A PRACTICAL PHOTOGRAPHY COURSE

(of 7 Lessons)

by

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First issued to Students in 1987, this course has been transferred from old computer disks to a more up-to-date desk top publishing, programme in July 1997. Minor modifications to the text in places, incorporate changes in photographic equipment. The basic approach, however, remains largely untouched.

Despite, modern scientific advances, the lessons still have relevance to anyone who wishes to learn about the art and craft of this fine, useful and interesting, hobby, now sadly overtaken by Video.

I thank all my many students, over the years, who gave me such pleasure and satisfaction. A number on completion of the course, joined our own small photographic club "SNAP" (now extant) to join with others of like interest and improve their knowledge and experience.

These Lessons were first created in 1987, for a Practical Workshop in Photography. A course lasting one year, of 30 weeks duration, one evening a week.

It was designed for use in Adult Education, run by Buckinghamshire County Council, and held at the Ramsay Centre, in Hazlemere, High Wycombe.

The lessons constituted a summation of many years of knowledge and experience, gained from my long interest in this art and craft, both as an amateur and as a part-time professional.

This re-issue is dedicated to Anne Simmonds, the Head of Centre, who remained there, a good friend, up to 1995, before her early retirement.

LESSON 1 - An Introduction

First beginnings WITH YOUR CAMERA

(1) Apertures and shutter speeds.

Accurate exposure is essential to quality in photographs and to assist the beginner in understanding the relationship between the aperture (sometimes called stops), which are usually incorporated in the lens and the shutter speeds normally mounted within the camera itself.

☞ *Consider the following:-*

the quantity of light to make an exposure as water. Then for any 'correct' exposure an specific quantity of water must be passed to the film. Let us assume that the right amount of water is one gallon and further consider that a bucket with a hole in the bottom represents the term aperture. To obtain the right exposure the whole gallon must pass from the bucket via the hole in the bottom. For the first trial we shall make a small hole in the bucket. The water will obviously trickle through this hole and it will take some time before the bucket empties. This is similar to choosing a small aperture for the lens, and as a result the length of time required to pass through the aperture is relatively slow, indicating that a long shutter speed is required.

Now if this same trial is undertaken with a very large hole in the bucket, equivalent, this time, to a large aperture, the water will rush through in a much shorter time, indicating a fast shutter speed.

☞ *So for the same given exposure, you may choose a small aperture, which will then require the selection of a slow shutter speed, or you may choose a large aperture to enable a faster shutter speed to be used.*

The relationship between shutter speeds and apertures is such that with every 1 stop increase or decrease in aperture, the shutter speed required should be doubled or halved so that the same quantity of light received by the film remains the same.

The **stops** or **apertures** are called f-STOPS and today the markings on the various lenses are standardised, and the range of apertures available will vary with both the quality of the lens and its focal length, but the following are commonly used on amateur equipment (old cameras might have different markings):-

f1.4; f2; f4; f5.6; f8; f11; f16; f22 (each stop passes twice as much light through the aperture than the one after). *Thus stop f4 passes twice as much light as f5.6 does, and f2 passes 16 times the quantity of light of f11, and so on.*

This relationship is very important in photography, and will be referred to time and time again in the later parts of the course.

NOTE: Beginners are easily confused to begin with as to the relationship and size of apertures. *They must remember that the larger apertures are indicated by the smaller numbers and that the smaller apertures have larger numbers.* e.g. f16 is a small aperture and f4 is a relatively large one. Lenses with f2 or larger max. apertures are called fast lenses, as they permit the use of fast shutter speeds.

It is very easy to keep your

Use of NOTEBOOKS

All the participants in the course are recommended to take notes as an aide-memoire to how, when and where the photographs were taken. Much initial learning is concerned with knowing your camera, its individual quirks, and to honing your own ideas, techniques, and if necessary undertaking experimentation.

Normal records would include the following common data depending on your personal requirements:-

(a) Aperture and shutter speed

(b) The lens used.

(c) The number of the exposures on the film.

(d) The film used.

(e) Details of the subject matter

☞ **MOST IMPORTANT**

(f) **Most important,** the intentions behind the photograph, and whether the technique used proved successful, or required adjustment with future tests.

Notes such as these will save you much frustration, and worry when undertaking future projects and possibly even commissions.

Interesting articles, letters etc. from photographic magazines can be cut out and mounted in a scrap book for reference.

Good luck with your photography

END

LESSON 2 - All about Lenses

THE USE OF LENSES

GENERAL INFORMATION (35mm cameras).

THE STANDARD LENS

The Standard lens is around 50mm focal length, and this lens roughly reproduces the size and relationships of the image seen in the viewfinder to that as seen by the normal eye. (From my own personal check, my own eyes seem to be the equivalent of 55mm-60mm, this can be checked using a zoom). Some cameras, have a Standard lens focal length of 55mm.

FOCAL LENGTH

The 50 or 55mm is marked on the front of the lens and refers to the focal length of the actual lens, and traditionally this is the distance from the front of the lens to the film plane. When discussing other focal lengths, it should be pointed out that modern designs of lens, mainly telephoto (see later) are now very sophisticated, and designed by computer, and in fact this simple statement no longer applies.

SPEED OF LENS

The speed of a lens refers to its maximum aperture. The aperture being the largest hole or stop that the lens has, (see Lesson 1). The larger the hole the quicker the amount of light required to expose the film correctly travels through the lens to the film, and accordingly a faster film speed can be used. So **FAST** lenses have large maximum apertures, and **SLOW** lenses have smaller maximum apertures. Generally, a standard lens, can be obtained giving 1, 2 or even 3 different maximum apertures. The faster lenses are more expensive, and in fact only give a fairly limited increase in speed. Accordingly, whilst these may be favoured by journalists and others who need to use use their cameras in difficult and possibly dark conditions, it is not generally so important to the amateur, who will manage quite easily with a lens of maximum aperture of f2 or f1.8.

WIDE ANGLE LENSES

Whilst the 50mm focal length lens is called a Standard Lens, there are lenses which have shorter focal lengths and popular amateur lens are 24mm, 28mm, 35mm and these take in more of the normal view as seen.

It should be noted that the 35mm lens is a very useful lens, being the normal view as seen by the eye plus some peripheral vision.

Because of this fact, this focal length of lens (and sometimes a 40mm lens) have been used by photographers as their Standard Lens, and it certainly is no accident that today most of the autofocus (point and shoot) cameras (if fitted with a single lens) use a focal length of 35-38mm.

Wide Angle Lenses have a number of characteristics and these should be learnt through practice, for they are very valuable in creating images:-

(a) Perspectively, if an object is maintained at a standard height close to the camera, the parts of the picture in the distance will be seen to diminish in height more rapidly than with the Standard 50mm lens, and the use of such a lens will accordingly create a feeling of space (the wider the angle encompassed by the lens the more space is created.

(b) A further advantage, is that for a given aperture, the actual depth of field (that part of the image visually seen to be in focus) is much greater in depth than with other lenses, again the wider the angle encompassed by the lens the greater the depth of field.

TELEPHOTO LENSES

Telephoto lenses have the opposite affect to wide angle lenses, these take in a lesser part of the view as seen by the Standard 50mm lens. Their different advantages are:-

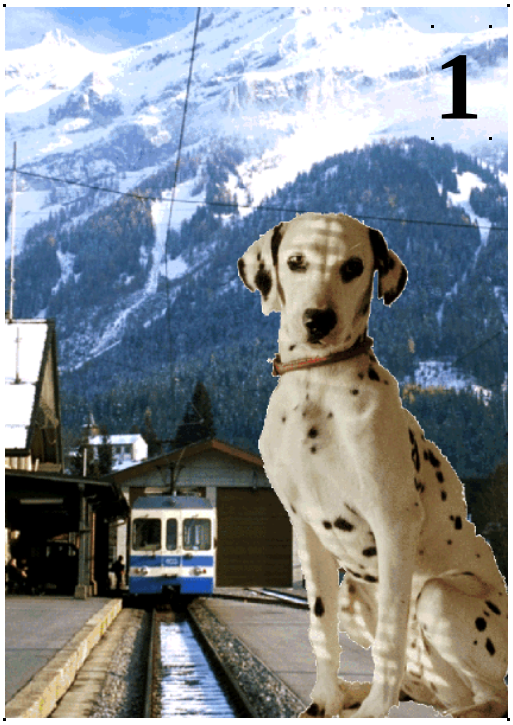
(a) Perspectively, assuming an object close by is maintained at a standard height, then the background will be relatively increased in size from that of the Standard 50mm lens.

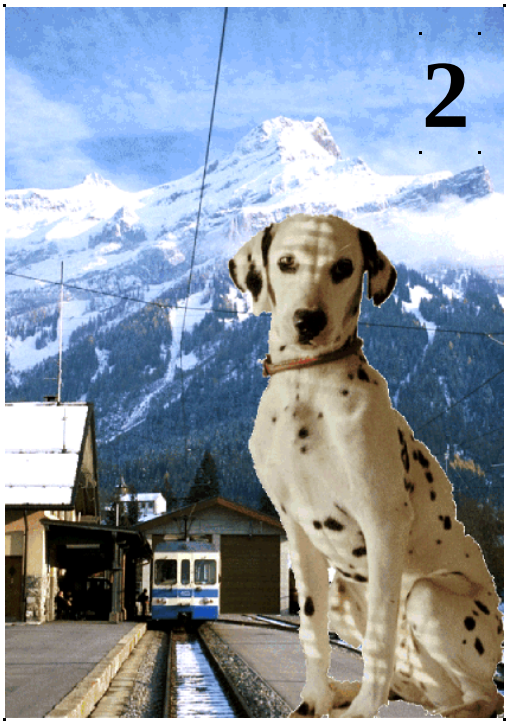
(b) Because the lens is equivalent to magnifying, and the greater the focal length, the greater the magnification, objects some distance away can be made to fill the negative frame, and a photographic image will be reproduced with much greater quality than could be achieved by enlarging a part of the negative. One point arising from this magnification, is that if the larger focal lengths are used, and there is haze (very common in the English Landscape), the effect is exaggerated, and pictures will have a diffused and softened look. This can be quite picturesque if contrasted with close up objects which are sharper and clearer.

(c) The depth of field with the telephoto is relatively small, and

ILLUSTRATION OF LENS PERSPECTIVE

Photographs taken by moving position to maintain size of the dog.



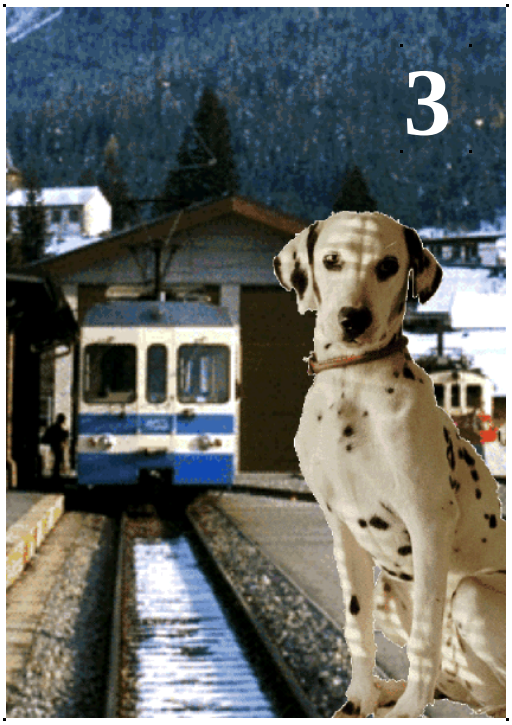


LENSES USED

1. STANDARD

2. WIDE-ANGLE

3. TELEPHOTO



Notes:

1. The first picture taken by the Standard Lens is as we would expect to see such a scene, the dog sitting in front of the general mountain scenery. Nicely balanced picture with the dog dominant.

