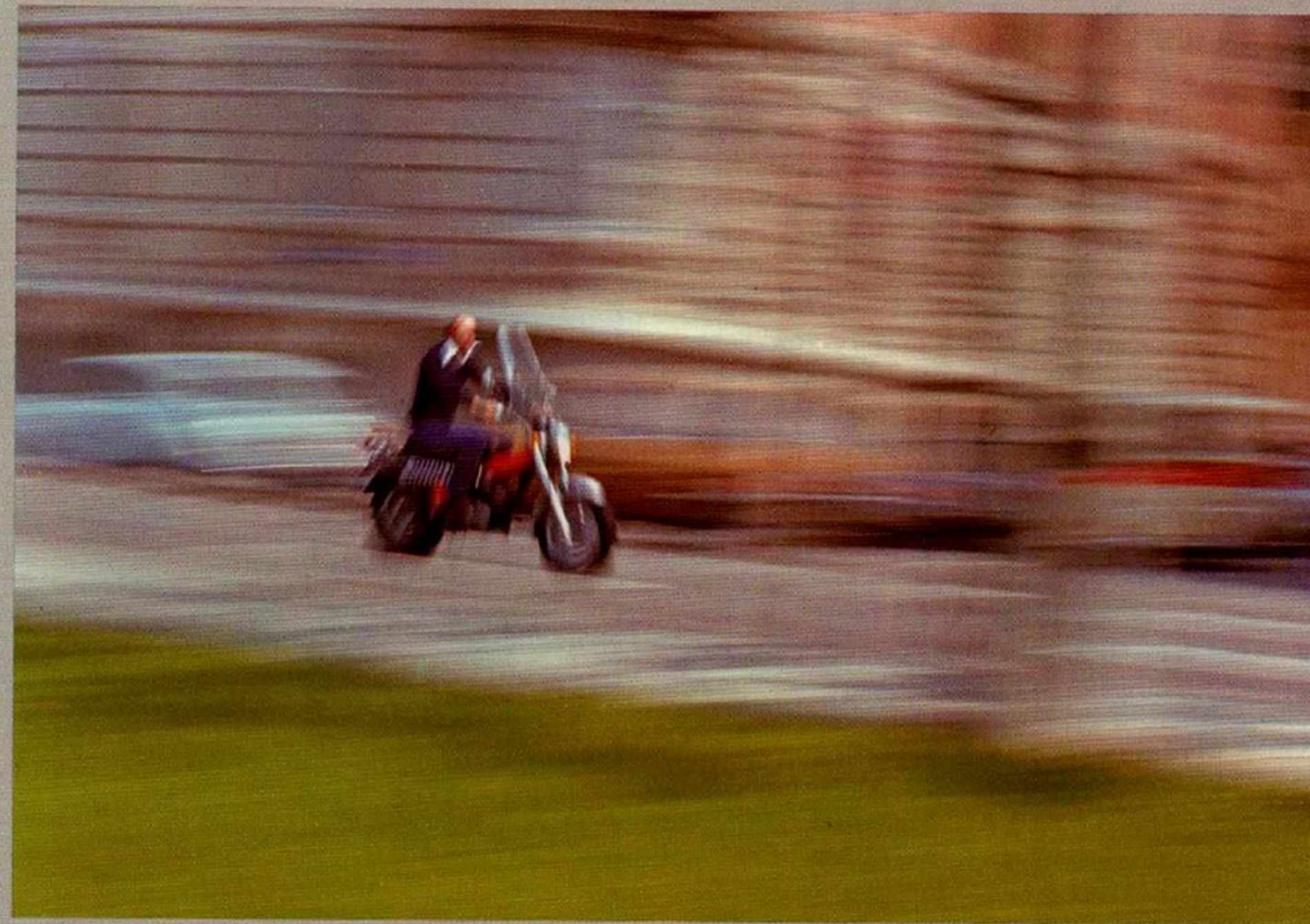


Macrophoto Lens 35mm f/2.8 on Auto Bellows, 3X, 1/8 sec. at f/5.6, ASA64.

Zoom Lenses

Zoom lenses offer the freedom of a variable focal length. Because their focal lengths can be changed to suit your photographic needs, the zoom lenses offer unlimited versatility throughout their entire focusing ranges. In effect, they perform similar functions to those of several regular interchangeable lenses combined. One zoom lens can take the place of several interchangeable lenses. A zoom lens is particularly useful when there is not enough time to change lenses, when you want to use an intermediate focal length lying between those of two interchangeable lenses, or when a sequential change from an overall view to a close-up is desired. It maintains the same color balance and an even consistency over a series of shots. It is also very effective in the creation of special effects when zooming is performed during a single shot.

1. FD 28–50mm f/3.5 S.S.C.
2. FD 35–70mm f/2.8–3.5 S.S.C.
3. FD 80–200 f/4 S.S.C.
4. FD 100–200mm f/5.6 S.C.
5. FD 85–300mm f/4.5 S.S.C.



