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PHOTOS OF GLASS

TK778.935 HUG

BY:
ALAN HUGHES

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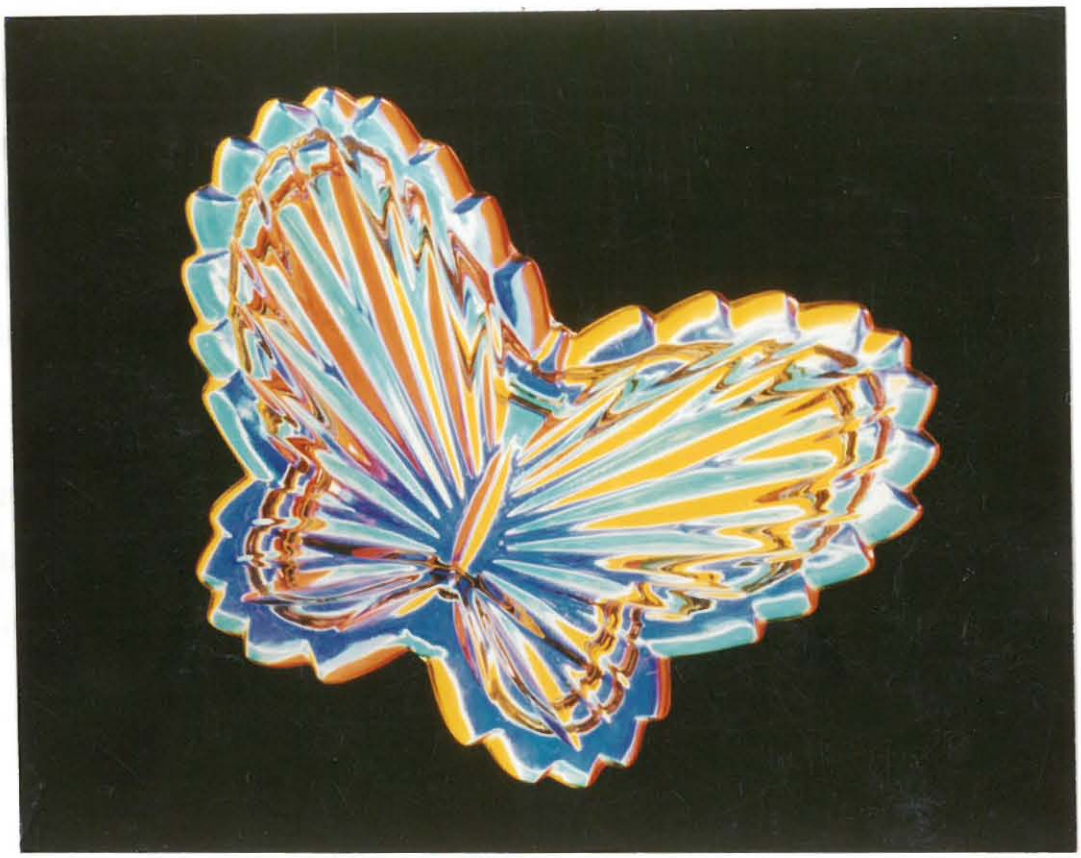

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P H O T O G R A P H I N G G L A S S

A DISSERTATION FOR A NATIONAL DIPLOMA IN PHOTOGRAPHY

BY

ALAN HUGHES

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INTRODUCTION

"Glass is a remarkable substance, made from the simplest raw materials. It can be coloured or colourless, monochrome or polychrome, transparent or opaque. It is lightweight, impermiable to liquid, readily cleaned and reused, durable or fragile and often very beautiful."

(David F. Grose, "The History of Glass

The first man-made glass was made by heating a mixture of silica (from sand), lime and an alkali such as soda or potash. Modern glass is still made from these same basic ingredients. Lead is often added to produce brighter, clearer, crystal glass. Glass is unique in that when it sets hard, it retains the random molecular structure of a liquid. It does not form interlocking crystals and this is why it shatters when bumped or dropped.

Glass is one of the most difficult subjects to light and photograph effectively. Most professional photographers face the problem of photographing glass at some stage in their careers. Those who lack patience and experience will not be able to produce an acceptable result. You can however create an extremely beautiful image, of a glass object, if you have sufficient skill and imagination.

I have always enjoyed making "pretty pictures". These are photographs which are eye-catching and pleasant to look at. Glass is a subject which has a large scope for beauty. I try to overcome the technical challenge of making a glass object look the way I would like it to look.

I usually take a long time in selecting the right piece or pieces of glass for a photograph. I look for objects which have a point of interest or an inherent beauty. Next I consider how I would like the object to appear in the final image. I imagine how I can enhance its qualities with lighting, selection and addition of colours. I believe that this previsualization is vital, as it helps you to set a goal which you can work towards. Many hours are wasted in the studio if you have no concept of how the finished photograph should look, I do not treat the previsualized image as a law. Sometimes while pursuing a certain result, I notice other more effective images. It always pays to explore new concepts and ideas.

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The time spent experimenting may result in a superior picture. Even if the new ideas are unsuccessful, the experience gained will help with future attempts.

My interests gradually progressed from "pretty pictures" to more applied photography. I started doing advertising photographs containing glass objects. This presented a completely new set of problems to be solved. These pictures required a different pattern of thought, as their purpose is completely different. Advertising photographs are made to sell a product. Other elements, such as lab s and props, have to be included. I now had to light more than just a piece of glass. The glass must still be attractive, but the lighting must be co-ordinated so as to illuminate other important details. One must often create an atmosphere to help promote the product. I found I had to be far more reserved and selective in my introduction of colours into these pictures.

Many people have asked why I concentrate on colour photography. This is partly due to necessity, but mostly because of personal preference. I find black and white rather boring when photographing glass. Glass needs colour to give it a new dimension, which I find lacking in black and white. By using colour, I can do more to ensure an attractive result. I use Ektachrome 64 professional colour transparency film. The appearance of a transparency is, in my opinion, far superior to a colour negative print. Transparencies are also preferable if the work is going to be reproduced. I get more personal satisfaction from a successful colour photograph.

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TECHNIQUES FOR PHOTOGRAPHING GLASS

Photographing glass is a technical, as well as an artistic, exercise. You must understand the properties of glass, you need the correct equipment, a thorough understanding of lighting, and good photographic knowledge.