2. The wide angle picture increases the space between the mountain and the dog, leaving considerable foreground, the dog remains the same size. This time we are able to see the whole of the mountain, and much of the sky, setting him in a total setting. Typical picture postcard, great care needed to obtain interest in the foregound and ensure there is no confusion in the picture. Here the space is filled by the train and rails.

3. The telephoto lens here compresses the image, the station becomes a major element of the scene, and the group becomes more abstract and compositional. Whilst only part of the mountain and station are visible, in this picture you would see quite a lot of the details and the interest is thus more intense. Again the dog remains the same size, but unless differential focussing is used as here, would no longer dominate the composition. By differential focusing, because of short depth of field of lens, the point of interest is easily changed.

the longer the focal length of the lens, the shorter the depth of field.

This can of course be a major problem, if you want everything to be sharp, and in landscape work, will often lead to the need for a tripod or other support to enable the smaller apertures to be used.

However, it can also be of benefit, for example: when the photographer deliberately wishes to emphasise a part of the main picture, such as a portrait, and can the more easily with a wide aperture, make the background out of focus so as not to distract from the person.

(d) One last factor, which is often used, is that because of the perspective qualities of the lens, objects are seen to be crammed together, this can be used for effect, particularly in journalism, (the affect is the opposite of the wide angle in that space is reduced). The other result is that the picture in effect becomes more two dimensional and this provides the photographer with the possibility of creating graphic compositions, abstract patterns and arrangements.

ZOOM LENSES

Zoom lenses, much favoured by the amateur photographer, because they encompass a wide and variable range of focal lengths, are very useful and can be economical.

With regard to the latter comment, however, **the serious Amateur should consider the purchase of three separate lenses, wide angle, standard, and telephoto if he wishes to take the finest quality photographs at the cheapest price, a study of prices will indicate that a 28mm (24mm are now coming down in price), 50mm and 135mm are all relatively cheap to buy, and form the basis of a good minimum outfit**.

The pros and cons of the zoom lens is as follows:

(a) The main advantage, is that without having to change the lens on the camera, the photographer is instantly in a position to vary the focal length of his lens, and with the modern camera can see the affect on his picture.

(b) Another major advantage, is that by using the zoom lens as a magnifier, he can fill the negative fully with the image desired, ensuring that standard prints can be produced without selecting a part of the negative for enlargement. This is particularly important when taking slides (using reversal film) which are the finished product themselves.

(c) The quality of zooms vary, and there is no doubt that despite the excellent lenses now produced, they cannot match the fixed focal length for ultimate quality. Zooms, particularly the cheaper ones, distort the images at maximum, or minimum, or both focal lengths (of their very design, they must be somewhat of a compromise). For most photographs this is not a problem, but where straight lines are concerned such as architectural work it can be very important to the final picture, and impossible to correct in printing.

(d) Their maximum apertures in most cases are determined by the maximum focal length, and they can therefore be considered as **SLOW** lenses. In recent times faster zooms have been designed, but the quality is of such lens is doubtful.

(e) They are advertised as offering macro facilities, true macro is a 1:1 reproduction, that is the full size subject on the negative, the macro with zooms is nowhere near this standard, and whilst suitable for a large flower, such as a rose is unsuited for closer work. Further, the quality in macro mode is exceptionally poor in most cases, particularly around the periphery of the picture and is only really suitable to allow the occasional snapshot, which might otherwise be missed.

OTHER LENSES

For those wishing to specialise in a field of photography, there are specialist lenses for their work. Many of these are within the scope of the Amateur photographer. Some are very expensive, and with the amount of work that an amateur would undertake, would be better hired.

PERSPECTIVE or SHIFT LENSES

These lens are used to correct the unfortunate perspective affects arising from the use of standard lens in architectural photography. They are also used in other fields for effect, but are very expensive.

Basically, the actual lens is a wider lens than normal, but is termed a longer focal length, and this is designed to permit the lens to be moved up or down, or sideways. A 35mm shift lens is actually a 24mm lens of which only a portion equivalent to the standard 35mm horizontal angle is used.

For example using this lens, if you point a normal 35mm lens straight at a building, and maintain the architectural features exactly vertical, you will have a great deal of foreground in the picture, and will not see the upper part of the building. You can of course if you have a lot of space, move back until you see the whole of the building, and then enlarge the part of the negative, both expensive and only using part of the negative leading to poor quality. With the shift lens, you would push it up, and the building as seen in the viewfinder will lower itself to the position you require.

MACRO LENSES

Macro lens are especially designed to take good sharp close-ups.

Standard Macro lens are relatively expensive, and are made by most camera manufacturers, these are normally 50mm focal length, and focus such that you are able to obtain a 1:2 ratio which is half full size of the subject on the negative. Some manufacturers will sell an extension tube, separately or with the lens to enable the true macro 1:1 to be achieved, at the loss of 1 stop in speed of the lens.

My experience is that the 50mm is an excellent lens for general photography, and you may well consider purchasing this as your Standard Lens rather than the usual one supplied by the manufacturer. However, the maximum aperture is generally smaller than the normal standard lens, and thus the lens is **SLOWER,** although some manufacturers now make an even more expensive lens of around f2 aperture.

One other problem is that with the 50mm macro, you have to get quite close to take the subject, which if it is an insect may well frighten the insect away. I use mine for copying and find the quality superb. Better for insects, are the 90mm Macro lens, which not only focus to infinity, but have an F2.8 aperture (only 1 stop less than the normal f2). These have the additional advantage that this is a superb focal length for portraits. Not only this, the lenses are able to give a true 1:1 macro, and allow you to be some 9'' or 225mm or so from the subject, which is much better for insects and the like. They are regretably expensive.

CONVERTERS:-

There are 3 converters that can generally be purchased. These are lenses that fit between the main lens and the camera, and increase the focal length of the original lens by 1.5, 2, or 3 times. They are very useful if you only have limited range of lenses, but I would not recommend the purchase of one at the expense of adding a standard wide angle or telephoto (28mm or 135mm) to your range. Good converters cost more money than these additional lens, and you should buy the best. Having said this, they have the advantage that they can generally be used with any lens, and are best of all with telephoto lens. This means that a standard 135mm lens can be turned into 200mm, 270mm or 400mm, which can enlarge your experience greatly.

I myself have purchased just two the, 1.5x and 2x magnification, and find that I now only use the 2x on rare occasions, mainly on my 300mm lens so that it can be used as a 600mm.

CLOSE-UP LENSES:-

These are cheap, and consist of various strength lens that are screwed to the front of your standard lens, and enable you to get somewhat closer to the subject. They are a very cheap method of getting reasonable closeups, but are in no way suitable for macro (even to the standard of zooms), and the lens must be stopped down to at least f8 to obtain any sort of quality.

CLOSE-UP (REVERSING LENS):-

This is a useful dodge on occasion, and very cheap, giving very good but limited reproduction. A reversing ring for your lens is relatively cheap, it enables you to mount your lens backwards. With a standard lens you are enabled to get very close indeed, nearly 1:1 macro, but there is no variation in size, it is this or nothing. You may be interested to know that it can also be used to advantage with zoom lenses, which have the surprise benefit of allowing the zoom action to focus on the subject while you remain static. With the standard lens, you will have to move forward and backward, until the subject is in focus, and close-ups have very tiny depth of fields, even with the smaller apertures.

HINTS ON THE USE OF LENSES

DEPTH OF FIELD.

Do remember to utilize depth of field as necessary to achieve the affect you want. In case of emergency use the depth of field as indicated on your lens, and shown to you in these lessons (if you want to be really sure, stop down a further stop).

THE USE OF APERTURES.

Depth of field is controlled by the selection of apertures, the smaller the aperture the greater the depth of field, as can be seen on the scale printed on your lens. (Note: Telephotos may not have a very usable scale, basically because as the focal length gets longer, the depth of field becomes much smaller and very little is in focus. Zooms are notorious, because of the variable focal length, any scales provided are basically unreadable, and more or less useless (one good reason for single focal length lenses).

In these latter cases, you can only examine the image in the viewfinder by the use of the preview button (if your camera has this facility), but of course, firstly the viewfinder is small and secondly as you view with the smaller apertures, the viewfinder gets darker and it can prove impossible to see.

Some manufacturers including independants, do supply special right angled magnifiers which mount over the viewfinder. These allow you to more easily examine the sharpness of the image. The better magnifiers, can be switched to show the whole viewfinder image, and a magnified section.

SHUTTER SPEEDS

Remember as smaller apertures are used, perhaps to obtain sufficient depth of field for your requirements, then longer shutter speeds will be necessary to support the camera to prevent camera shake, or alternatively you will need to use faster film.

APERTURE/SHUTTER SPEED/FILM SPEED

We have already noted the relationship between the choice of Aperture and Shutter Speeds, remember however, that Film Speed is also related, and the use of a faster film will enable either a smaller aperture, or a faster shutter speed to be selected according to your needs. A 200ASA is twice as fast as one of 100ASA, and a 400ASA film is 4 times as fast. The former will gain you 1 stop in speed and the latter 2 stops. There are faster films available, and further gains can be made, but at the cost of loss of quality due to increased granularity of film.

FIELD OF VIEW & FOCAL LENGTHS

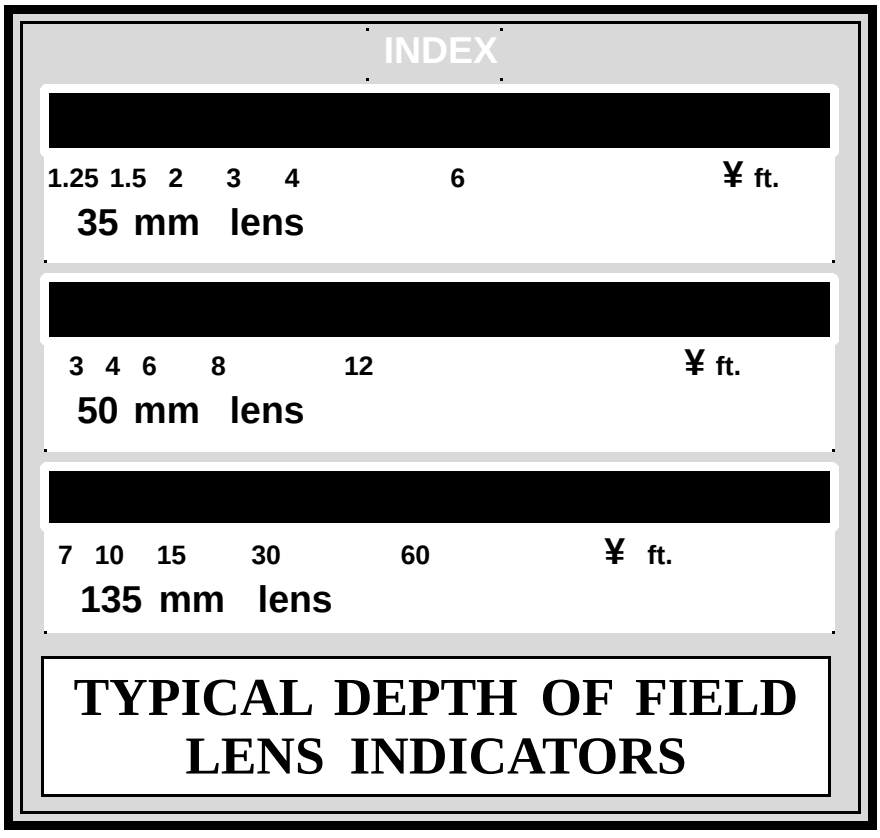
If a 50mm Standard lens takes a certain field of view, a lens of 25mm (in fact the equivalent commonly sold is 24mm) takes a field of view 4 times as large, and telephoto of 100mm takes in only a field amounting to a quarter the area. Halving and doubling again to 12mm and 200mm would thus respectively take in 16 times or 1/16th of the original view.