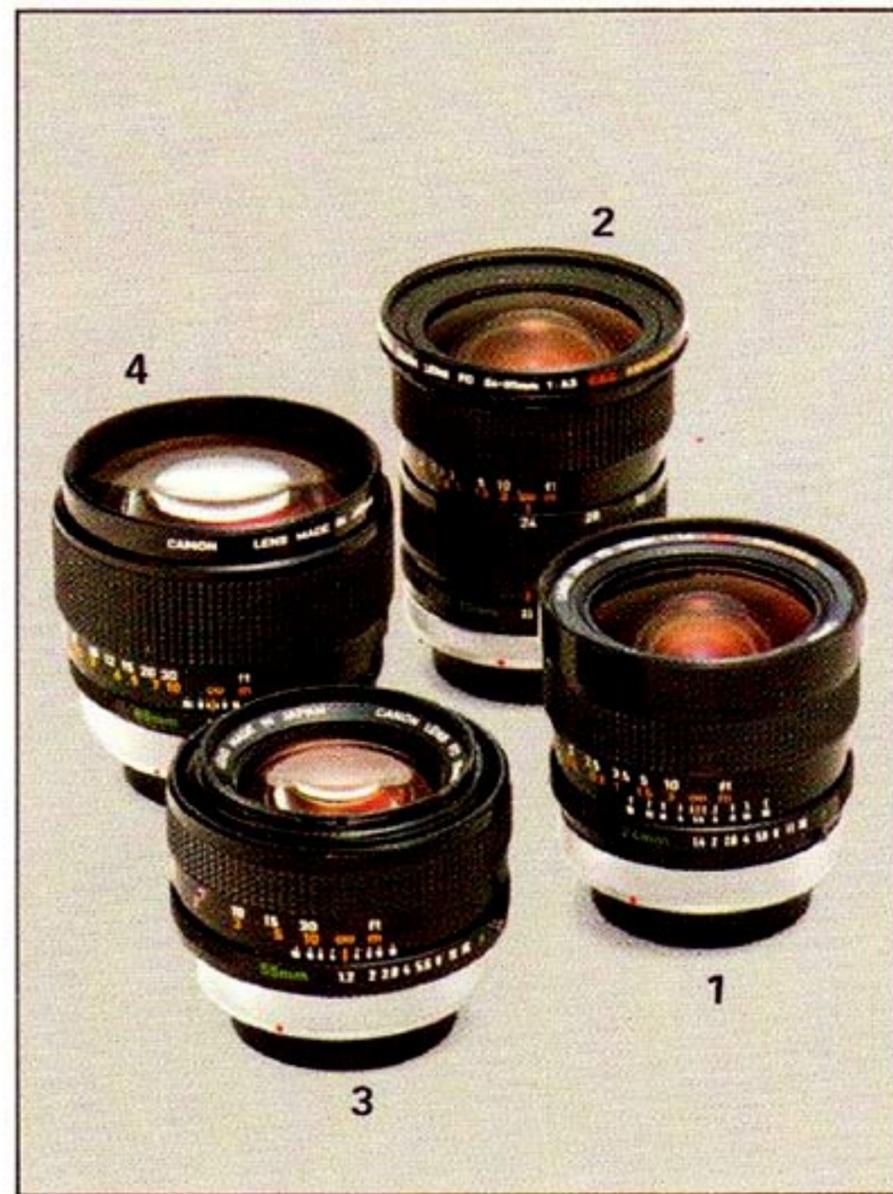
FD 80–200mm f/4 S.S.C., 1/2 sec. at f/22, ASA25.

Aspherical Lenses

It is best to use the fastest lens possible when shooting in dark places or when a fast shutter speed is required. The quality of many fast lenses is limited, because the faster the lens, the more it tends to be affected by various aberrations. Lights come out blurred in the picture when you shoot in very low light levels. This is called flare and it happens because the lens surface is spherical. It is unavoidable as long as a round surface lens is being used.

Canon, for the first time in the world, succeeded in mass producing aspherical lenses which were adopted for use in photographic lenses. The aspherical lens is considered the ideal lens because it best prevents flare and various other kinds of aberrations.

1. FD 24mm f/1.4 S.S.C. Aspherical
2. FD 24–35mm f/3.5 S.S.C. Aspherical
3. FD 55mm f/1.2 S.S.C. Aspherical
4. FD 85mm f/1.2 S.S.C. Aspherical



FD 85mm f/1.2 S.S.C. ASPHERICAL, 1/60 sec. at f/1.2, ASA25.

Fluorite Lens

The excellent features of the fluorite lens have long been known. Unfortunately, until recently its use was limited to microscope objectives. Natural fluorite was too small to use in larger lenses.

In 1969 Canon succeeded in making large artificial fluorite crystals and adopted their use in a telephoto lens. For the first time, fluorite lenses were being produced and made commercially available in large quantities.

Fluorite lenses are especially advantageous in telephoto lenses. The fluorite lens considerably reduces chromatic aberrations which usually increase with longer focal lengths and are otherwise very difficult to correct. Its low refractive index and low dispersion add to the optimum performance of the fluorite telephoto.

The FD 300mm f/2.8 S.S.C. fluorite telephoto incorporates all the best features of the fluorite lens.