EQUIPMENT

Although glass can be photographed with many cameras, my personal choice is a large format camera. Most of my images are recorded with a four by five inch Sinar camera. This is a very versatile camera and it can be adjusted to suit almost any studio set-up. The four by five inch format gives excellent quality. I generally work with the camera supported on a studio stand.

I use the standard 150mm lens most of the time. Some professionals prefer to shoot glass with a longer focal length lens, to prevent distortion. I find that if I can avoid or correct distortion, the 150mm lens gives me a more acceptable depth of field. I occasionally use a 90mm wide angle lens to give false perspective or if greater depth of field is essential.

For lighting my photographs, I use up to four flash heads. I normally work with Brons C171 flashes. They are powerful, have adjustable power, proportional modelling lights and a variety of useful attachments. As well as parabolic reflectors, I use different sized soft boxes, additional diffusing screens and various snoots. If you can afford it, a fibre optic attachment is a very useful accessory for lighting smaller objects.

Other accessories I use are reflectors, black paper and cardboard, colour filters for the flasheads, scissors, tape and prestic. I also use sheets of various types of glass to support objects. Backdrop rolls, a large sheet of translucent perspex and patterned glass are all very good backgrounds.

LIGHTING

Before attempting to light glass, you must understand how glass affects light. Glass does three things to light:

- It transmits light,
- it reflects light, and
- it refracts or bends light.

By understanding these three principles, we can use them to light glass effectively.

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DIAGRAM 1

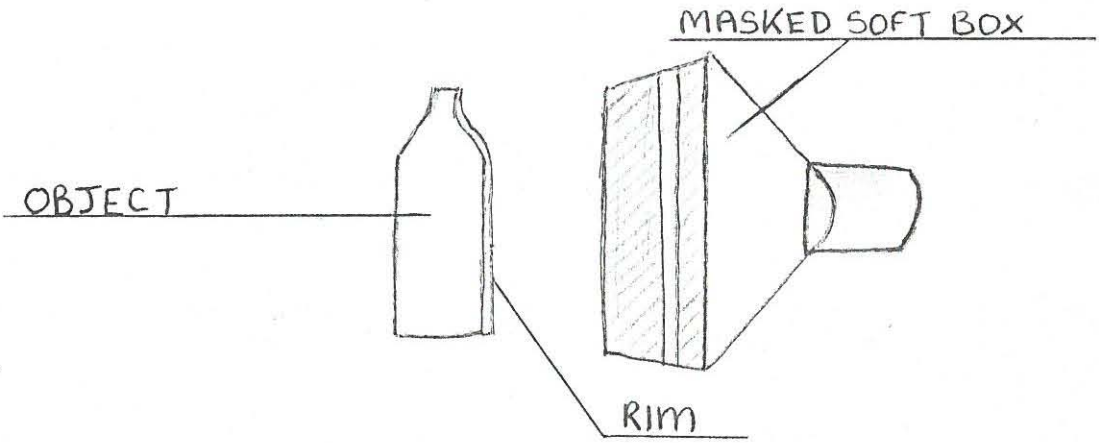
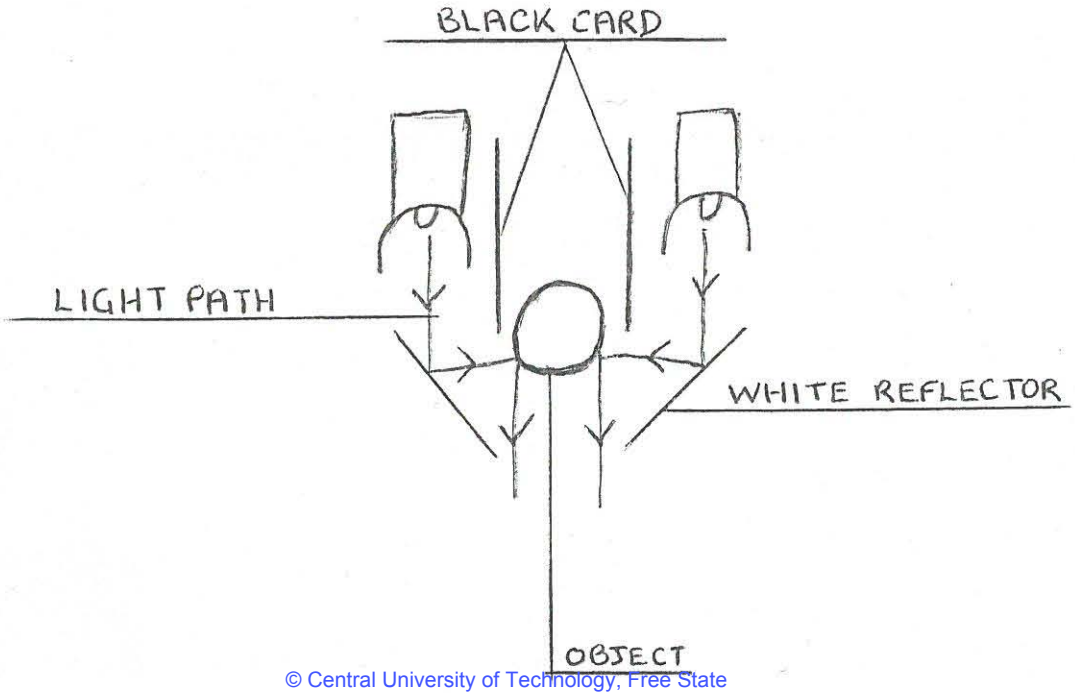


DIAGRAM 2



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As glass transmits light, it is sensible to light it from behind. This is the most common method of lighting glass and it is used by most photographers. The background is lit and the light which is reflected off of the background is transmitted through the glass. You can adjust the lighting to make some areas on the background lighter or darker than others. This gives a graduated result which can work very well.

I often use a large sheet of translucent perspex for back-lighting glass. I light the perspex from behind so that the light is first diffused by the perspex, before being transmitted by the glass. I achieve greater control over my lighting by using this method. If I require an evenly illuminated background, I use a large soft box as my background. I usually add an extra diffusing screen to soften the light and to make it more even. Selected areas of the picture can be lit from behind. This can be done by placing black paper masks on the lights, or on the perspex. After some experimentation, interesting results can be obtained with back-lighting glass.