Most books describe the field of view as a horizontal angle encompassed by the lens, for information the usual common lens are listed below, with the angle in degrees:-

- **8mm 180 degrees in all directions (a circular image)**
- **16mm (100 degrees)**
- **24mm (84 degrees)**
- **35mm (63 degrees)**
- **50mm (47 degrees)**
- **85mm (29 degrees)**
- **100mm (24 degrees)**
- **135mm (18 degrees)**
- **200mm (12 degrees)**
- **300mm (8 degrees)**
- **400mm (6 degrees)**
- **500mm (5 degrees)**
- **1000mm (2.5 degrees)**
-

+ **MOST IMPORTANT Whilst we have not dwelt on the fact in this lesson, do not forget that lenses have 2 main qualities, that of a degree of magnification, less or greater than the standard 50mm lens, and that of changing the perspective relationships. For the former, you the photographer remain static, and the focal length of the lens is changed, whilst for the latter, you the photographer walk to modify the relative positions of the objects and select the right focal length of lens to produce the effect you require.**

Because of these special characteristics that lenses possess, the normal focal length recommended for portraiture is about 85-90mm. Accordingly, to retain normal facial perspective relationships, particularly between nose, face and ears, a wider lens will require to be used further away, a 50mm may be used for head and upper torso, and the wider angle say 35mm (commonly used on compact cameras) is better used only for full length, albeit seated figures.



REMEMBER: An easy way to assess the most suitable lens is to check the lens you are using. Then 1/4 of the image is twice the focal length and 4x the image is 1/2 focal length, and so on.

END

LESSON 3 - Hints for Creative Photography

HINTS FOR SIMPLE CREATIVE AND SUCCESSFUL PHOTOGRAPHY

(1) EXPOSURE

Negative Film: It is better to overexpose than underexpose on negative film. Whilst the latitude of modern colour films is able to accept a variation of approximately one and a half stops underexposure and up to three stops overexposure, for average contrast subjects, correct exposure is essential for two poissible reasons. (a) for the finest quality of the image and (b) if the subject has an extensive contrast range.

Before examining these matters in detail in later lectures, try using 200 ASA film and setting the camera as if using 100 ASA film, this will generally ensure that landscapes and similar pictures wehre there is a large amount of lighter sky or tonal value remain well exposed. Some cameras have sophisticated metering which will assess the type of subject and automatically carry out these adjustments. Remember that with negative film, if in doubt it is better to overexpose. When using colour film, this also tends to enhance the colour saturation of the subject.

Slide or Reversal Film: Whilst manufacturers recommend the correct exposure for such films, it is quite common for photographers to underexpose by one third or half a stop to give more saturated colouring to their slides (Note the opposite exposure correction to that used for negative film). Note any overexposure is detrimental to slides, and if in doubt bracket (see next paragraph) or underexpose.

BRACKETING: This is a term used by photographers, who when taking an important photograph, and one for which it is essential to have accurate exposure, will take more than one photograph (generally at least three, exposing one at the correct metered exposure, and two others a half stop under or half stop over. This might be possibly 1 stop either way depending on circumstances).

With slide film, the different exposures can give quite different moods and sometimes it is essential to bracket to ensure that one of the pictures captures the scenic values.

☞ **REMEMBER: if in doubt**

NEGATIVE FILMS it is better to overexpose and for **REVERSAL/SLIDE FILMS** underexpose.

The technique referred to as bracketing is not normally called for with negative films, where the latitude of the exposure is much greater.



(2) APPROACHING THE SUBJECT:

By all means endeavour to take the obvious picture of any subject. Landscape photography is particularly difficult, and very often one can wait for hours for the composition to be as one wishes, or indeed the conditions required may not occur, therefore, it is better to have taken something than nothing at all.

☞ **REMEMBER** Film is relatively cheap and to save expense one can obtain contact prints showing small pictures of your negatives, this is available in both B & W and Colour, and you can then enlarge the pictures you wish. Today because of the much reduced costs of obtaining colour prints, many photographers will not ask for contact prints but will use normal prints as their proofs. Whilst normally the quality of colour printing is very good, later lectures will indicate that standard lab printing does have limitations and is unlikely to represent the vision as seen by the photographer.

After having taken the obvious, commence to examine the subject and improve upon the original image. Consider moving in closer, photograph a part to represent the whole, try differing angles, and changing perspective by altering your lens. Each photograph should aim to either improve upon the original composition, or seek to show a differing aspect of the subject. All this time you will be honing your own personal vision and refining your own personal style. In my own architectural photography, I might take 3 or 4 pictures before I

THINK!	PLAN!	LOOK!

obtain the image that satisfies me, and in landscape work, one can take all day, and still take only that number of exposures.

If you are taking a portrait of someone, you may need a whole film to obtain an image that satisfies you. Again every photograph should move you closer to the image that you are seeking, or enable you to explore the differing aspects of the person or group concerned. Again in a quick session, I have found that as a minimum at least 6 photographs will be needed (though I do not consider myself to be a portrait photographer). A further complication is that to assist your subject or model, you should be offering advice and guidance as to what you wish them to do, rather than telling them everything at the same time. This later will only cause frustration, annoyance and confusion. Do it stage by stage, taking photographs at each change. You will find that the subject will be more relaxed, and it will enable you to take photographs when the image you are seeking presents itself, without even the subject knowing. It is even possible that the person is will forget about the camera.

☞ *REMEMBER:*

YOU, NOT THE MODEL, CONTROL THE CAMERA & THE IMAGE, AND ONLY YOU ARE ABLE TO SEE THE COMPOSITION IN THE VIEWFINDER. THE IMAGE IS THE KEY!

(3) PLANNING:

Before taking pictures it is a good idea to think about what you are trying to achieve, the setting for portraits, the lighting, in landscape what is the best time of day, the direction of the sun, etc. Most of all ***what are you trying to say?*** This saves much wasted time and annoyance, and even if the final result bears no resemblance to the original idea, such planning is rarely wasted as it provides a strong basis on which to start your session.

(4) COMPACT CAMERAS, AND WIDER ANGLE LENSES:

Remember that these cameras, unless they are very expensive have wider than normal lenses. Some more recent models have limited zooms or two lenses which may individually be selected. The normal lens is usually about 35 to 38mm focal length. When taking scenes in particular they always include a large area of foreground, and again because of their short focal length and great depth of field, much of the scene will be sharp and in focus.

Always therefore examine the viewfinder carefully to:- (a) include something in the foreground; (b) to ensure that the background does not become over complex and detract from the subject. It may help to take a higher or lower viewpoint than usual to frame the subject either with sky or ground. If the subject is interesting in itself such simplification by removing over bearing detail such as complicated or intrusive backgrounds can only be beneficial.

(5) DEPTH OF FIELD:

Do use depth of field to its best advantage and in a creative manner. For example in landscapes endeavour to get as much detail, sharp and in focus by utilising the smaller apertures of the lens, such as f11 and f16. One school of famous photographers used f45 with plate cameras for this purpose and created some wonderful images. Usually the smallest aperture available on a 35mm camera is f22. You may need to support the camera on a tripod, or alternativel, use the simple expedient of resting the camera on a wall or fence, and making use of the self-timer which most cameras have fitted, to get the sharpest possible image.

NOTE: cheap bean bags and similar supports are sold, and are quite useful if at the present time you cannot afford a tripod (this latter piece of equipment is the professionals best companion).

Alternatively, for example in a portrait, you may wish to focus attention upon the face. In this instance you will wish to use the larger apertures probably f2 to f5.6 depending on focal length of lens used. The depth of field varies according to lens, distance from subject, and aperture used, and in portraiture it usually is absolutely critical. Practice various combinations, but bear in mind that you have to balance the actual area of the sharp image against the fuzziness required of the background. Many portrait photographers favour a 90mm lens used at an aperture of f2 or f2.8, and set their subject some distance from a plain backcloth.

When considering lenses for use in portraiture bear in mind that in a full face, the depth of field required (that is in sharp focus) is from point of nose to ear, some 6 inches or 150mm, a profile is easier being some 4 inches or 100mm, this latter dimension also applies to small children. Further, as focal length of lenses shorten, because they are used closer to the person, distortion of features may occur, accordiingly, the following is recommended:-

Use 35mm lens for portraits from waist to head, use 50mm lens for bust and head, and 90mm lenses for just the head and shoulders. For children you may

THINK !!

WHAT DO YOU WISH TO SAY WITH YOUR PHOTOGRAPH

reduce the area in viewfinder a little and get closer.

Try a combination of shots: the close up portrait, the person in their home setting, surrounded by personal possessions, use natural lighting, artificial, bounce flash, and basically have fun enjoy yourself, and don't forget that this also applies to your model and assistants if any !!!

(6) SELECTING SHUTTER SPEEDS (to prevent camera shake)

+ ***N.B.*** *This does not apply to selecting shutter speeds when endeavouring to stop movement in the subject, when additional protection will be required.* There are tables available which will assist you in this latter point which may be noted in camera books.

This advice relates solely to the need in normal conditions to obtain a sharp image when hand holding a camera.

As the focal length of a lens changes, the image is reduced or magnified, at the same time longer lenses and zooms become heavier and more cumbersome. Further the ability of persons vary as to how still they can hold a camera. With regard to this latter point, you should yourself undertake tests, which may mean that you may have to adjust the shutter to a faster speed than advised by me.

As the image is magnified, so also is normal movement. You can tell if your image suffers from camera shake by the simple fact that nothing in the picture is sharp, normally if your focussing is wrong something will be sharp. Also if the movement is quite bad, the image will be disturbed in the direction of movement showing a positive bias in the direction in which movement took place.

+ **THE RULE IS: The Minimum Shutter Speed which should be used with any focal length of lens is the reciprocal of that length in seconds.** Thus for a standard 50mm lens, the shutter speed should be 1/50th sec., now such a speed does not normally exist, and you would therefore select the next highest speed which is 1/60th.

It can be seen, from this rule, that wide angle lenses have the advantage that they can be used at quite slow speeds, for example a 24mm lens would only require 1/30th sec. The opposite however, applies to a telephoto lens, where a 200mm lens requires a shutter speed of 1/250th of sec.

This indicates one of the main disadvantages of the zoom lense, particularly one with a wide range of focal lengths. Amateurs using zooms often obtain quite many unsatisfactory photographs because of camera shake. The reason is simple, they select a fixed shutter speed let us say of 1/125 sec., and then zoom without during the actual act of taking their photograph in some cases using a focal length greater than 125mm. If you use a zoom lens it is better to select a high shutter speed for the max. focal length, and use a faster film. For example a 200 ASA film and a 400 ASA film will gain 1 or 2 apertures respectively. This also enables some control of depth of field to be maintained. 200 ASA film is of similar quality to the usual 100 ASA, but if 400 ASA is used, the increased grain, particularly with colour, can be a disadvantage.

NOTE however, these shutter speeds will allow reasonable size enlargements, if larger enlargements are required, you should use a faster shutter speed, e.g. instead of 1/125th of a sec. use 1/250th, or alternatively support the camera on a tripod or other support for absolute sharpness. In an emergency, rest the camera against a tree, wall, etc.