FD 300mm f/2.8 S.S.C. Fluorite

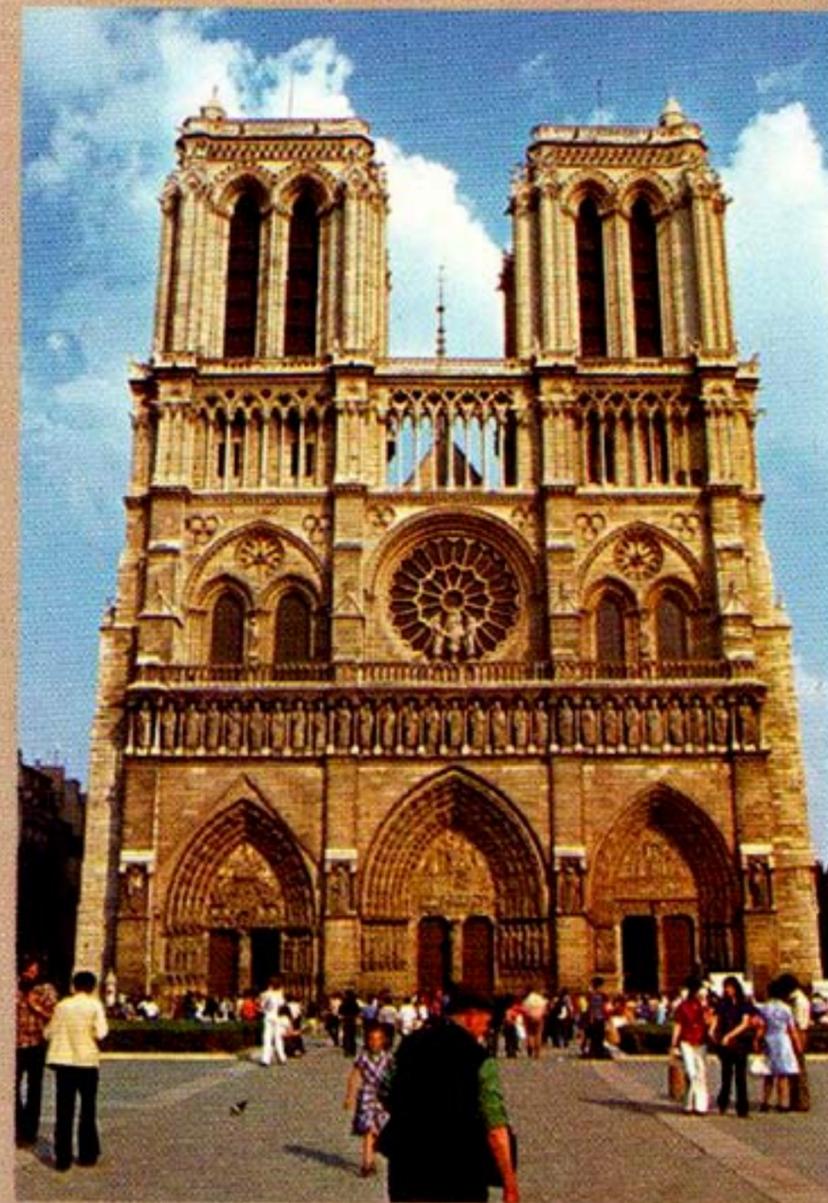
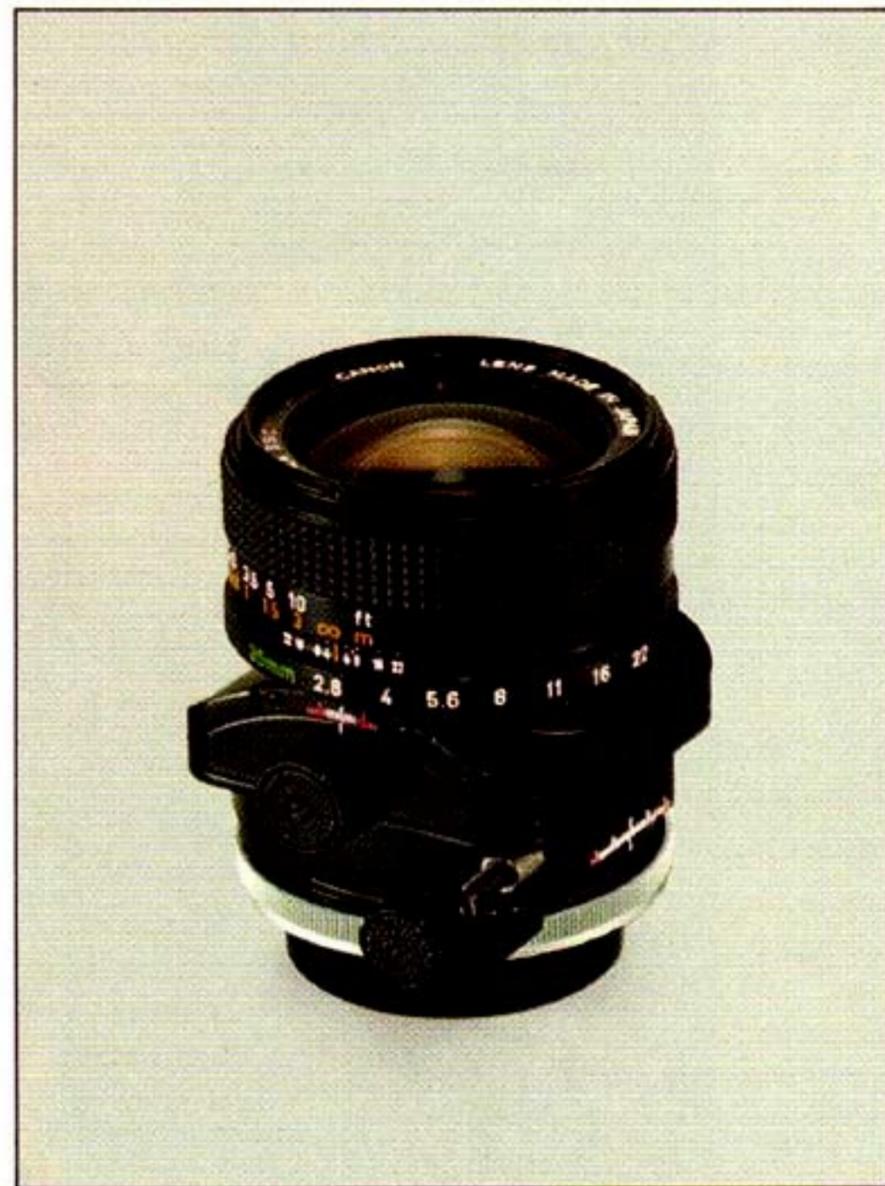


FD 300mm f/2.8 S.S.C. Fluorite,
1/125 sec. at f/4.5, ASA125, by
Norihiko Matsumoto.