The ability of glass to reflect light has to be used or avoided carefully. If a glass subject is lit from the front, the shape of the light will be reflected on the surface of the glass. A light with a parabolic reflector will cause bright, round, specular reflections. This is a mistake which many photographers make and it can ruin a photograph. It is generally best to avoid lighting glass from the front, when possible.

There are certain circumstances where you are forced to light glass from the front. In advertising or any picture which contains other objects next to the glass, you may have to light directly. The best solution is to use large diffused sources of light. These will form larger, less contrasty, reflections. They can be used to good advantage, to emphasize the shape of the glass. If there is only a small area of solid matter to light, you can often use a small spot light or a flash with a snoot. Make sure none of the light, from the spot light, falls on the glass as this will cause bright reflections. When using large diffused lights or spots experiment to find the best positioning and results.

Because glass is a denser medium than air, light waves entering it are slowed down and thus bend. This a known as refraction and causes lights placed above, below, or to the sides of the glass to affect the final image. The refracted light often appears to come from within the glass itself. Once again experimentation is essential. Only after a lot of practice will you learn where to position the light, in order to get the refracted light where you want it.

There are several other techniques and tricks, which can be used when lighting glass. Many photographs like to rim-light a glass. This creates a thin highlight down the sides or top of the glass and helps to emphasize its smooth form. One way to achieve this rim-lighting is to mask large soft boxes, so that only a thin strip of light is emitted. (SEE DIAGRAM 1). You would put one such light on either side of the glass to get a white rim on either side.

Another method is to use white reflectors to form the rim highlights. The lights themselves are kept from shining on the glass by using black cardboard. (SEE DIAGRAM 2). The light reflects off of the white reflectors

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onto the glass, which in return reflects the light towards the camera.

It is also possible to get a black edge on a glass object. When the subject is back-lit from slightly above, the edges will be black. This black rim can be enforced by using black reflectors on either side of the glass. A black marker pen is also useful for touching up black rims.

"Tenting" is a technique which is occasionally used for lighting glass. A light tent, consisting of reflectors and lights is built around the object. This technique gives even highlights all over a reflective subject. It can also be used when labels or packaging need even lighting, in an advertising shot. Usually white light tents are used, although other colours can be used.

Water and other liquids can improve a photograph of a glass. Water makes the light refract more and it has a different effect on different types of glasses. Some liquid filled vessels will magnify or distort other objects behind them. The liquids in perfume and drink advertisements play an important role in the photograph. You often have to cheat a little to make the liquid look more attractive. This can be done by altering the colour with food colouring. Artificial condensation is often used for drink advertisements. A mixture of glycerine and water, sprayed on the glass, will improve a beer or a colddrink advertisement. Alternatively, the glasses can be chilled to form real condensation.

A helpful accessory, when lighting glass, is matting spray or dulling compound. They can be used to diffuse unwanted specular reflections. Hair spray also does this reasonably well. If a reflector is being used behind a glass, a thin coating of matting spray, on the back of the glass, will make the reflector less obvious. Hair spray also helps glycerine and water, to form small droplets on glasses.

Various types of glass are useful for supporting objects, as well as making interesting backgrounds. Plain glass makes an excellent base for most glass subjects. A piece of black felt or card below the glass will give a mirrored reflection of the subject. With careful back-lighting, you can make an object appear to be floating in mid air. Often a glass needs to be lit from below, to enhance a pattern or to illuminate a liquid. This can be achieved by shining a light, with a snoot, from below the supporting glass. Another alternative is to cut a hole in a piece of black paper, and to stick this to the bottom of the supporting glass. The light is then shone through the hole to illuminate the subject.

Patterned or textured glass can improve a back-lit photograph. The sheet of patterned glass is supported between the subject and the illuminated background. Each type of glass will give a different effect. You can also try putting other pieces of glass just behind the patterned glass. This will create unsharp, mottled shapes in the background. Sheets of patterned glass are most effective when used in conjunction with bright colours.

There are different ways of introducing colour into pictures of glass. The method I use most is coloured cellophane sheets and filters. I attach the sheets of cellophane to soft boxes to give soft coloured lighting. These make good backgrounds which can be altered by using different colours

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and thicknesses of cellophone. The coloured filters can be used on parabolic reflectors, on flashes. These can be shone from above, below or from the sides to add coloured highlights to the glass. The refracted coloured light will seem to come from within the glass and will emphasize delicate patterns.

Coloured reflectors are another tool for adding colour to glass. They are used in the same manner as normal white reflectors. I tape coloured cellophane sheets onto white reflectors, as this gives me a brighter result than normal colour reflectors. I always keep some traces of white in my photographs. Even a small highlight or rim will make the colours more effective. A picture of glass, lit purely with coloured light, will look flat or dull. The white highlights add sparkle.

CLEANING

Because glass is such a smooth substance, the slightest mark will show up dramatically. Try to find glasses which are free of bubbles and other flaws. If you have to use a faulty glass, position it so th blemish is not visible. I always clean glasses before starting a shoot. Just before shooting I clean everything again to ensure that it is all spotless.

A very soft, fluff-free cloth is best for cleaning most types of glass. All traces of dirt or finger-marks must be removed. Water or methylated spirits is sometimes needed, especially when stickers and price tags need to be removed. Make sure you polish the glass after the water or methylated spirits has evaporated, as they tend to leave drying marks on the glass.

All liquids used in a photograph should also be clean. Water should be filtered and then left to stand for several hours. This allows air bubbles in the water, to escape. If glass sheets are being used as bas s or backgrounds, they should be clean and free of scratches. All reflectors, lights and backgrounds should be as clean as possible.

CALCULATING EXPOSURE

Accurate exposure is vital when photographing glass, especially if colour transparency film is being used. The manner in which you measure your exposure will depend upon your lighting equipment and your light meter.

I use a Calcuflash meter. Because it has a built-in shutter, it can read ambient light as well as flash light. It is capable of taking reflective readings as well as incident readings. It can also calculate the effect of multiple flash, or multiple exposure, which is very useful. A probe attachment, giving accurate readings off of the ground glass screen, is something I like to use when one is available.