(7) PERSPECTIVE RELATIONSHIPS:

Do examine your surroundings carefully for useful relationships to subject, either by walking and/or using differing focal lengths of lens. By this means a totally different view of a subject can be photographed than that which could be seen by the normal eye. This approach is ***creative*** photography, for the image usually printed by the truly creative photographer is not that normally seen by others, and can be distorted, modified, changed in scale, spacial relationship, & tonal values from reality etc.

A building for example can be framed by a very small tree, situated some distance away and made to look enormous, by the use of the telephoto lens. With the wide angle lens, spacial relationships are exaggerated, and a few hundred feet can look like a mile. Further, with the wide angle lens and its great depth of field, objects can be in focus (i.e. sharp) both close to the camera and farther away, something the human eye cannot do.

(8) TELEPHOTO LENSES:

A special word on telephoto lenses, for these compress space, and this affect is much used by photographers, who are thus not only able to select details of subjects, and exclude large areas which may detract or disturb the composition, but can transform a 3D image into a 2D pattern.

This property can lead to a simple graphic style and many landscapes taken in this way are more or less abstract compositions.

(9) GENERAL ADVICE:

When learning about photography, **DO NOT** try and practice everything you have been taught at the same time. It is better to concentrate on just one aspect you choose and spend some time exploring

END

LESSON 4 - Principles of Design

PRINCIPLES OF DESIGN + remember "FUSEM"

"FUSEM" is a means of remembering certain principles of design. These principles were first used by the Greeks and can be used as a means of assessing, creating or conversing in a common vocabulary on anything of artistic quality that you wish.

When you fiirst learn to use the language, as set out here, you will find it difficult to understand. However, as your experience widens you will begin to appreciate both the subtlety and complexity of the subject. In my many years of working in many fields including architecture and photography, I have never found any creative activity that was not helped by a knowledge of these Principles.

THE PRINCIPLES:

There are five Principles of design, and they can be applied to all types of design, including the natural world.

FUNCTION

UNITY

STABILITY

EXPRESSION

MAGNITUDE

ART FORMS IN GENERAL: obviously depending on the art form selected, the various Principles will be given differing emphasis, but in all fine work, every Principle will be respected, and will complement and support each other. In pure art for example, the Principle of function may be less important, and probably unity and expression will be emphasised. Having said this, of all the Principles, that of **EXPRESSION** is the most important, for without it the whole design, or composition fails.

The following pages set out only brief pointers on each Principle, true subtlety and depth of understanding in the finest work is only achieved after much experience and application, in our case, of actually taking pictures and producing them in their final printed form.

We all know that if a number of persons were given a similar project to undertake, they would still achieve differing results. These would normally take on their own personal photographic style, and this style is developed as each individual photographer discovers and develops his own personal talent and gifts.

I There are two other points which should be made, and borne in mind by those who consider themselves untalented.

(1) Some fortunate persons have a special intuitive gift for photography, or indeed any art form. Whilst, they are to be envied, it is, however, not uncommon for many such persons to waste their abilities because they are unable to master the technical requirements of their art or craft.

(2) Likewise, It is possible for those who spend time and apply themselves, to learn techniques and develop a sound approach to their photography, art or craft, learning by hard earned experience. Such persons can often produce works of great quality. Look out for the examples of famous artists, and you will find numbered amongst them, many who may not be considered geniuses, but have obtained an eminence in the field in which they practice.

One last point remains to be made, and this is of some importance: As functional considerations, or those of stability become critical to the matter in hand, indeed of major and essential importance. You will see that whilst the design by varying persons would be slightly different, it is highly probable (with the exception of someone with great originality, very very rare), that the designs, in our case photographs would show less variation than usual in general appearance and expression. Consider for example the basic form of a watch, where function is paramount, before the invention of electronics and the modern digital watch. Design variations were restricted solely to hands, dial, shape of watch, and the basic form was the same, with a smaller face for ladies than for gentlemen.

PRINCIPLES OF DESIGN

in brief are described in the following pages:-

FINE PHOTOGRAPHS ARE THE RESULT OF THE DESIGN PRINCIPLES ALLIED WITH VISION + PERFECT TECHNIQUE !!!

PRINCIPLES OF DESIGN

+ FUNCTION:

This principle is self-explanatory and governs the actual use to which the photograph is to be put.

The functional purposes may be simply an informal record (such as a family snapshot), a formal portrait, reportage (for publications in newspapers), for publication in specialist magazines, fashion, a collection of special photos, say in regard to coins, public houses, landscapes, documentation of town, village, city, posters or advertising.

These are the obvious functional type purposes, however, there are also the more intangible functions.

e.g. a photograph of war intended to show, (a) suffering, (b) heroism, (c) futility of, or justification for. Each of this attributes will affect the subject matter selected by the photographer, and the manner in which he takes the photograph.

Function is relatively easy to dismiss, but if you think carefully about the actual purpose for which the photograph is required, then you will discover that deep and long consideration of those needs will bring about the subtlety of the special picture, one that is outstanding.

QUESTION *Ask yourself what the photograph is to be used for, and have you succeeded in fulfilling that function.*

+ UNITY:

Unity represents the compositional aspects of the design, it is one of the most complex of the Principles and for this lecture we will only begin to look at some of the rules.

Before we examine this Principle, however beware, part of its complexity is that the really great works can often break the common rules and by so doing, create ooutstanding works of genius. If such breaking of the rules was done too often, then their very greatness would be negated. What is important is that when such departure is undertaken, it is part of an overall creative process and necessary for the instance in question.

ONENESS

The photograph should have a strong sense of unity or oneness. There should be no element in the composition which is irrelevant to it, and none missing which should be included. Thus when taking pictures, the general rule is SIMPLIFY. This more often than not means getting closer, fill the frame with your subject matter.

You can have oneness in many aspects, you can have a oneness in many aspects: such as in subject, colour, shape, tone, texture, materials, lighting, among others.

The most common means of creating a stong sense of oneness or unity is to control colour, and many professionals, even if only for their own pleasure, use black and white for their photography, which gives an immediate, unity to any picture. Colour is much more difficult to control, and the most satisfactory results generally occur where there is a dominance (see later) of one colour contrasted (see later) with another.

VITALITY or CONTRAST

Depending on the function, a composition must have some degree of vitality or in other words contrast to make it interesting. Contrast can be by use of colour, texture, shape, etc. Consider the difference between a Poster requiring immediate visual impact, and which thus needs a strong sense of vitality and a fine landscape which must be far more subtle in its treatment.

DOMINANT

Every photograph must have a dominant, around which the rest of the picture must hang. The dominant need NOT be the biggest element of the composition, and much fine work contains a small dominant, to which attention is drawn by the remainder of the composition. You can also have a dominant colour, pattern, shape, etc., which is then contrasted (see earlier) with lesser elements.

BALANCE

Every composition should be balanced. There is an old rule that says you should visually divide the picture into thirds, vertically and horizontally, and the important subject should fall on one of the crossing points. This certainly works with many static pictures, and is well worth trying, but it can become boring.

There are other useful suggestions to help balance and composition, for example the common one of unifying three elements into a triangular formation.

Again a deliberate choice to photograph in a

STUDY PICTURES YOU LIKE!
THEN FIND OUT
WHY
USING THE PRINCIPLES

manner against these rules, can lead to a more dynamic picture, and it is quite common to consider a strong diagonal composition, particularly when expressing (see later) implied movement.

I RHYTHM

As in music, where rhythm forms the base on which the melody floats, rhythmic elements lend vitality and unity to the composition.

There are the more obvious rhythms introduced by fixed elements in architectural works, such as railings, window patterns, or even the shadows cast by such items. There are also the more subtle rhythms of nature, where natural forms have a simple rhythmic pattern, such as the leaves on a branch, the branches on a tree, the folding of the landscape with hills sitting in the valleys formed by other hills, or even the groups of sheep in the fields.

Sometimes the elements are hard, sometimes soft, but always included in a composition they offer unity and vitality to a scene. The simple architectural composition is readily understood, many fine pictures are based on architectural elements, taken from unusual viewpoints, such as stairs, pavings with people taken from above, building facades both as a whole, or in part. Other compositions may need deeper analysis, some fine pictures are based solely on the photographers ability to compose people into a rhythmic, but not necessarily an even or boring pattern.

Pattern pictures and graphic pictures depend heavily on inherent rhythms, whereby an element is repeated a number of times, but not necessarily being an exact copy each time. Indeed the more satisfactory pictures are where there is a great deal of subtle variance. Consider a tree, where all branches are basically the same, one main branch with lesser branches, with twigs, increasingly being more plentiful and thinner. This applies to all trees, but yet each branch and tree is different in general form.

The inclusion of rhythmic elements in your pictures will greatly increase their attractiveness, there is something about the inherent order and yet tremendous natural variation in such elements that echoes feelings in the human sub-conscious. This quality is common to all men, and indeed to nature, where even the basic simple annual rhythm of spring, summer, autumn and winter, or night and day control our lives, and yet each day is variable.

+ STABILITY:

This Principle relates to structural or constructional aspects of the final presentation, and is very important in such art forms as architecture, and sculpture where the materials used and the manner in which they are put together are essential. But it still has an application in our field of photography.

To produce a fine print, whether as an entity in itself, or a means of reproduction in magazine, requires a certain technical knowledge of the materials and chemical reactions that are used. As you become more proficient in your skill, you will learn to become more aware of the special gifts and qualities that you and your processer/printer will need to enable the image that you have created to be made available to others.

You will consider the following:-

(1) The type and size of film.

(2) The quality, colour and texture of paper to be used.

(3) The various chemical treatments that can be applied to modify the image, including, toning, colouring, reversal images, as well as other skills which are a matter for the more experienced photographer.

(4) Arising from the Principles of Function and Magnitude in particular there may be special technical problems requiring attention.

Many fine photographers, have gained their particular reputation from their ability to reproduce fine images in the darkroom, even though their actual visual photographic ability may be limited. They appear to find their creative talent by the modification and manipulation of what might otherwise be an umpromising photograph.

Accordingly, any interest in the technical side of photography, can be developed into a very worthwhile talent, and if you find it hard to see and take pictures, this aspect may well enable you to obtain tremendous pride and satisfaction from your craft.

Indeed the creative photographer, who may well excel in taking wonderful pictures, may find himself or herself very limited by their inability to appreciate the means of obtaining the final creation of the image as seen and visualised, which necessitates at least a good working knowledge of the technical possibilities.

To this extent then, it can be argued that it is essential to practice these oneself to fully understand you own limitations and to enable you to make the best of your own talents and abilities. You may also then have the difficult task of endeavouring to indicate to your processor/printer your exact requirements.

However, a word of warning, do not get obsessed with techniques to the detriment of a clarity of purpose. Limit your technical exploration and become expert in those skills you choose to gain.

+ EXPRESSION:

The most important of the Principles is Expression. Like the other principles it has many subtleties and will take time to examine and learn, however, the term is relatively easy to understand:-

l QUESTION: Ask yourself what did I mean to say ???

This question relates to the 'expressiveness' of the picture, what it has to say to you and other viewers. Let us now examine the various (not altogether comprehensively) aspects of this Principle.

You can express the following:-

(1) The subject, in a portrait, various aspects of the sitter may be expressed, their age, their status in society, their masculinity, femininity, childhood, their condition (starving, poverty, riches, self-made), their occupation. The list is enormous, and we must consider each and every aspect which we feel is important to the picture, in many cases determined by its actual FUNCTION.

(2) The photographer can express a mood, of peace, stillness, tranquillity, or in contrast, of strife, contrast, motion. Further, conditions of tragedy, comedy, fun, solitude, crowdedness, pain, busyness, folksy, gaiety, etc.