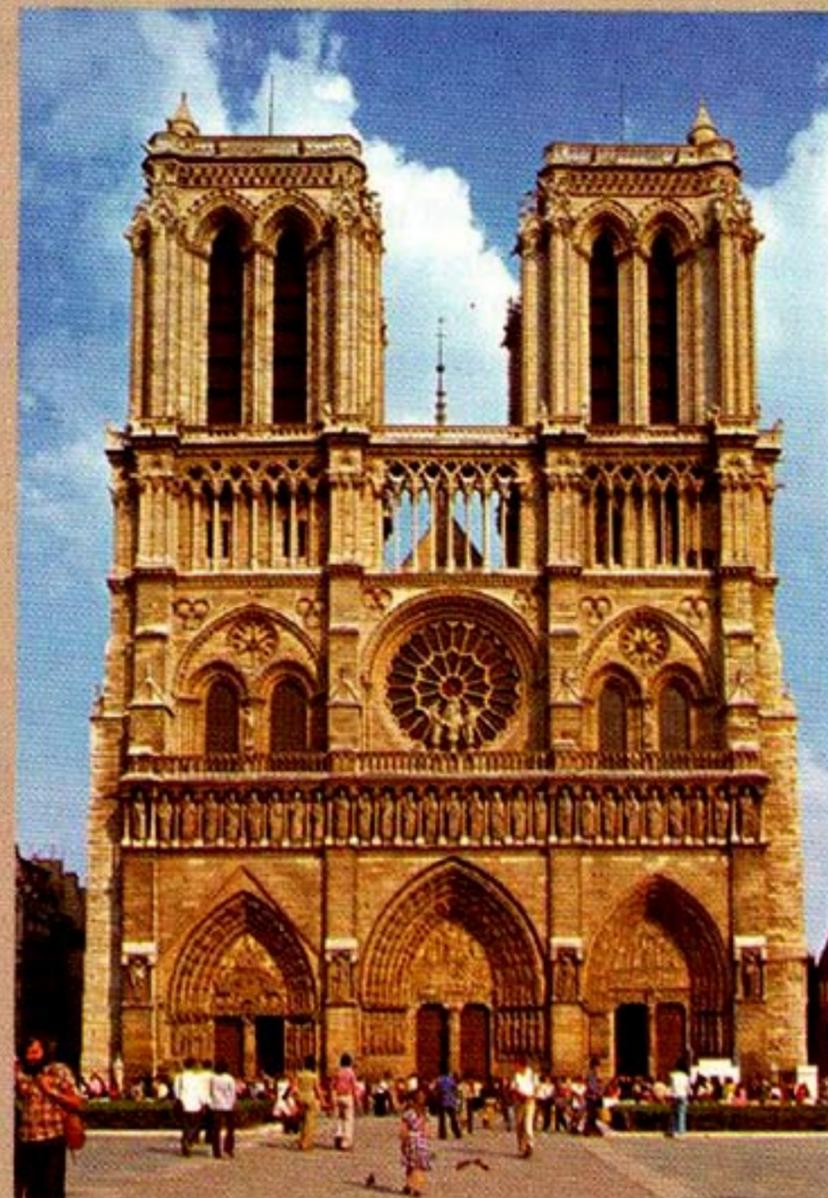
Tilt & Shift Lens

This is a very unusual lens incorporating tilt and shift mechanisms which change the optical axis to give optimum control over depth of field and perspective. Using the tilt mechanism, you can control depth of field without changing the exposure. The shift mechanism is especially useful in architectural photography where it can be used to eliminate the "backward-leaning effect" common in pictures of buildings taken with a regular lens. Using both mechanisms together, you can achieve the perfect picture in overall focus and natural perspective. However, they can also be used artistically to create distortions impossible to attain with normal lenses.

TS 35mm f/2.8 S.S.C.



▲ Normal

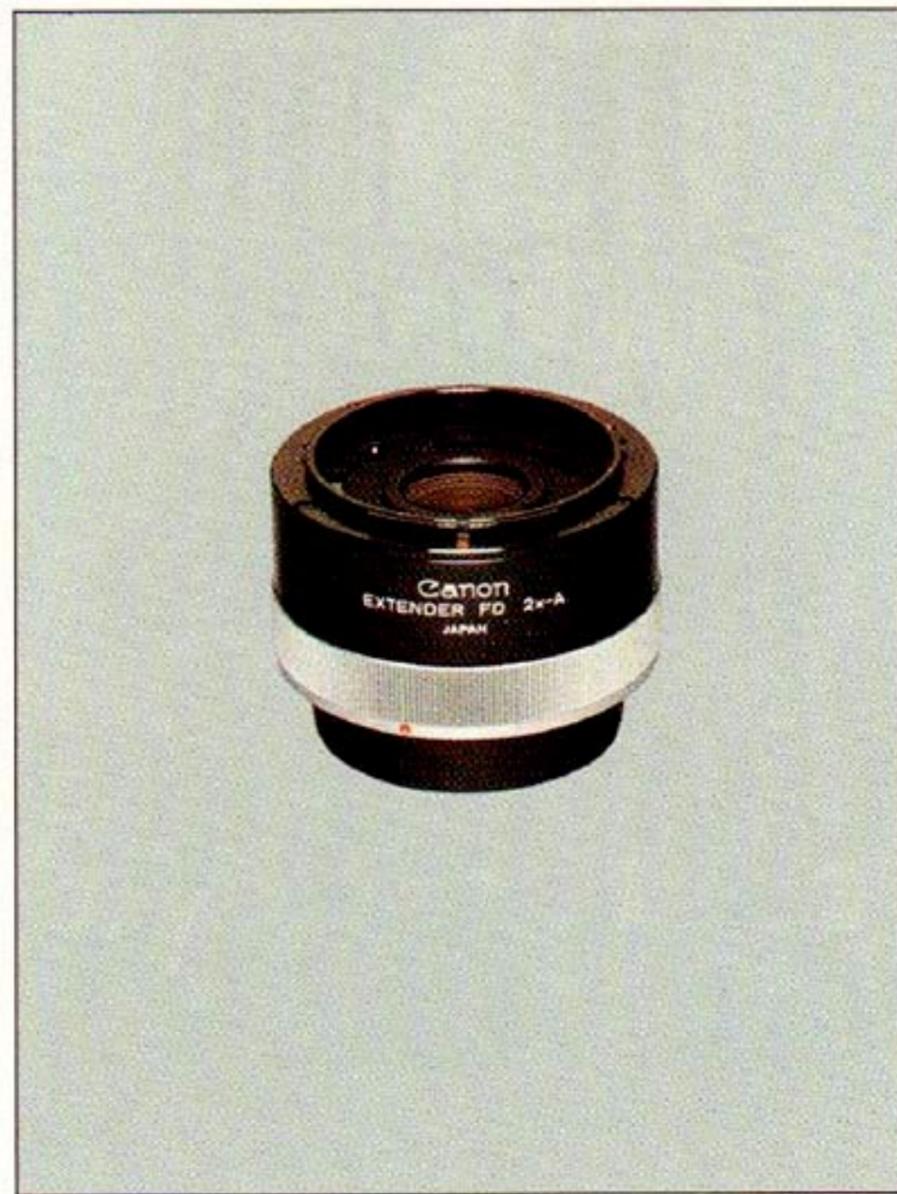


▲ Corrected

Extender FD 2x-A

This is a special FD lens accessory. A type of lens itself, it is inserted between the lens and camera body to double the lens' focal length or the zoom range of a zoom lens. It is equipped with all the FD couplings so that, depending on the camera, full-aperture metering, automatic diaphragm coupling and AE photography are still possible. An unexpected advantage of using the Extender is that the minimum shooting distance of the master lens remains usable, enabling closer shooting and correspondingly higher magnifications than with a regular lens double the focal length of the lens in use. Generally lighter and easier to manage, the Extender/lens combination is a viable alternative to buying another lens of double the focal length.