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When I calculate my exposure, I work backwards. I first find out visually what f-stop will give me the correct depth of field. Usually, this is between f16 and f32. I then measure my bellows extension and work out how much I must compensate. Some of my photographs are extremely close-up, needing one or two whole stops compensation. After adding the stop or two onto my original f-stop, I read the number next to the total f-stop, off of the flash meter's guide ring. This is then the reading which I must get on the flash meter. I generally take incident readings, as I find this to be the most accurate with transparency film. If the glass is backlit, I take a reading through the glass itself. When there are solid objects included in the shot, I take reflective readings of them as well. I take many readings before deciding on my final exposure.

As Ektachrome 64 is a slow film and I use small apertures, it is often necessary to use multiple flash, to get sufficient exposure. I use a darkened studio, turn off the modeling light and use open flash. I always shoot at least two sheet of film. If the exposure is not perfect, I can push or pull the development of the second sheet of film. When the exposure is particularly tricky, I shoot two extra sheets of film, one a stop over and one a stop under-exposed.

When I first started shooting glass, I made a lot of mistakes with exposure. As I got used to my equipment and my subject matter, I became more and more exact. A year of experimenting has taught me a great deal. Nowadays, I very rarely have to bracket my exposure or alter my development.

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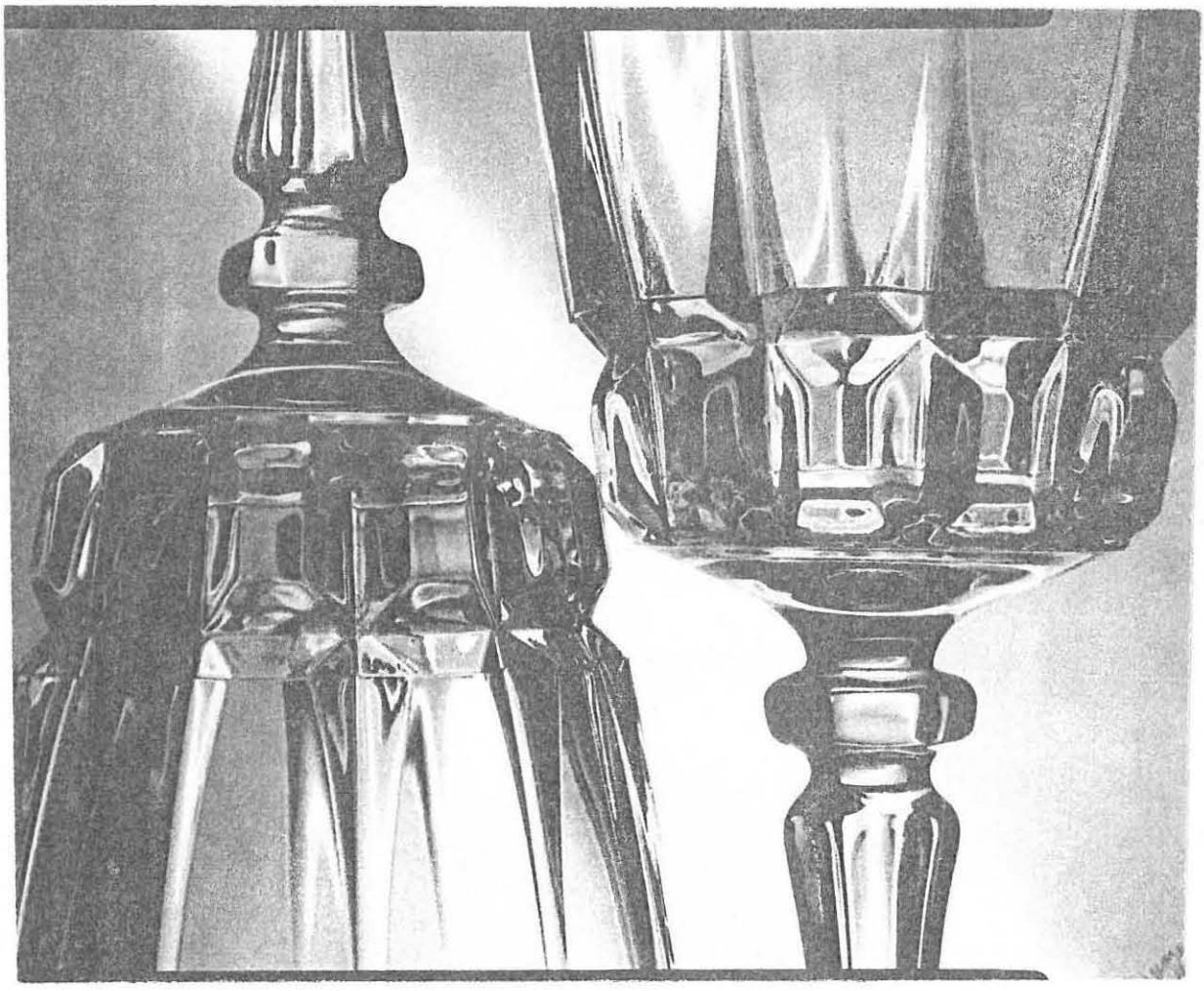
EXAMPLE 1

This example was my first successful photograph of glass this year. It was simple to shoot, yet I feel it is extremely effective. I made the image for beauty's sake and not for advertising purposes. I liked the glasses because of their pattern, which to me is their main feature. My aim was to beautify them and create a "pretty picture". I found that by placing the one glass upside down, a striking composition could be formed. The pattern was isolated by coming close. Colour and back-lighting were also used to enforce the pattern and the composition.

The two glasses were resting on a stool. The only lighting was a flash with a large soft box, which also served as the background. I taped two different coloured sheet of cellophane onto the soft box and rotated it to achieve the design effect. The picture was shot at f16 with a standard 150mm lens. This ensured that the glasses were sharp, but that the background remained unsharp.

The orange and green, work well together in this picture. They combine without overshadowing each other. The white diagonal line, not only disects the glasses, but also divides the intricate patches of colour accenting the pattern. I, personally, find this shot very satisfying.