(3) Yet again, he can express himself in abstract matters, subjects, harmony or contrast in colour, tonal values, shapes, textures, humanity, universality and such like.

(4) He can express simpler functional matters, such as in advertising, e.g. products, food, materials, clothes, cigarettes, books etc.

(5) He can limit his expression to accurate representations of things for record purposes, such as archaeology, astronomy, natural history, the body, buildings, jewellery etc.

NOTE: The expressiveness of the picture can derive itself from any of the other Principles, where these are given greater emphasis, but the finest use of the principle is when all the other principles are fully taken into account.

It is an important factor, that the most successful and the most universal of photographs, are those that base themselves on "truisms". This term relates to those basic factors of experience and life which all humanity share and experience.

Thus common experiences are those of new life, childbirth, marriage and death. Further, those expressions of feeling, and conditions of living, such as fear, pain, grief, laughter, joy, cold, starvation, poverty and such like.

Study photographs, particularly those, that remain in memory, and you will find a universal human experience. This of course cannot be produced with every photograph, but you must be aware of it. If ever a situation arises where such universal values present themselves to you, you should be able to not just immediately recognise the fact, but react quickly and take the picture.

Whilst the extreme circumstances are of course rare, even in our world, such feelings are there although perhaps not so loudly expressed. Look for them. Mother and baby, old lady or gentleman etc.

Many fine photographs, are solely compositions in themselves, and limit expression to materials, texture, and shape. I was going to add colour, but this is an extra dimension, and a large proportion of such pictures are in black and white. The skill of the photographer relates to the perfect exposure, and juxtaposition of shape and texture. You will find many lesser examples or exercises, illustrating these points, in photographic magazines.

l *TASK Find some photographs that say important things to you. Study some of the finest images from the past. Then ASK yourself what do they tell you, and WHY have they attracted you ?*

A survey, some years ago, among famous photographers of the most important photographs every produced, found that of those images which each chose, there were a number of duplications. Of these, and you may have come across them were 3 of war.

The first was the little naked girl in Vietnam running down the road totally alone towards the camera, with troops on either side; the second was of a mother holding her dead child; and the third that of a South Vietnamese pistol shooting a Viet Cong in cold blood. The reason for these choices are very simple, for whilst they were all relevant at that time to a horrific situation, they also expressed differing human feelings, stark and uncompromising, universal to everyone, creating a strong and positive individual reaction from each of the observers.

This last point is a very subtle one, and is MOST IMPORTANT, if a picture can leave something to the viewers imagination, so that his or her mind can add a bit of themselves to the picture, then the photograph has an added dimension. It will mean many things to different persons. Listeners to the radio plays, will know the difference between the effectiveness of these plays as against those seen

READ THIS LESSON OVER AND OVER !

on television. Radio allows the listener free rein of their own imagination, and whilst building in both background, and a personal picture of the participants in the play, it still allows the listener to add their own nuances based on their own individual experiences of life and living. A film on the other hand is much more dominant, and whilst not excluding the viewer entirely, is more positive in setting out the directors view, bias, and prejudices.

Following on this theme, a similar effect is seen with photographs which have been taken with diffusers, much used for romantic photography, they leave some mystery to the image. Similarly, many abstract photographs, or those taken in misty, foggy, or other strong atmospheric conditions.

Lastly on this same point, there are possibilities of not including the whole of a subject, deliberately allowing the viewer to complete the picture in his own mind.

All these approaches will allow a photograph to take on a more universal expression, and such photographs, always have strong popular support. One photographer, David Hamilton, has built a hugely successful career on his diffused images of young ladies, and these pictures, and books have sold widely throughout the world. He could not have made a more suitable choice if his intention was to make money, for he has incorporated three essential truisms in his work, (a) the innocence of the young growing teenager, (b) the use of the diffuser has enabled the viewer to use his imagination to imbue the images with his or her fantasies or details, and (c) there are the universal sexual undertones. Whether one can agree or not with what some would call exploitation and commercialism, many of the images are superb and will be long remembered, and of course the models are created girls, and do not exist in reality.

+ MAGNITUDE:

This is the last Principle of Design, and may prove difficult to master and understand. It is the relationship of the design, or in this instance, the photograph to three major influences, Time, Scale and the Environment or Surroundings. A quick summary and discussion of them follows:-

TIME

There are a number of features relating to time, the first is relatively straightforward, and that is the need for the photograph to meet the functional need to last for a set period of time. e.g. a snapshot may only be intended to convey a picture of a place or a person to another person for a short period, this could be the sending of a photograph of your baby to their grandparents, whilst a more long term view will be taken if the photograph is intended for permanent retention, and possibly with the even longer hope of passing down to later generations.

Whilst this illustrates possible extremes, it does indicate that the attention to detail and approach to the photograph by the photographer, including his technical abilities (see Stability and later) will vary according to the functional requirements.

The second aspect of time is less easily dealt with, it relates to the time in which the photograph was taken. If you study many of the old snapshots or photographs that you have, you will immediately recognise that they are products of the period in which they are taken, from (1) the clothes worn by persons in the picture, (2) the buildings or environment in which the picture was taken, and (3) the type of photograph, size, quality, materials used, we shall call this the common time. There is also the contemporary artistic time, which is generally more advanced than the common time, this is the basis of art history, and expressed, ideas, advancement in technical opportunities, and very subtle nuances of society. You may find it easier to understand this point if you consider other art forms, such as theatre, painting, music, literature etc.

Accordingly, whilst the principle of Magnitude and its aspect of time, can be expressed in a photograph quite unwittingly, such as your family snapshot, careful thought will lead to a more expressive use of this principle.

SCALE

Scale is much easier, it relates to the need for thought to be paid to the relative size of elements in the picture, one to another.

We are all aware of the problem of taking huge breathtaking scenes of say mountains, and when examining the pictures at home, find that we have been unable to express the wonder that we saw. The most common need for scale is of the picture to the human being, but this may not always be so, the scale may need to be suited to other elements, for example a record picture of insects, would require a scientific scale, possibly an accurate 1:1 or 1:0.5.

Scale between elements in the picture may be harmonious in the composition, or they can be deliberately exaggerated by the use of lens perspective. The decision rests with the photographer.

ENVIRONMENT

This last aspect, considers the relationship of the picture to the environment in which it is to be a part. Consider the final use to be a photograph mounted in family photographic album, to be on an office wall, to be a poster, or an illustration in a book.

Each of these will effect the choice of style, materials, size, colour, shape, subject, sharpness, and manner of expression used in the photograph.

Further within the photograph itself we must consider the environment or surroundings of the subject. This can be in contrast to the subject, or in a more harmonious style. It may be that the environment is more important and forms the main subject of the design, in which the dominant is only a part.

Let us consider this last point, by some examples:-

(1) The portrait. If the portrait is of a business personality, then it would be right and proper to enhance the image with a backcloth representing that business, it may be a factory, a component made, the company siting and town. A more personal approach could be taken showing the tools of the trade, or the profession of the subject. Either way, the environment would compliment the subject and the subject complement the background.

(2) Perhaps the subject is a pheasant, being part of a still life, in this instance, the backcloth of the still life, would consist of suitable colours and details as to suggest the theme of the countryside. In this instance, perhaps, they would be laid on a rough country cloth, and the whole would be enhanced by taking the colours of the subjects, and using these to pick the tonal values and colours of the surroundings.

(3) What about advertising? Here again we are presumably trying to sell a product, the environment would be selected to either contrast and so emphasize the product, or alternatively show the product in a sympathetic setting.

One recent set of photographic posters, which obtained much praise from advertisers, was the Benson and Hedges advertisements for their gold cigarettes, in which the pack of cigarettes used, was hidden within the picture, and in one or two of the series was not shown at all. This whole series was based on the truism - being that of human curiosity, and the inbuilt human need to solve problems. For every advertiser to have tried this technique would have caused confusion, and the images would not have succeeded. The genius, (if one can call it that) was to once again break the normal rules, and thus draw attention to the advertisements.

A similar approach is sometimes taken with a colour magazine. Here, with a fine quality colour magazine, quite commonly a women's magazine, one where superb coloured photographs are regularly featured, a clever photographer decides to take advantage, and gain attention by the expedient of placing an advertisement consisting of a superb, simple, black and white photograph, which is in complete contrast with the rest of the magazine.

You can begin to see that the principle of MAGNITUDE is quite complex, and perfectly capable on its own of inspiring you to create images.

Bear in mind if the environment demands size - the sharpness & quality of the image is paramount!

CONSIDER - MAGNITUDE & STABILITY

These two principles considered together constitute an important motivation for the selection and choosing of films and paper.

(1) The only known colour film with the ability for long term life, today (and since 1930's) is "Kodachrome", and that is why this film is used extensively by professional photographers (It is actually a B&W slide film - coloured by a secret process). The colours in all other colour films, bleach more rapidly with time, and the rate depends on how well they are stored.

(2) Colour prints, fade rapidly on exposure to light, and this can be seen if you look at the edge of a print which has been mounted on a wall in a frame. Spray treatment to reduce the effects of ultra-violet light can assist in reducing the deterioration but only to a limited degree.

(3) Black and White film, with good processing and storage has archival qualities and will last far longer than any colour film.

(4) Black and White prints, are archival with suitable processing. There is some doubt as to the long term life of resin bonded papers, but the traditional fibre papers will readily give archival performance, especially if they are toned. Toning may consist of the relatively cheap, but satisfactory sepia, but gold toning (doesn't give a gold colour), but a lovely red purple kind of colour, is the finest and much more expensive. You will note that if you have old family photographs how the old sepia toned photographs have lasted, and no doubt will begin to see how the somewhat later black and white prints have begun to oxidise (i.e. they look shiny like silver, and the image is being destroyed from the edges).

(5) I have copied some of the finest colour prints taken of the family into black and white to ensure that the important images are available to future generations.

(6) KODAK have good technical publications on photographic matters, some expensive, some free. Just write to them.

END

LESSON 5 - EXPOSURE, Initial Advice

EXPOSURE

INTRODUCTION

1. Exposure is not a simple affair, and much invention and thought has been given to specialist equipment and advice to assist photographers in ensuring accurate exposure. Notwithstanding, help offered by such technical equipment, examples of which are sophisticated meters, both on and off camera, the only arbiter of what is in fact correct exposure is the photographer.

2. There are numerous examples of photographs where the photographer for creative reasons has deliberately under or overexposed to obtain a pictorial affect or image of his subject.

3. Having said this, whilst a photographer is learning his craft, there are guidelines as to correct exposure. Indeed the experienced photographer will still use these guides as a base from which he will deliberately depart, one method used, and a very important method is known as the ‘‘zone system’’, but this will be ignored in detail in this lesson as being quite difficult for beginners to understand.

BASIC METERING (Middle Tone).

The normal good quality exposure meter is based on an average reflectance of 18% mixture of black and white. Some cameras have spot meters which will take readings based on this value. This mixture is a grey tone, and is best seen as the Kodak Grey Card. This card is much used as an unofficial standard by professional photographers, and may be purchased from the better photographic stores.

Cameras with through the lens metering (TTL) are normally centre weighted or averaged to give just a 10% reflectance value (which assists the amateur in obtaining better average results with slides or reversal film - negative films, both colour and black and white having greater latitude to incorrect exposure).

These two standards create what is known as a **middle tone**, which derives from an assessment of all the tonal values from black to white. The use of the 18% grey card is the most accurate, and is to be recommended.

TYPES OF METER.