The Extender can be used on all single-focal-length FD telephoto lenses ranging from 100mm to 800mm and any FD telephoto zoom lens with a lower zooming limit of at least 80mm.



Introduction to Individual Lenses

Fish-eye Lenses

Canon Fish-eye Lens 7.5mm f/5.6 S.S.C.

This is an equidistant-projection fish-eye lens that covers an angle of 180° . The resulting image is a 23mm-diameter circle. This lens was originally developed for academic purposes, but now it is frequently used for artistic and other purposes because of its characteristic circular image.

Since fish-eye lenses have a short focal length, close to the film plane, the mirror usually has to be raised before photographing. However, with this Canon fish-eye lens, this inconvenience is eliminated. This lens has a built-in filter mechanism with SKY, Y3, O, R, CCA4 and CCB4 filters. Exposure is manually set and focus does not have to be adjusted because of its deep depth of field.

Canon Fish-eye Lens FD 15mm f/2.8 S.S.C.

This is a full-frame fish-eye lens which covers a 180° angle on the diagonal of the film plane, while the 7.5mm Fish-eye Lens has a circular image. Since it was designed as a part of the

FD series, exposure can be set just as in all other FD lenses.

Lens speed is f/2.8, the fastest among lenses of this type. There is no need to raise the mirror. As in the 7.5mm Fish-eye lens, there are four built-in filters (SKY, Y3, O and R). Compared to the super wide-angle lenses in general, this lens maintains its characteristic distortion. The center of the subject will be extremely exaggerated and the edges somewhat cramped.

Super Wide-angle Lenses

Canon Lens FD 17mm f/4 S.S.C.

This lens covers the widest angle of view in regular shooting. It has a compact design and raising the mirror is not necessary. The loss of image quality at close distances, a common disadvantage of lenses with a compact design, is prevented with its special built-in compensation mechanism. This is the Canon Floating System which enables the lens to render a superior image quality from close distances to infinity. The exclusive Canon multi-layer coat-

ing, Super Spectra Coating (S.S.C.) provides natural color balance and prevents ghost.

Canon Lens FD 20mm f/2.8 S.S.C.

With its unique applications of optical theory and manufacturing technology, Canon succeeded in surmounting all difficulties involved in producing a fast, aberration-free, super wide-angle lens when it designed this f/2.8 lens.

As in the FD 17mm f/4 S.S.C., the floating system has been incorporated to ensure good image quality. This lens gives excellent sharpness and good resolution even at full aperture. With its wide 94° angle of view, it is suitable for shooting scenery in open spaces or even in a small room. Since it has a marked perspective effect, however, in order to avoid distortion in portrait photography, the subject has to be in the center of the picture frame.

Wide-angle Lenses

Canon Lens FD 24mm f/2.8 S.S.C.

This lens is suitable for shooting snapshots, scenery and small interiors. Its design and S.S.C. multi-layer coating eliminate any aberrations, and the incorporation of the Canon

Floating System prevents deterioration of image quality in close-range photography.

Canon Lens FD 28mm f/2 S.S.C.

Increasing lens speed in wide-angle lenses poses many difficulties. Generally, the faster the lens speed in a wide-angle lens, the worse its resolving power and color balance. These problems have been overcome in this lens. Excellent image quality is assured even at full aperture. It also has the Canon Floating System to compensate at close distances and delivers a sharp image from as close as 30cm to infinity. And focusing is quick and easy even in dim light conditions and indoors.

Canon Lens FD 28mm f/2.8 S.C.

This is the ideal lens for those using a wide-angle lens for the first time. With the 35mm lens becoming popular as a standard lens, this lens could be considered the standard wide-angle lens because of its greater wide-angle effect. It is compact and lightweight and offers superior performance with high contrast and resolution. Photographs taken with this lens can be considerably enlarged.

Canon Lens FD 35mm f/2 S.S.C.

With spherical aberration and curvature of field brought to the minimum possible, this lens gives high contrast and sharpness throughout the whole picture area even at full aperture. The Canon Floating System compensates in close-range shooting.

Canon Lens FD 35mm f/3.5 S.C.

Since a 35mm lens presents hardly any distortion in the image and perspective is rather natural, many use it as a standard lens. As a short focal length lens, it is excellent for snapshots, too, since it has considerable depth of field. This lens was developed to follow the trend toward a wider use of 35mm lenses. Practicality and economy were emphasized in its design. When travelling with limited baggage, this is the perfect lens to take along. By using computers in its designing stage, coma has been completely compensated so that high contrast is obtained as well as high resolution. Like all the other FD lenses, this lens guarantees superior image quality.

Standard Lenses

Canon Lens FD 50mm f/1.4 S.S.C.

This is the most popular of the FD lenses. As a standard lens, its superior resolving power and color balance have won the praise of photographers everywhere. A new type of glass has been effectively introduced into its design so that all aberrations are satisfactorily compensated for images with high contrast and without flare at full aperture. Because of its speed, it is effective for indoor shooting as well.

Canon Lens FD 50mm f/1.8 S.S.C.

This is the most compact of FD lenses. Its lens speed is excellent for its compact design, and it obtains high contrast and high resolution even at full aperture. There is practically no change in image quality throughout the entire focusing range of the lens, and it maintains this image quality even when an extension tube or a bellows is attached for close-up photography. The standard lens is very convenient because, by adjusting the aperture and the shooting angle, you can obtain the telephoto effect of making the subject stand out

in the image or the wide-angle effects of exaggeration and deep depth of field.

Canon Lens FD 55mm f/1.2 S.S.C.