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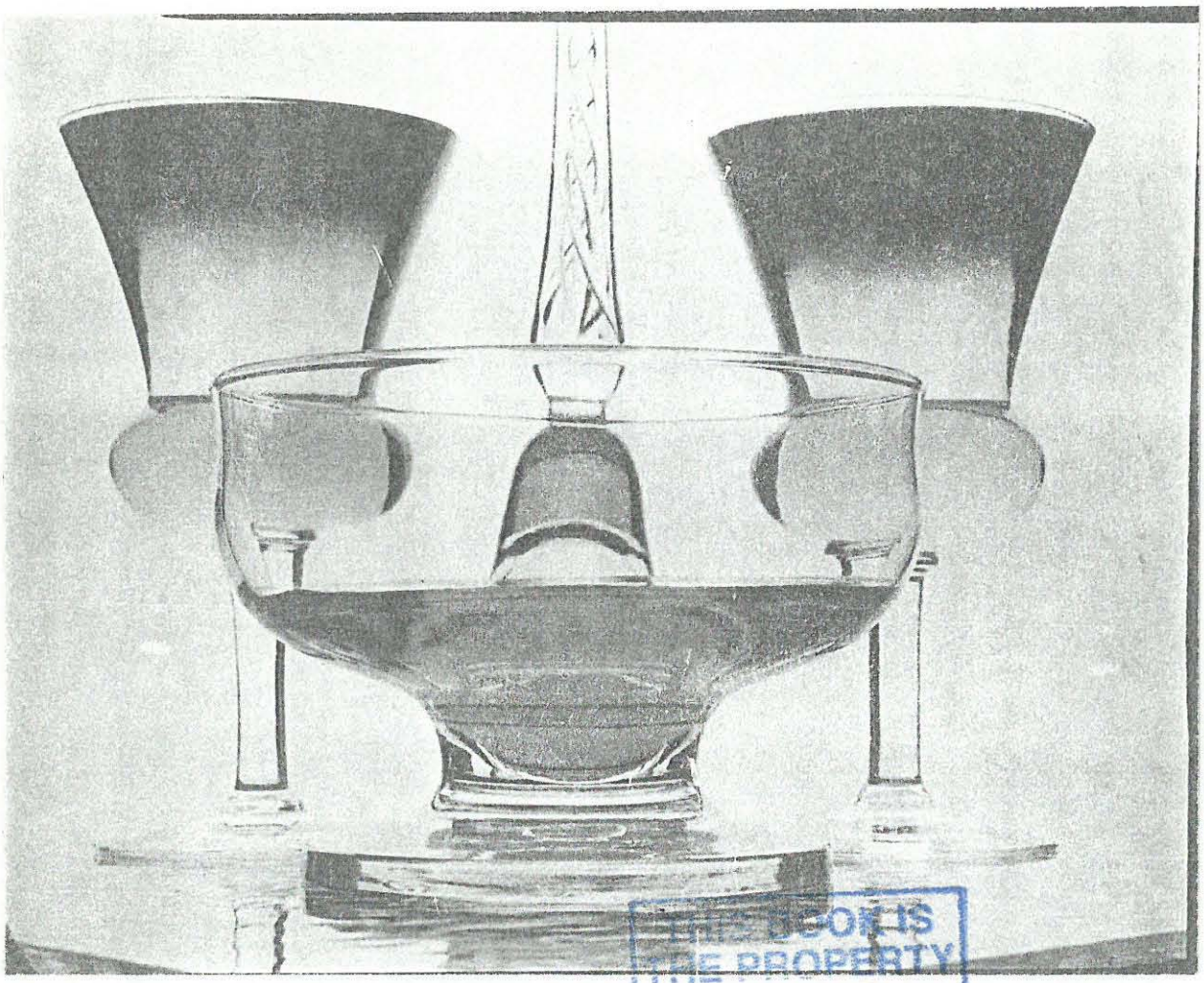
EXAMPLE 2

This picture relies on a different set of elements. The beauty of the glass objects lies in the clean, rounded shapes. This is emphasized by the positioning, lighting and colours. I usually only work with one or two glass items. Here I have used four. They all go together well due to their simple, common curves. The composition is very formal and exact. Once again the picture was lit from behind with a large soft box. Black reflector cards were used on either side to strengthen the shapes o the outer glasses.

The colour is formed with water and food colouring. The pink food colouring did not mix well with the water and it tended to settle on top. I encouraged this by adding it carefully with an eyedropper. The tall glass at the back had a natural tint of its own. This photograph is not as full of colour as the last one, but the areas of colour make the glass stand out from the background.



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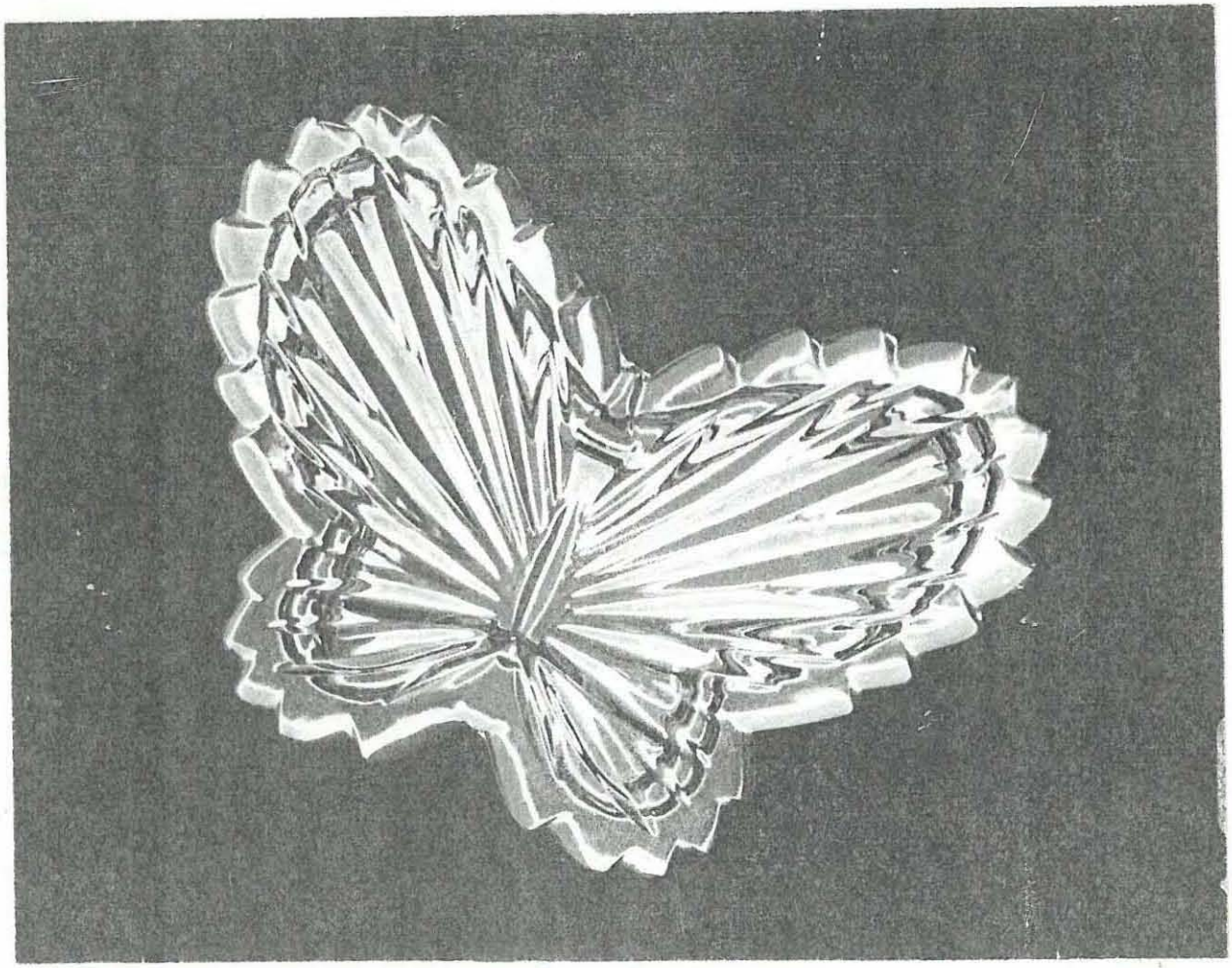
EXAMPLE 3