There are a few types or forms of metering which are discussed below:-

(a) REFLECTED: The most common, where the meter, either separate or built into the camera is pointed towards the subject and the reading taken. This averages the reflectance of the subject as seen. It can be seen that if there is more than the average of light or dark tones in the scene as encompassed by the field of view of the meter or lens (if TTL metering is used), then the reading will be influenced to either under or overexpose.

If there is too much ‘‘white’’ or the light tones, the reading will give too short an exposure and the setting should be adjusted to give longer exposure, alternatively, if there is too much ‘‘black’’ or dark tones in the subject then the exposure will be too long, and the adjustment should be to shorten the exposure. This relationship should be well learnt, until the need to adjust becomes second nature.

(b) ADJUSTED REFLECTED: Most modern cameras, to assist photographers, are now through the lens metering (TTL), and have a built in meter that is either termed centrally weighted or averaged. They have a major advantage, in that the field of view of the meter is exactly that of the view as seen by the lens, which immediately reduces the chance of error. By the use of a device such as central weighting or averaging, an endeavour is made to overcome many of the problems derived from peripheral influences such as sky (which is light), on exposure, and assists by giving greater emphasis to the centre of the frame where most amateurs will place their main subject. However, as a photographer become more creative, they quickly learn that a central position is not always the best for composition, and this facility becomes of less use, unless the camera also has an exposure lock facility. An exposure lock facility, means that you can point the camera at the subject, take an exposure reading and lock it into the memory of the camera, then recompose and take the shot.

Despite the greater sophistication of this form of metering, the inherent problem of achieving accurate exposure remains to a lesser degree.

(c) INCIDENT METERING: Some meters, used separately from the camera, have special opal hemispherical diffusers fitted to them, such as the Weston Master Meter. There are also simple flat diffusers, for fitting to the front of a camera lens, but

these are not accurate and/or as efficient.

These meters are used to read the light falling on the subject from the camera position and thus the reading is not influenced by the varying tones of the subject. This type of metering is much used for colour photography where exposure is critical, and are often used by Film Directors.

(d) MULTIPLE PATTERN METERING: This is a more sophisticated form of metering, which has been designed to overcome many of the problems associated with central weighted or averaged meters used in TTL cameras. The actual picture area as seen by the lens, is analysed by a number of individual readings from various areas of the picture, and an internal computer within the camera assesses the meters findings against a number of standard picture patterns, and automatically adjusts the exposure to suit. The system is able, to determine whether it is likely that it is a portrait set against a light or dark background and make the necessary changes to exposure. It is the most foolproof system available to amateurs still enabling them to point and shoot. Of all amateur photographs the system will give something like a 95% success rate, but if you are somewhat creative then the system may still not clever enough for the unusual photographs that you are probably wishing to take.

(e) SPOT METERING: A very expensive type of meter, formerly purchased separately from cameras, and costing several hundred pounds.

This is the most accurate meter for use by a photographer or film maker. Today spot metering is integrated into many of the more sophisticated and expensive cameras. If you are serious in your photography and can manage the additional cost, this feature is essential.

The meter permits the taking of a reflected light reading from only a small section of the total picture as seen in the camera. For best use the spot used should be no greater than 2% of the picture area. Some are not so good, and cover up to 10% of the area, when this is the case, the problem can be overcome, with some cost in time, by using a zoom lens, taking a reading of the enlarged image, and zooming back to the original picture, or worse by having to change to a longer focal length of lens. Depending on the subject, this can be acceptable, or aq procedure that can be a very great nuisance.

Using this method, a particular tonal value within the picture, say a skin tone, grass, brickwork etc. can be pegged to a positive exposure value, and enables the professional, particularly when using the ‘‘Zone System’’ of exposure, to know exactly how the negative will be exposed. e.g. the tonal value read by the spot meter can be set to give any tonal value required, from the 18% middle tone, by adjustment in exposure of +/-1, 2, 3 etc stops or part of stops.

EXPOSURE MODIFICATIONS:

Remember the Camera or meter will always give you a middle tone reading, and this may be called a ‘‘KEYTONE’’. Keytones can be anything, and are usefully employed to enable accurate exposure using any meter to be assessed. As has been mentioned, the common keytone is the ‘‘Kodak 18% Grey Card’’, but alternatively you may decide to use your hand, grass, red brickwork, or any other standard reference tone as a keytone.

To do this, you will have to test your own standard choice of keytone against the 18% grey card, and remember the basic adjustment to your normal camera reading required, using the +/- exposure control. e.g. If you are taking photographs of the usual English person, you would need to take a basic meter reading and set the exposure control to +2/3rds of a stop. If the subject was Asian, no adjustment is required, and if the subject was West Indian or African of dark colour, you will have to reduce exposure.

Below, for rough guidance, is listed the adjustments suggested by KODAK for the +/- exposure control on your camera (alternatively if you do not have this facility, you can manually modify the aperture, shutter speed or amend the film speed), from their grey card standard for differing key tones.

+ 3 STOPS Diffuse highlights, such as white clouds, snow & white paint.

+ 2 STOPS Light tones, such as very pale skin, light blue sky and dry white sand.

+ 1 STOP Medium light tones, such as pale skin, weathered wood, foliage, red brick, deep blue sky.

NO ADJUSTMENT Middle grey 18% grey card.

- 1 STOP Medium dark tones, such as dark skin, dark foliage, tree trunks.

- 2 STOPS Dark tones, such as very dark skin, and most dark clothing.

- 3 STOPS Very dark tones, such as textured black objects.

- 4 STOPS Untextured black.

IMPORTANT NOTE: For those with TTL camera metering, and meters which are based on a 10% middle tone, the Kodak Grey Card would require a further adjustment of 2/3rd of a stop more exposure than normal, and the other readings modified will require modification as already indicated.

CALIBRATION OF CAMERA-FILM-METER

Remember, that all these 3 elements which relate to exposure are subject to the normal manufacturing tolerances of up to 1/3rd of a stop inaccuracy in their working, ie. The camera - aperture, shutter. The film - film speed as quoted. The meter reading. Just adding these together your actual exposure could be out by as much as 1 and 1/3 of a stop. The faults could in fact balance!

Accordingly, you should try and assess from experience whether your photographs are generally over or underexposed, and correct your own keytone accordingly. If the accuracy is very suspect, you could get the camera and meter professionally checked, but do remember even

MAKE YOUR OWN NOTES

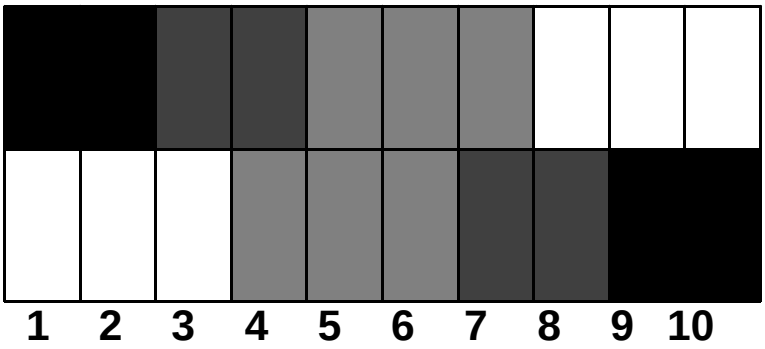
When taking exposures keep a record for assessing your ability and that of your equipment in seeing and reproducing tonal values. Don't change your camera,

NEGATIVES & EXPOSURE

Indication of general zonal values of a scene: 1 - 10

THE GENERAL TONES FROM BLACK TO WHITE i.e. 10 ZONES SHOWN, BEING SIMILAR TO THOSE USED WHEN USING THE ZONE SYSTEM. BELOW THIS FIRST SET ARE SHOWN THE DENSITIES TO BE EXPECTED ON NEGATIVES WHICH ARE OF THE OPPOSITE VALUES.

Thus: Snow is white but on negatives it will be black, and vice versa. Colour negatives shown exactly similar tonal variation.



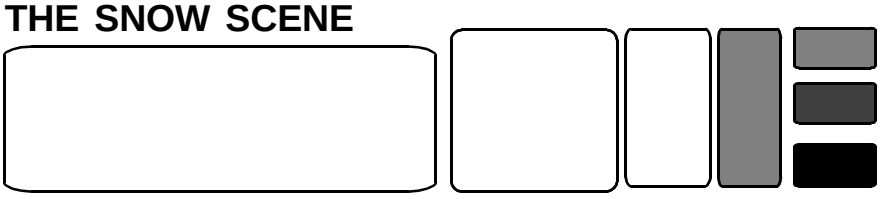
LATER ON IN THE COURSE WE SHALL LOOK AT CONTRAST:

Suffice it for this lesson we shall just discuss the principle of varying tonal values in subjects, by exaggerating the situation, for example let's examine the tonal values of two contrasting scenes:

FIRST - A Snow Scene, which consists of mainly lighter tones.

SECOND - A woodland scene where most of tonal values are much darker.

THE SNOW SCENE



THE WOODLAND SCENE

THESE CHARTS SERVE TO SHOW THE AFFECT OF SUBJECT TONAL VALUES AND THAT REPRODUCED ON NEGATIVES.

The reproduction by the printing process is not very satisfactory, and the various shades are accordingly not accurate, however they do serve to indicate the principles.

1. Using the zone system, there are 10 zones from pure white to pure black in the subject, each represents an increase in exposure of double, or 1 stop. Both colour negative film and black and white film is able to accomodate such a range, and discussion on this subject is the matter of a separate lesson.

2. ZONE V is the equivalent of the standard middle grey tone, and zone 10 is pure white, whilst zone 8 is white with some texture showing. At the other end of the scale, zone 1 is pure black, zone 2 is black with a sense of depth and zone 3 is the first dark shade to show texture.

3. Try to get used to assessing tonal values, and linking them with the Kodak recommendations, so that you can choose any keytone and by adjustment of your camera, pitch the exposure correctly.

4. The snow scene and the woodland scene indicate clearly that all pictures do not average tonal values to the 18% middle grey. In the first instance, too many light tonal values lead to UNDERexposure and in the latter case too many dark tonal values lead to OVERexposure.

END

LESSON 6 - Film & Contrast

FILM & CONTRAST

CONTRAST

On a number of occasions throughout the course, we will have referred to Contrast, when examining photographs or pictures. Control of contrast is one of the most important differences in approach between the photographic Professional and the Amateur. The former takes great care to control the contrast to suit the film chosen, or to obtain a pictorial effect.

CONTRAST RATIO

Examining a photographic subject, there will be a range of tones varying from dark to light. The difference between the darkest and the lightest provides a basic contrast ratio. The actual ratio however, may be much greater, for you must also take into account the effect of lighting.

To explain this: imagine a persons face, the skin has the same tonal value on both sides, but if one were to place a bright light to one side and a weaker light on the other, lets say the first is twice as powerful as the second, a 2:1 ratio just for the lighting will apply.

To obtain the actual range of contrast therefore, you multiply (1) ratio of tonal values by (2) ratio of lighting contrast. So if you had a low range subject of say 5 stops which has a tonal ratio of 1:32, and then multiply for a lighting ratio of 1:4, the actual contrast ratio would in fact be 1:128 which is a much greater range.

USE OF METERS (f-stops)

If you measure with your meter the lightest part of the subject, and then the darkest part. Use either a separate meter or the one in the camera, you will find a difference between the two readings that can be interpreted in either:-

(a) apertures or

(b) shutter speeds (which can then be adjusted into equivalent apertures.