This is an improved version of the FD 50mm f/1.4 lens and one of the fastest of the FD lenses. The superior image characteristics of the 50mm f/1.4 lens have been preserved. Even spherical aberrations and coma are compensated for in this lens despite its f/1.2 speed. The focal length became 55mm to accommodate the faster speed while maintaining the same top-quality performance. Because of its fast speed, this lens is frequently used at full aperture in dim light conditions, and it maintains good image quality at full aperture at night as well.

Telephoto Lenses

Canon Lens FD 85mm f/1.8 S.S.C.

Since its 85mm focal length provides almost the same perspective as the human eye, this lens is suitable for many kinds of shooting. It is perfect for portraiture in which control over the way the subject is emphasized is particularly important. At full aperture it gives a soft, flattering image of the subject,

and it is designed to eliminate all aberrations in the background to deliver wonderful shading effects. Since aberrations at close shooting ranges are insignificant with this lens, it is possible to attain superior image quality from as close as 90cm to infinity. This lens also offers the advantage of exceptional maneuverability, as it is almost the same size as a standard lens.

Canon Lens FD 100mm f/2.8 S.S.C.

Its comparatively natural perspective effect makes this lens suitable for portraits. It is also excellent for shooting stage or night scenes since it adequately compensates flare. It is so compact that it could be mistaken for a standard lens. Like the standard lens, it provides superior maneuverability and lends the photographer the ability to respond quickly to fast-breaking photographic opportunity. This lens has almost no image deterioration due to magnification, so it is very useful for close-ups and for considerable enlargements.

Canon Lens FD 135mm f/2.5 S.C.

When classifying lenses, we usually refer to telephoto lenses as those having a greater focal

length than the standard lens, but actually it is only starting with the 135mm focal length that a lens really reveals the characteristic telephoto effects of emphasis of the main subject and foreshortened perspective. This is suitable for portraits from considerable distances, for stage photography, and snapshots. Its speed of f/2.5 enables it to perform effectively under dim light conditions and makes focusing adjustment easy. Curvature of field is eliminated to a remarkable degree, resulting in greater image stability without distortion at the closest range.

The various types of chromatic aberrations are compensated almost to perfection for beautiful color balance just as with all the other FD lenses.

Canon Lens FD 135mm f/3.5 S.C.

For its 135mm focal length, this lens is fast enough to excel in general daytime photography. The faster the lens, the more difficult it is to compensate for aberrations, so it was easier to compensate for aberrations that deteriorate the image in this lens than in the f/2.5, making it a more economical lens with

high resolution and high contrast. It is very compact, offering great ease of handling.

Canon Lens FD 200mm f/2.8 S.S.C.

This lens was developed in response to the demands of sports and press photographers who need the fastest shutter speeds. It is also suitable for stage photography, for nature photography and snapshots. The f/2.8 speed is not only helpful in using fast shutter speeds to freeze movements but also in making the subject stand out when used at full aperture.

Canon Lens FD 200mm f/4 S.S.C.

The overall length of this lens is very short considering its focal length. It is relatively compact and has superior maneuverability. Therefore, it is very handy for hand-held shooting in sports and nature photography as well as snapshots. It is also very effective for a telephoto effect in photographing scenery. This lens provides high contrast and image definition throughout the entire focusing range.

Spherical and chromatic aberrations, likely to occur with fast lenses, are considerably re-

duced so that it delivers wonderful image quality at full aperture even in close-range photography. The 1.8m minimum subject distance is a fundamental achievement in this lens and makes it suitable for close-ups.

Canon Lens FD 300mm f/4 L

Despite of its fast speed, this lens has a compact and lightweight design due to the Canon Rear-group focusing system incorporated. Since focusing is accomplished by shifting only a part of the rear lens group in the interior of the barrel, the overall length of the lens remains the same during focusing with no effect on balance. This feature comes in very handy in shooting action photography when mobility is a must. Another advantage is that aberration fluctuations which often occur with changes in shooting distance are rarely noticeable. As indicated by the "L" in this designation, this new telephoto lens is designed to deliver extra high-quality performance.

Canon Lens FD 300mm f/5.6 S.S.C.

Although lenses typically tend to be heavier as their focal length increases, this lens uses

Canon's original Rear Group Focusing System, which explains its lightweight design. It weighs only 685g, good for hand-held photography. Compared to the 200mm lens, it attains more telephoto effect and performs perfectly in sports, nature and scenery photography. Since image definition remains excellent throughout the entire focusing range, it performs with high resolution and high contrast even at the closest subject distance of 3.5m.

Super Telephoto Lenses

Canon Lens FD 400mm f/4.5 S.S.C.

Canon Lens FD 600mm f/4.5 S.S.C.

Canon Lens FD 800mm f/5.6 S.S.C.

"Compact", "lightweight" and "manueverable" are not typical adjectives used to describe a super telephoto lens. However, add to these "easy to focus" and you have a perfect description of these three Canon super telephoto lenses. These fantastic characteristics are due to Canon's exclusive Rear Group Focusing and Vari-Pitch Focusing Systems. Since only the rear lens group moves to focus while the overall length of the lens is constant, focusing is much smoother while

the lens is lighter and more compact. The Vari-Pitch Focusing System used in the FD 400mm lens enables swift, precise focusing even on distant subjects. These systems are giving super telephoto lenses a new and better image in photography.

Reflex Lens 500mm f/8 S.S.C.

This is the only mirror lens in the FD series. Its mirror construction not only makes it convenient for hand-held shooting but enables easier correction of chromatic aberration for super sharp images. With its front group focusing system, close focusing requires only slight lens extension. Its fixed f/8 aperture makes it particularly suited to use with the A-1 in the stopped-down AE mode. Great for photographers on the move and for special creative effects.

FL 1200mm f/11 S.S.C.

This is a front-convertible type super telephoto lens. In order for it to function, a separate Canon Focusing Unit housing the rear components and focusing device is available. When attached to the Focusing Unit, this lens gives

a 2°05' angle of view and 24X magnification.