This is a photograph of the lid of a butterfly shaped glass jewellery box. The beautiful shape and the intricate rippled pattern are the properties which caught my eye. It had to be lit in such a way as to emphasize these features. I managed this by using bright, vibrant colours and by keeping the surrounding area black. The result looks almost artificial, or derived, like a posterization. When looking at it, you do not see glass, you see colour, the butterfly and a pattern. The fact that it is made of glass becomes secondary to the beauty of the photograph.

The studio set-up for this picture was fairly simple. I cut a black paper mask, exactly the same size and shape as the object. The mask was supported by a clean sheet of glass and the butterfly was put on top of this. This made it possible to light it from below and to keep the other areas pure black. I used one flash head with a medium sized soft box, below the sheet of glass. Rolled up sheets of coloured cellophane, placed on the soft box, provided the saturated colours. Thin spaces between the cellophane give the traces of white in the picture. I took the picture from directly above.

I enjoyed taking this photograph. It gave me free, unlimited use of colour, to enhance an already beautiful piece of glass.



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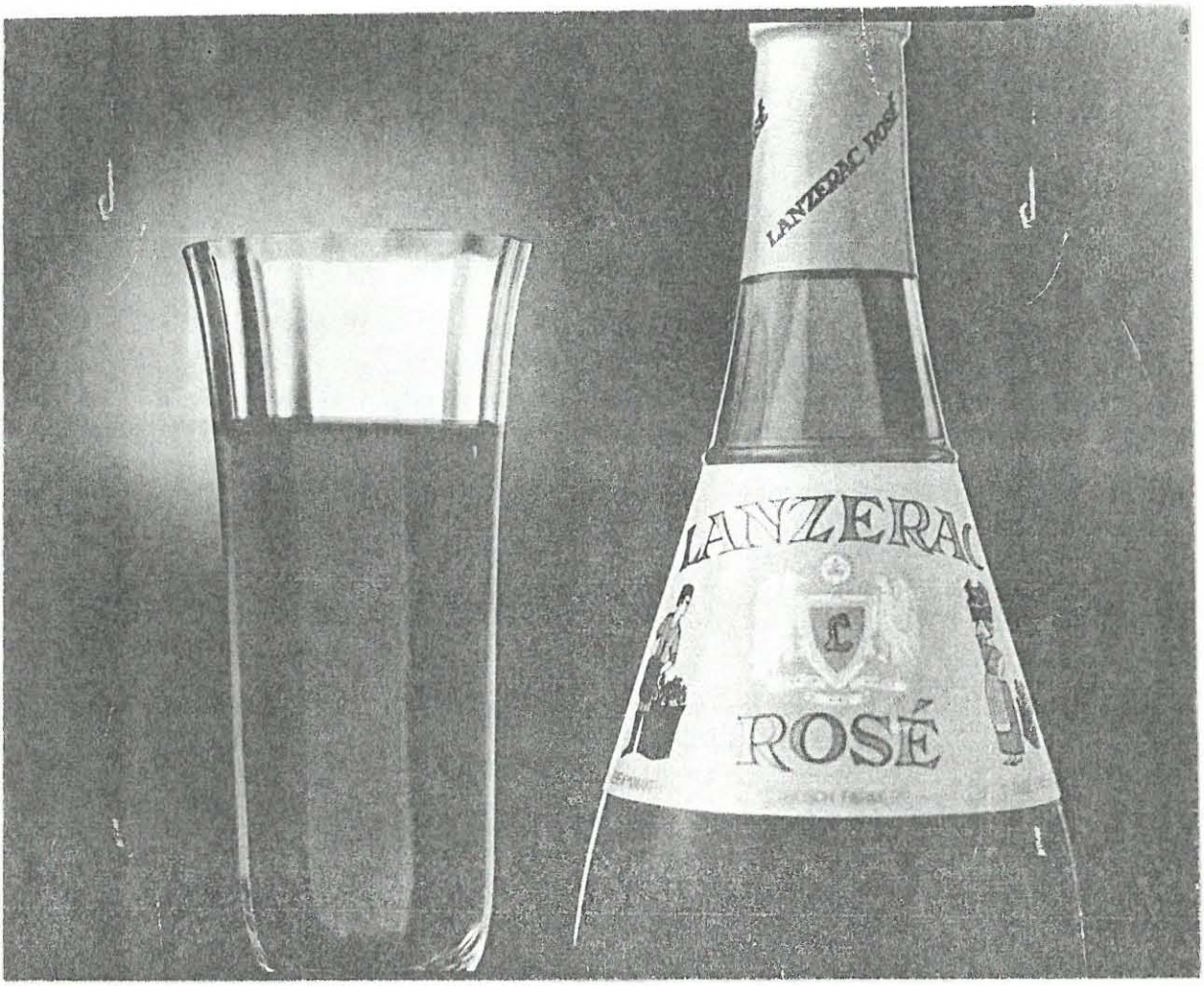
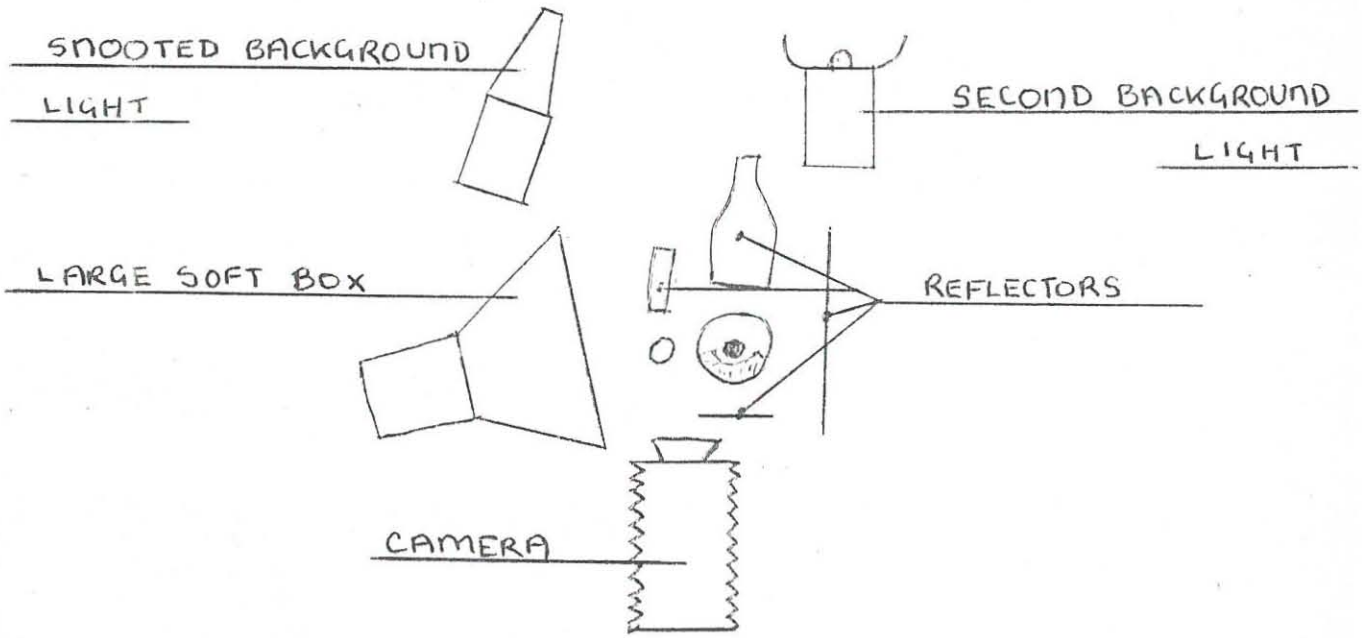