The difference between the two readings will give the Contrast Range which will be one of the following:-

STOP DIFFERENCE RATIO

1 stop difference	1:2
2 stop difference	1:4
3 stop difference	1:8
4 stop difference	1:16
5 stop difference	1:32
6 stop difference	1:64
7 stop difference	1:128
8 stop difference	1:256
9 stop difference	1:512

and 10 stop difference 1:1024

When taking these reading, you will find that the use of a spot meter is most useful as it enables only the small areas of tonal value to be isolated, and readings taken. With the normal meter, you will have to move much closer to the subject, or use a telephoto/zoom lens.

SUBJECTS

The contrast range of the subject is as mentioned previously the tonal range multiplied by the lighting ratio.

A LOW RANGE SUBJECT has a Contrast Ratio of 1:16;

A MEDIUM RANGE SUBJECT may have a Contrast rATIO OF 1:128; and a

HIGH RANGE SUBJECT can be as high as 1:1024.

Put another way, the difference in stops for a LOW RANGE subject may be about 4, whilst that for a MEDIUM RANGE subject would be 7, and that for a HIGH RANGE subject of the order of 10 stops.

LIGHTING

When we consider the contrast arising from lighting, consider that normal colour portraits may be lit with a ratio of 1:2 or 1:3, black and white films can take more contrast, and may be up to 1:4 or even greater if an effect is required.

What happens, however, if we go outdoors, study the affects of the Sun and sky. Start by examining the varying subjects under differing conditions, and you will notice the tremendously high contrast arising from bright sunlight. Even with low contrast subjects, conditions become impossible to contain within the normal wide range that negative films can reproduce. This is why, the professional prefers the sun to be covered with a light cloud, shady areas, or finds it necessary to use other forms of light to fill in the deep shadows.

FILMS

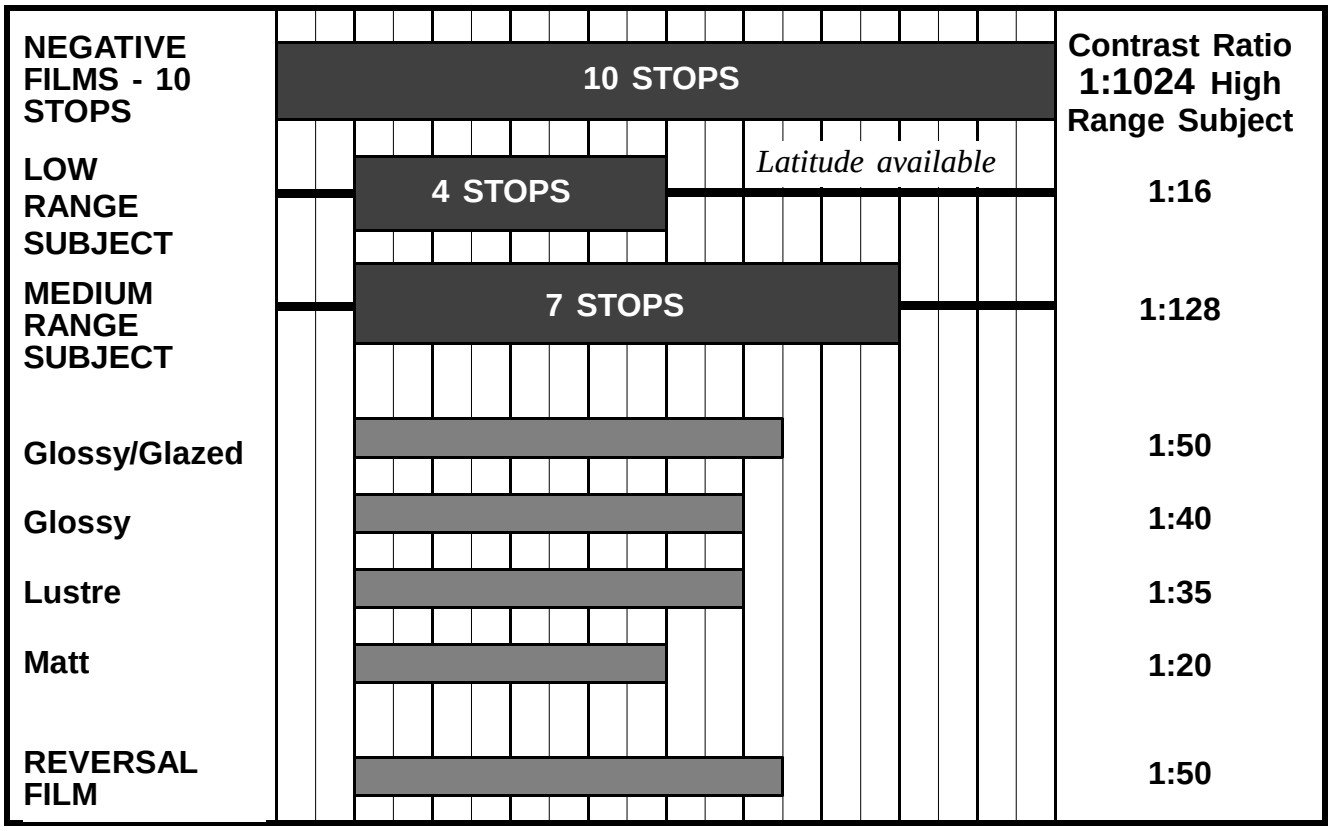
(a) MEDIUM SPEED BLACK & WHITE FILM, say 125ASA, will reproduce a range in excess of 10 stops.

(b) COLOUR NEGATIVE FILM

also is very good at reproducing a range of stops, something of the order of 8-9 stops. Professional films, specially designed to reduce contrast, are thus much better at managing the problem. However, these have to be kept refrigerated until use, and amateur films have advantages, being especially manufactured to permit rough usage and conditions.

(c) SLIDE REVERSAL FILM, most people seeing slides would imagine that these films are capable of handling the largest contrast, but no, they can only truly reproduce a range of between 5 and 6 stops.

It can be seen therefore that using negative films, if exposure is correctly controlled, unless there is exceptional contrast, most scenes or subjects can at least be reproduced on the film. With Reversal Film. however, the range is much more restricted, and not only does the exposure have to be critically accurate, the contrast range is limited and you may have to decide to lose detail in either the dark areas or the highly lit ones, depending on subject matter.



REPRODUCTION OF NEGATIVE FILMS

Having given the ***good news*** about negative films, here comes the ***bad news***:- for the photographer's problems arise when reproducing the negative during the printing process. Here the actual contrast range that can be retained is much smaller, and generally only a part of the total range which appears on the negative can be accomodated.

(a) Prints which are glazed and glossy 1:50

(b) Prints which are glossy only 1:40

(c) Prints which are satin or lustre 1:35

(d) Prints which are matt 1:20

Whilst these ratios are minimal and impossible to overcome with Colour at the present time, with Black and White prints it is possible to change the 'Grade' of paper used, and thus to reproduce a greater range of tones. In fact it is perfectly possible using a good medium speed B & W film, with accurate exposure, choice of development and selection of correct grade of paper, to print the whole 10 stop range (a Contrast range of 1:1024).

There is much research going on into finding a solution to changing the contrast of colour prints, and whilst it was understood some years ago, that it would soon be possible for low contrast papers to be available which would assist photographers, to date science has provided no such solution.

You will understand, therefore, why so many professional Photographers relax from their normal work by taking photographs in black and white. Not only are they generally more expressive (in most cases) than colour, they are easier to visualise and control at the printing stage, and a greater range of tonal values can be incorporated.

SUMMARY

ACCORDINGLY, if you wish to reproduce colour from colour negatives, limit contrast to a maximum ratio of 5 or or 6 stops being 1:32 or 1:64 with glossy paper and only 5 stops or 1:32 with lustre. This will of course not be possible in some cases, and as a result there will be increased areas of black and white within your pictures.

It can be helpful if those areas of black and white are limited in size (unless otherwise controlled or intended as part of the composition). The only other option given a large range subject, is to change your point of view to give flat lighting with the sun behind you, or alternatively use some form of fill-in supplementary lighting to reduce contrast.

CREATIVE APPROACHES

As with all aspects of photography, the very difficulties or limitations arising from equipment, lighting, subject etc., and in this case Contrast Ratio can be imaginatively used to great effect by deliberately allowing parts of the picture in which details can be seen by the eye, to print as pure White or pure Black on a finished print.

A simple example is to take a portrait against a lace curtained window, the eye can see the details of the curtains and of the street through the window, but by careful analysis and selection of exposure, when printed, the background will not show this detail, but will print pure white.

PRINTING

Just a short note on commercial printing. However, much care you take with your exposures, a commercial printing firm will make similar judgements as to the averaging of the exposure of the negative for printing, using the 18% middle grey as the average. The same faults that occur when the photographer takes the picture can therefore also occur when printing, and a perfect negative can be printed incorrectly.

If you have firm vision of your image, you must treat commercial prints as proofs, particularly those from chain stores and the like, and send these prints with your instructions to a professional printer to ensure that the expressiveness and composition you require is achieved.

Better still of course, is to print your negatives yourself, but even professional photographers, do not normally print their own colour, but relay on good printers who often charge highly for their services.

Having said this, if you have controlled the Contrast, chances are that even the commercial processor will make a reasonable job of the print, albeit that some of the nuances may be lost.

When it comes to Reversal or Slide film, it pays to send them to a reputable laboratory, or even return them to the manufacturer for processing. You will then receive back slides showing exactly the photographs you took, including, all faults, in exposure, composition etc. and you will know these are your errors.

Using slide or reversal film, is therefore, a very good way of checking on your technique. Today the quality of prints from slides can be excellent, and FUJI having their own laboratories for this work, have produced excellent prints and at very reasonable costs if done at the same time as the original processing of the slide film.

REMEMBER CONTRAST CONTROL IS IMPORTANT !!!

NOTES

Use this panel to take readings of various subjects, to find keytone values for your camera, and to assess contrast ratios for various types of situations and subjects.

END

LESSON 7 - The Flashgun

FLASH LIGHTING

Flash lighting provides the photographer with his own portable sunlight. It is a most versatile tool, and used correctly can be one of the photographer's most important assessories.

One of the problems with colour film is that colour is very influenced by the colour of the lighting, this does not apply to black and white film. Whilst colour negative film can generally be corrected during the printing stage, as long as an unsuitable mix of lighting has been avoided, reversal or slide films are more complex and the correct film and correction filters must be chosen at the time of taking the photograph.

The modern electronic flash is normally corrected for daylight, and can therefore be used with daylight film, and mixed with normal sunlight.

Flash can range from the simple to the more complex system flashguns, and include studio lighting. All work on similar principles, the more expensive offering greater flexibility in use and increased power. The simplest flashgun which should be purchased today at reasonable cost, will provide automatic sensor control, with thyristor circuitry. The former saves lighting calculations and the latter saves battery costs.

GUIDE NOS:

All flash guns have a standard Guide Number, normally quoted for use with 100ASA film speed. This number is the product of distance x aperture. Guide Numbers are quoted either in feet or in metres.

e.g. with a guide number of 100 ft. and an aperture of f4, you can light an object up to 25'0'' away, alternatively with a person 5'0'' away you would need an aperture of f20 for correct exposure.

With the use of a sensor, however, which extinguishes the flashgun when it calculates that sufficient light has been received, calculations do not need to be made, and normally such flashguns permit the choice of a number of differing apertures, in cheaper models only two. The more apertures offered the better, as these allow the photographer greater control over depth of field, and flexibility when used for fill-in flash lighting.

MAXIMUM SHUTTER SPEED:

All 35mm cameras have a maximum shutter speed to be used with flash, except at the present time the Olympus OM4 Ti, which with a special flashgun allows any speed to be used.