Macro Lenses

FD 50mm f/3.5 S.S.C. Macro

This versatile lens is capable of behaving like a regular standard lens in general photography giving magnifications up to 1/2x. When combined with Extension Tube FD 25, you can get beautiful life-size reproductions of various forms of wild-life, machinery, whatever. Perfect for copying.

FD 100mm f/4 S.C. Macro

Like Canon's standard Macro lens, this lens can be used in general photography with magnifications up to 1/2x while it, too, provides life-size magnifications when used with Extension Tube FD 50. Despite the extension tube, full-aperture metering, automatic diaphragm coupling and AE photography are still possible depending on the camera. Because it permits twice the shooting distance of its standard counterpart, it is particularly convenient for shooting a restless insect or when a little more light is needed. Its natural perspective is perfect for commercial photog-

raphy, its aberration-free performance for copying.

Macrophoto Lenses

Macrophoto Lens 20mm f/3.5

Connected to a bellows, this little lens is capable of approximate magnifications of 4x to 10x. With no focusing mechanism and manual aperture control, it is particularly suited to high-magnification photography with a bellows. Its f/22 minimum aperture permits excellent control of depth of field. When connected to Duplicator 8 this is the perfect lens for producing a 35mm slide from 8mm movie film.

Macrophoto Lens 35mm f/2.8

This lens provides approximate magnifications of 2x to 5x with a bellows. Having all the basic features of the 20mm Macrophoto lens, it, too, is especially corrected for aberrations in photomacrography. Coma in particular is eliminated for extra-sharp images. It also has an extremely short barrel with gently tapered front end for easier lighting control. This lens can be connected to Duplicator 16 for

producing a 35mm slide from 16mm movie film.

Zoom Lenses

FD 28–50mm f/3.5 S.S.C.

This remarkable short zoom can plummet all the way down to wide-angle and zoom right back up to standard focal length. Delineation is consistently excellent while zooming. It also has a built-in macrophotography mechanism and is extremely compact.

FD 35–70mm f/2.8–3.5 S.S.C.

This lens is ideal for all-round photography from wide-angle to moderate telephoto. Close-up photography down to 30cm (1 ft.) from the film plane is possible by using the built-in macro capability. One of the best zoom lenses ever made.

FD 80–200mm f/4 S.S.C.

This offers outstanding performance with a 1:2.5 zoom ratio that adequately covers the short through medium telephoto range. It is especially compact and easy to handle in order to enable a photographer to cope with

a great variety of fast-moving subjects.

FD 100–200mm f/5.6 S.C.

This is an inexpensive and relatively lightweight zoom lens for sports, snapshots and scenery.

FD 85–300mm f/4.5 S.S.C.

This is a telephoto zoom lens with an extraordinary range of focal lengths. It has a minimum focusing distance of 2.5 meters (8 ft.) for tight shots of people, animals, or sporting events.

Aspherical Lenses

FD 24mm f/1.4 S.S.C. ASPHERICAL

This lens is the world's fastest 24mm lens for a 35mm camera. By using Canon's technological break-through — mass-produced aspherical surfaces — it assures maximum resolution and contrast even at a distance of 30cm.

FD 24–35mm f/3.5 S.S.C. ASPHERICAL

This exceptional short-range zoom is the only Canon zoom lens to have an aspherical element, the now-famous Canon design which reduces aberrations to a negligible minimum for the

kind of image quality you would expect from a fixed focal length lens. With this addition, Canon zooms have reached down to the lower limit of the wide-angle range.

FD 55mm f/1.2 S.S.C. ASPHERICAL

This lens features everything in one lens: huge maximum aperture for bright viewfinder images and easy focusing, normal perspective and moderate angle of view, multilayer Super Spectra Coating, a Floating System for aberration-free photography at close distances, and a specially ground aspherical lens element for crystal clear and sharp pictures taken at f/1.2. Use this lens only once and you'll understand why Canon calls it "the perfect lens."

FD 85mm f/1.2 S.S.C. ASPHERICAL

Along with the FD 55mm f/1.2 S.S.C. ASPHERICAL, this lens is the fastest lens available and its aspherical element, a Canon epoch-making development, allows you to obtain a perspective such as the human eye provides, with marvellous delineation and without flare. It is perfect for scenery and portraits.

Canon FD Lens Table

FD Series (For Full-aperture Metering or AE Photography)