DIAGRAM 3



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EXAMPLE 4

This photograph and the one which follows it, were taken as advertisements. They are no longer "pretty pictures" of glass, as their purpose is to help sell a product. The lighting is more complicated, because props and labels have to be lit as well as the glass.

Lanzerac Rosé is, to me, a light, fruity, party wine. It is very social and does not have the formality of a red wine or a dry white wine. It is like pink champange without the bubbles. I tried to make the wine look bright and cheerful in my photograph. This was done mainly by the way it is lit and by the emphasis of colour.

By lighting the glass container well, the product will look more appetizing. The lighting I used is shown in DIAGRAM THREE. A flash head with a large soft box provided the main illumination. It lit the left side of the bottle and provided light for the reflectors. A large reflector filled in the right side of the bottle and a smaller one, above the camera, brought out the gold lettering on the label. Specially shaped reflectors, carefully positioned behind the bottle and the glass, illuminated the wine and emphasized its natural colour. The background was lit with a flash, with a snoot, to give the circular patch of light around the lip of glass. Another flash graduated the right side of the backdrop.

Making the wine look like Rosé, was problematic. I reshot the picture several times before I was satisfied with this one. On my first attempt, the wine looked like red wine because I did not use a reflector behind the glass. My second try was even less successful. The glass I was using was round and it brought the image of the reflector into sharp focus, like a magnifying glass. Even with matting spray on the glass the reflector made a small square highlight in the middle of the glass. This shot with the longer glass is more successful. As well as using a reflector, I had to water down the wine in the glass to make it as light as the wine in the bottle. I checked that they were equally bright with a probe attachment.

The comparatively dull, blue background was chosen to make the pink stand out. It makes the wine more prominent and more attractive. This photograph should, hopefully, encourage viewers to buy the wine.