Some cameras only allow a shutter speed as fast as 1/30th sec, others up to 1/250th of a sec. You should check your manual to see what is the maximum shutter speed for your own camera. It is important not to exceed this shutter speed, although lower shutter speeds may readily be used. If too fast a shutter speed is used, only part of the picture will appear on the negative or slide.

To save photographers having to remember to set their maximum shutter speeds, flashguns are now being dedicated to the make of camera, which then automatically sets the correct shutter speed, and in many cases, allows flash exposure using the Through-the-Lens (TTL) camera exposure meter (35mm SLRs only).

NOTE: When using the modern flashgun, the shutter speed (as long as the maximum for the camera is not exceeded) on the camera is irrelevant, unless a deliberate mix of lighting is required. The speed of the flashgun, normally predominates, and dictates the actual speed of exposure, which can vary from 1/800th of a second to over 1/80,000th of a second in a normal good amateur flashgun. You can see that if your camera has not got a very high shutter speed, by using flash, your ability to obtain high shutter speeds is easy. The faster speeds are those obtainable when using a sensor in a flashgun, which automatically extinguishes the light when enough has been received by the subject.

EXPOSURE:

You have just been given the good news about the speed of flash, when used with a sensor, which automatically controls exposure.

But there may be problems, for many flashguns have a sensor mounted within them. Beware, you may still need (as mentioned in the chapter on exposure) to use the plus or minus exposure scale on your camera. The potential problems arise from the following:-

(a) the angle of subject seen by the sensor is probably around

that of the 50mm lens.

(b) The sensor is unaware of the tonal value of the subject which could be black or white, or any tonal value in between.

Accordingly, the photographer with b) can make an allowance varying the exposure, but is unable to do a great deal about a) should he be using a wide angle or telephoto lens.

In these circumstances, the choice of a camera with matching flashgun, giving TTL or through the lens metering is most attractive, for the subject seen in the viewfinder is the subject seen by the flash, and whilst there might still need to be an adjustment for tonal value, this is more readily ascertained.

So do **BUY A CAMERA WITH TTL FLASH METERING**, if you wish to take a lot of flash photographs. This is essential, if your favourite subject is macro photography or close up nature studies or such like.

THE SIMPLE USE OF FLASHGUNS

ON THE CAMERA:

This is convenient and useful for snap photography, the flashgun simply mounted on the camera shoe, or with many camera built in. It does however, lead to harsh lighting with poor modelling, and depending on the lens used, can easily give red eyes (where light enters the eyes and is reflected from blood vessels at the rear of the eye). Light fall off occurs, so that objects closer to the camera than the subject receive too much light, and those further away too little.

ATTACHED by CORD or BRACKET to CAMERA.

This is the system generally used by Professionals, the result is much better modelling of the subject. The press man will often use a cord, and raise the flash as far away from the camera as he can reach and as high as possible, to simulate natural daylight. Brackets attached to the camera are common, note when this is done, the flashguns are generally raised as high as possible from the bracket.

BOUNCE FLASH:

One of the easiest and best ways of improving lighting. Most flashguns, which are separate from cameras, permit movement of the head to bounce light from a surface such as a ceiling. Beware, however, of coloured ceilings, for in black and white photography, a great deal of the light will be lost, and in colour photography, the light reflected will be coloured). Better flashguns also permit sideways movement, to enable light to be bounced from walls or reflectors.

Instead of walls, and ceilings, built-in reflectors can be used, and some flashguns permit an assessory to be fixed to the flashgun, to simulate a more frontal soft bounced light.

Bounced flash lighting, gives a very even lighting over a large area, with soft modelling. Because the lighting is even and contrast low, exposure control is not critical, and objects nearer and further away from the camera are equally well lit. Note, however, if using the ceiling, that the person is not standing in a small room, for their head will be better lit than their feet, if they are seated, there will be little difference.

The technique calls for a relatively powerful flashgun, and a Guide Number of at least 100 ft is recommended. With the modern flash sensor control, exposure can still be automatic as long as the sensor still points at the subject. If using a manual flash, try dividing the Guide Number by the total distance of travel from flashgun, to ceiling or wall to the subject, and then adding 1 stop more exposure.

FILL IN FLASH:

One of the most important differences between the Professional Photographer and the Amateur is the greater use made by the former of fill-in flash. When used correctly, it can be almost impossible to detect that flash has been used. Some creative photographers will do the opposite and deliberately show the flash as the Main light supplemented by natural light.

The technique can be difficult to learn, as it is important to obtain an accurate balance between daylight and flash output, however, for the Amateur with the latitude of modern films, and without the desire to obtain a particular balance between the differing sources of light, this technique could be used more often by just using the flash in the normal manner in daylight.

The main reason for the use of this technique is to limit contrast in the subject, particularly in the case of colour film where it is not possible to reduce contrast in printing as in black and white.

The best example is the wedding photographer, who we have all seen using flash with his camera, even on a sunny day. His problem is a bride usually dressed in white and a groom in a dark suit (today fortunately for many Amateurs, the grooms are often in Grey), in possibly very strong sunlit side lighting. (See Lecture on Contrast).

A simple technique for fill-in flash, is to read the meter for daylighting, let us say 1/125th of a second at f11, and set the flash or its sensor for an aperture of f5.6 or f8 to give the preferred Contrast. By doing this, the flash output will be deliberately less than the daylight by 1 or 2 stops, so that the fill-in is not too

obvious, the shadow areas will thus receive added light. Clearly, this technique cannot be used for subjects such as landscape, but is most useful for subjects within range of the flashgun, at the aperture set.

ideal Contrast, but now with 16 units of light, the exposure would be doubled, so we reduce the aperture on the camera by 1 stop permitting only 8 units of light to affect the film. Now refer to the Table 1 on this page.

to the focal length of the lens.

GUIDE NOS:

Guide Numbers for a flashgun depend on the speed of the film used, as as stated before these are normally for 100ASA film. Be careful though, for some flashguns will give their recommended guide numbers for 25ASA.

It may useful to note that with every 4x more or 1/4 of the film speed used as the basis for the Manufacturer's recommended

Table 1. FILL-IN FLASH

Actual Contrast	Flashgun (output)	Final Contrast (- 1 stop)
1:2	Not necessary	1:2 (ex. aperture)
1:4	4	2.5:4 (1:2)
1:8	8	4.5:8 (1:2)
1:16	16	8.5:16 (1:2)
1:32	32	16.5:32 (1:2)
1:64	64	32.5:64 (1:2)

Note: how as the Actual Contrast gets worse, the actual result gets closer to the ideal 1:2.

NOTE: CONTRAST

A useful Contrast ratio for colour film or slide portraiture is 1:2, it is interesting that if the face is partially lit by strong sunlight, then using the flashgun set for the same exposure as the highlight reading, and reducing the actual aperture on the camera manually by 1 stop, will effectively produce that balance.

A simple calculation will prove this fact: assume a difference between the lit side of the face, and the unlit side of the face as read by the meter as being 3 stops, this is a ratio (see lecture on Contrast) of 1:8. The eight units of light are the lit side, so we set the flashgun to give a further 8 units to the whole face, so that the Contrast now reads 8+1:8+8 or 9:16, approx 1:2, the Note how the worse the Contrast the closer to 1:2 the ideal Contrast we get.

RED EYE:

We have earlier referred to Red Eyes, which are often seen on Colour photographs (black and white does not show this phenomenon). This is caused by the angle of light to the eyes from the flashgun being close to that of the angle of the lens to the eyes. To prevent this, the flashgun should be moved away from the lens to increase the angle and prevent the reflection of its light back to the camera. This relationship will change with the focal length of the lens, and a rough guide is to ensure that the distance of the flashgun from the edge of the camera lens, is at **LEAST** the equivalent distance

It may useful to note that with every 4x more or 1/4 of the film speed used as the basis for the Manufacturer's recommended

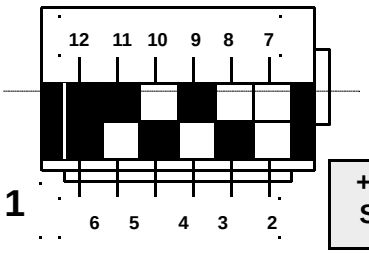
REMEMBER:

+ 1. DO MAKE MORE USE OF YOUR OWN SUNLIGHT - FLASHGUN.

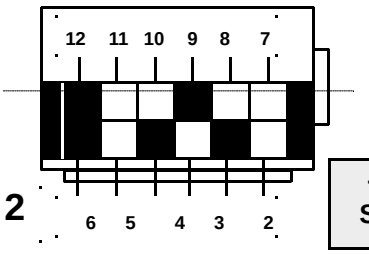
+ 2. IN DAYLIGHT DO USE YOUR FLASHGUN TO REDUCE CONTRAST, THIS APPLIES EVEN TO COMPACT CAMERAS (Some cameras, however, may not permit this).

END

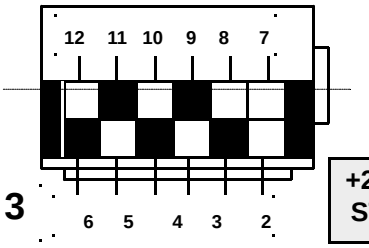
LATITUDE OF FILMS
as indicated by DX CODING



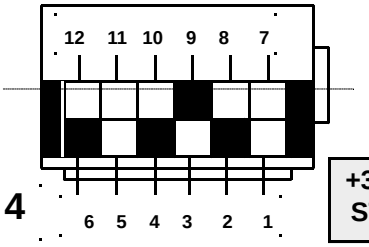
1 — **+/- 1/2 STOP**



2 — **+/- 1 STOP**



3 — **+2 to -1 STOPS**

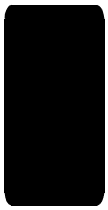
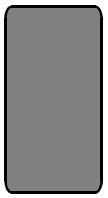
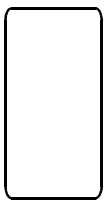


4 — **+3 to -1 STOPS**

The DX CODING on film cassettes offer you a guide as to the inherent Latitude to incorrect exposure of a film. The important squares are Nos: 11 & 12. On the cassette various squares are filled either silver or black. Examine the cassette carefully, check the colours with the diagrams above, and select which one applies.

NOTE: *DO REMEMBER* The 'Contrast Range' of a subject may utilise full tonal ability of the film, and may mean that the full latitude of the film

USEFUL INFORMATION 1

Range	ZONE	Description	
LOW VALUES 	ZONE 0	Total black in print. No useful density in the negative other than	0
	ZONE I	Effective threshold. First step above complete black in print, with slight	I
	ZONE II	First suggestion of texture. Deep tonalities, representing the darkest part of the image in which some	II
	ZONE III	Average dark materials and low values showing adequate texture.	II
MIDDLE VALUES 	ZONE V	Average dark foliage, dark stone or landscape shadow. Normal shadow value for caucasian skin	I
	ZONE V	Middle Grey (18% reflectance). Clear north sky as rendered by panchromatic film, dark skin,gray stone, average weathered wood.	V
	ZONE VI	Average Caucasian skin value in sunlight. Light stone, shadows on snow in sunlit landscapes, clear north sky on panchromatic film with light blue filter.	V
HIGH VALUES 	ZONE VII	Very light skin, light grey objects, average snow with acute lighting.	V
	ZONE VIII	Whites with texture and delicate values, textured snow, highlights	V
	ZONE IX	White without texture, approaching pure white, thus comparable with ZONE I in its slight tonality without	I
	ZONE X	Pure white of the printing paper base, specular glare or light	X

THESE ZONES ARE AS DESCRIBED BY THEIR INVENTOR ANSELL ADAMS

END