Type	#	Lens	Construction Elements Groups		Angle of View	Minimum Aperture	Closest Focusing Distance		Filter Size (mm)	Hood	Length		Weight		
							(m)	(ft.)			(mm)	(in.)	(g)	(lbs.)	(ozs.)
Full-frame Fish-eye		Fish-eye FD 15mm f/2.8 S.S.C.	10	9	180°	f/16	.3	1	Built-in	Built-in	60.5	2-3/8	485	1	1
Super Wide-angle Lenses		FD 17mm f/4 S.S.C.	11	9	104°	f/22	.25	.9	72	—	56	2-3/16	450	1	
		FD 20mm f/2.8 S.S.C.	10	9	94°	f/22	.25	.9	72	—	58	2-5/16	345		12
Wide-angle Lenses		FD 24mm f/2.8 S.S.C.	9	8	84°	f/16	.3	1	55	18W-55B	52.5	2-1/16	330		12
		FD 28mm f/2 S.S.C.	9	8	75°	f/22	.3	1	55	18W-55B	61	2-3/8	343		12
		FD 28mm f/2.8 S.C.	7	7	75°	f/22	.3	1	55	18W-55B	49	1-15/16	230		8
		*FD 35mm f/2 S.S.C.	9	8	63°	f/22	.3	1	55	18W-55A	60	2-3/8	345		12
		*FD 35mm f/3.5 S.C.	5	5	63°	f/22	.4	1.5	55	18W-55A	46.8	1-13/16	205		7
Standard Lenses		*FD 50mm f/1.4 S.S.C.	7	6	46°	f/16	.45	1.5	55	18S-55	49	1-15/16	305		11
		*FD 50mm f/1.8 S.S.C.	6	4	46°	f/16	.6	2	55	8S-55	38.5	1-1/2	200		7
		FD 55mm f/1.2 S.S.C.	7	5	43°	f/16	.6	2	58	18S-58	52.5	2-1/16	510	1	2
Telephoto Lenses		FD 85mm f/1.8 S.S.C.	6	4	28°30'	f/16	.9	3	55	18T-55	57	2-1/4	425		15
		FD 100mm f/2.8 S.S.C.	5	5	24°	f/22	1	3.5	55	18T-55	57	2-1/4	360		13
		FD 135mm f/2.5 S.S.C.	6	5	18°	f/22	1.5	5	58	Built-in	91	3-9/16	630	1	6
		FD 135mm f/3.5 S.C.	4	4	18°	f/22	1.5	5	55	18T-55	85	3-3/8	385		14
		FD 200mm f/2.8 S.S.C.	5	5	12°	f/22	1.8	6	72	Built-in	140.5	5-9/16	700	1	9
		FD 200mm f/4 S.S.C.	6	5	12°	f/22	2.5	8	55	Built-in	133	5-1/4	675	1	8
		FD 300mm f/4 L	7	7	8°15'	f/32	3	10	11Exclusive	Built-in	208	8-3/16	1,100	2	7
		FD 300mm f/5.6 S.S.C.	6	5	8°15'	f/22	3	10	55	Built-in	198.3	7-13/16	685	1	8
Super Telephoto Lenses		FD 400mm f/4.5 S.S.C.	6	5	6°10'	f/22	4	13	11Exclusive	Built-in	282	11-1/8	1,300	2	14
		FD 600mm f/4.5 S.S.C.	6	5	4°10'	f/22	8	27	48	Built-in	455	1'5-15/16	4,300	9	8
		FD 800mm f/5.6 S.S.C.	6	5	3°06'	f/22	14	45	48	Built-in	567	1'10-5/16	4,300	9	8
Macro Lenses		FD 50mm f/3.5 S.S.C. Macro with Extension Tube FD 25	6	4	46°	f/22	20.5 (cm)	8.1 (in.)	55	None Necessary	69.5	2-5/16	310		11
		FD 100mm f/4 S.C. Macro with Extension Tube FD 50	5	3	24°	f/32	.4	1.31	55	None Necessary	112	4-7/16	530	1	3

Type	Lens	Construction Elements Groups		Angle of View	Minimum Aperture	Closest Focusing Distance		Filter Size (mm)	Hood	Length		Weight		
						(m)	(ft.)			(mm)	(in.)	(g)	(lbs.)	(ozs.)
Zoom Lenses	FD 24-35mm f/3.5 S.S.C. ** ASPHERICAL	12	9	84°-63°	f/22	.4	1.5	72	W-75	86.3	3-3/8	515	1	2
	FD 28-50mm f/3.5 S.S.C.	10	9	75°-46°	f/22	1-11	3.5	58	W-69B	105	4-1/8	470	1	1
	FD 35-70mm f/2.8-3.5 S.S.C.	10	10	63°-34°	f/22	1-11	3.5	58	W-69	120	4-3/4	575	1	4
	FD 100-200mm f/5.6 S.C.	8	5	24°-12°	f/22	2.5	8	55	Built-in	173	6-13/16	765	1	11
	FD 80-200mm f/4 S.S.C.	15	11	30°-12°	f/32	1	3.5	55	Built-in	161	6-5/16	750	1	10
	FD 85-300mm f/4.5 S.S.C.	15	11	28°30'-8°15'	f/22	2.5	8	Series IX	Built-in	243.5	9-9/16	1,695	3	12
Aspherical Lenses	FD 24mm f/1.4 S.S.C. ASPHERICAL	10	8	84°	f/16	.3	1	72	—	68	2-11/16	500	1	2
	FD 55mm f/1.2 S.S.C. ASPHERICAL	8	6	43°	f/16	.6	2	58	18S-58	55	2-3/16	575	1	4
	FD 85mm f/1.2 S.S.C. ASPHERICAL	8	6	28°30'	f/16	1	3.5	72	—	71	2-13/16	756	1	11
	Fluorite Lens FD 300mm f/2.8 S.S.C. FLUORITE	6	5	8°15'	f/22	3.5	12	11Exclusive	Built-in	230	9-1/16	1,900	4	3

FL and Manual Series (For Stopped-down Metering and Stopped-down AE)

Type	Lens	Construction Elements Groups		Angle of View	Minimum Aperture	Closest Focusing Distance		Filter Size (mm)	Hood	Length		Weight		
						(m)	(ft.)			(mm)	(in.)	(g)	(lbs.)	(ozs.)
Circular Fish-eye	Fish-eye 7.5mm f/5.6 S.S.C.	11	8	180°	f/22	Fixed Focus		Built-in	—	62	2-7/16	380		13
Tilt and Shift	TS 35mm f/2.8 S.S.C.	9	8	63°/79°	f/22	.3	1	58	18W-58B	74.5	2-15/16	545	1	3
Super Telephoto	FL 1200mm f/11 S.S.C.	7	5	2°05'	f/64	40	130	1148	Built-in	567.5	1'10-5/16	3,100	6	13
	Focusing Unit	2	1	—	—	—	—	—	—	285.5	11-1/4	3,100	6	13
Macrophoto Lenses	Macrophoto Lens 20mm f/3.5*	6	3	—	22	By Bellows		—	—	20	13/16	35		1
	Macrophoto Lens 35mm f/2.8	6	4	—	22	By Bellows		—	—	22.5	7/8	60		2
Mirror Lens	Reflex Lens 500mm f/8 S.S.C.	6	3	5°	Fixed at f/8	4	13	34	Built-in	146	5-3/4	740	1	10

S.S.C. = Super Spectra Coating S.C. = Spectra Coating
 *Equipped with a coupling pin for Canon Auto Tuning System
 **New lens

†FD lens hoods are of bayonet mount.
 ††Filter is of insertion type with holder
 †††Macro focusing capability.

Subject to change without notice.

Note: With the exception of the FD 85mm f/1.2 S.S.C. Aspherical lens, single-focal length FD lenses from 35mm to 200mm accept the Extension Tubes FD 25-U (25mm) and FD 50-U (50mm) for higher magnifications while preserving all FD coupling functions.