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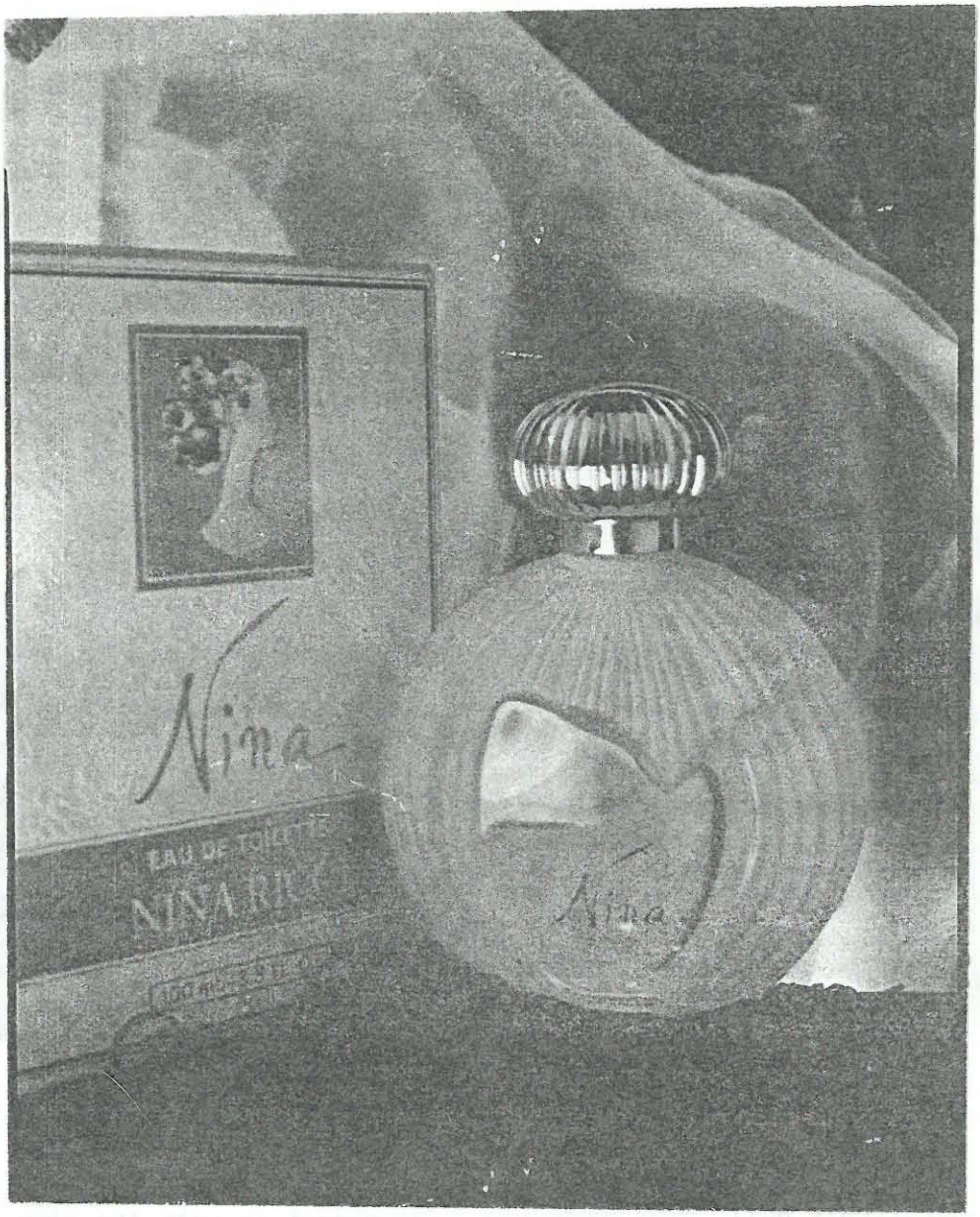
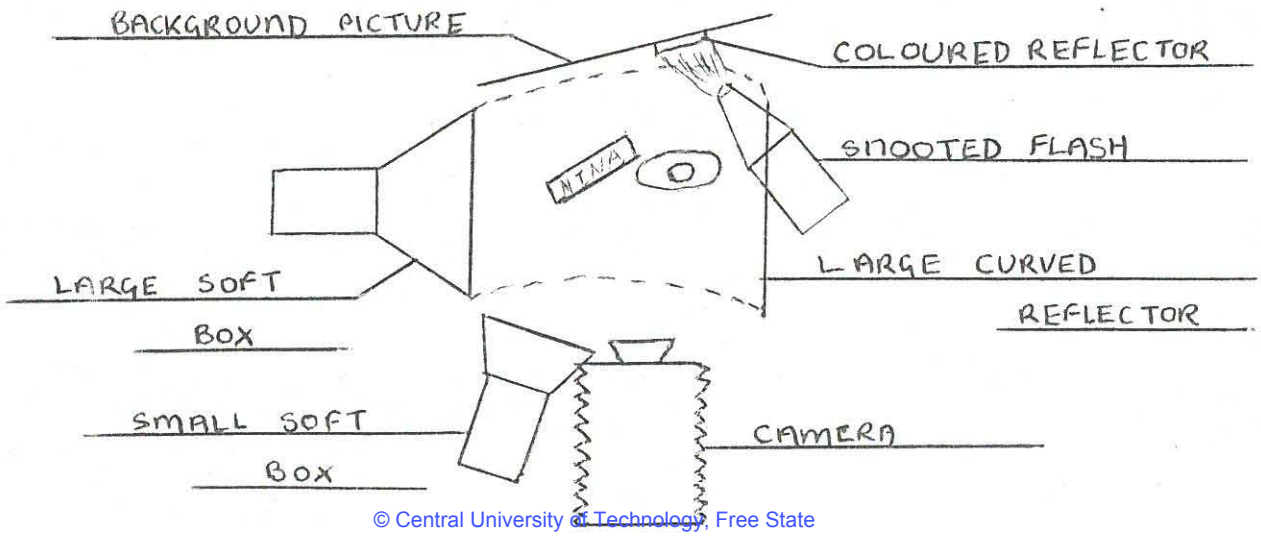


DIAGRAM 4



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EXAMPLE 5

In this photograph, I am advertising a perfume. To do this effectively, it is necessary to create an appropriate atmosphere. The photograph must have a romantic, effeminate feel to it. I added the sash in the foreground and the picture of a lady in the background to help build an atmosphere. The bottle had to be lit in such a way, as to be eye-catching. This would then lead your attention to the product which must also be attractive. The box was included to enforce the name of the product and the company which makes it.

Due to the number of elements in the picture, the lighting was complicated and it took a long time to set up. DIAGRAM FOUR shows how it was lit. A flash with a large soft box on the left was my main light. This, together with a large reflector, curved from the right hand side over t the soft box, gave soft, even illumination over the entire shot. This reflector was also useful for lighting the reflective, spherical lid. Another flash, with a smaller soft box, formed the small specular reflection on the bottle and made the bottle more dominant. My third flash had a snoot on it and was below the set. It lit a small reflector, attached to the background, behind the bottle. I coloured this reflector with pieces of red and yellow cellophane. This gave the perfume its warm colour and also formed the thin red line down the right side of the perfume. I darkened the left edge of the bottle with a black marker pen. This caused the slight shadow on the box, which prevented the bottle from fading into the box.

I am pleased with this shot and I think it is a success. The warm colours lead one into the perfume and the suggestion of the veiled lady make it romantic and feminine.

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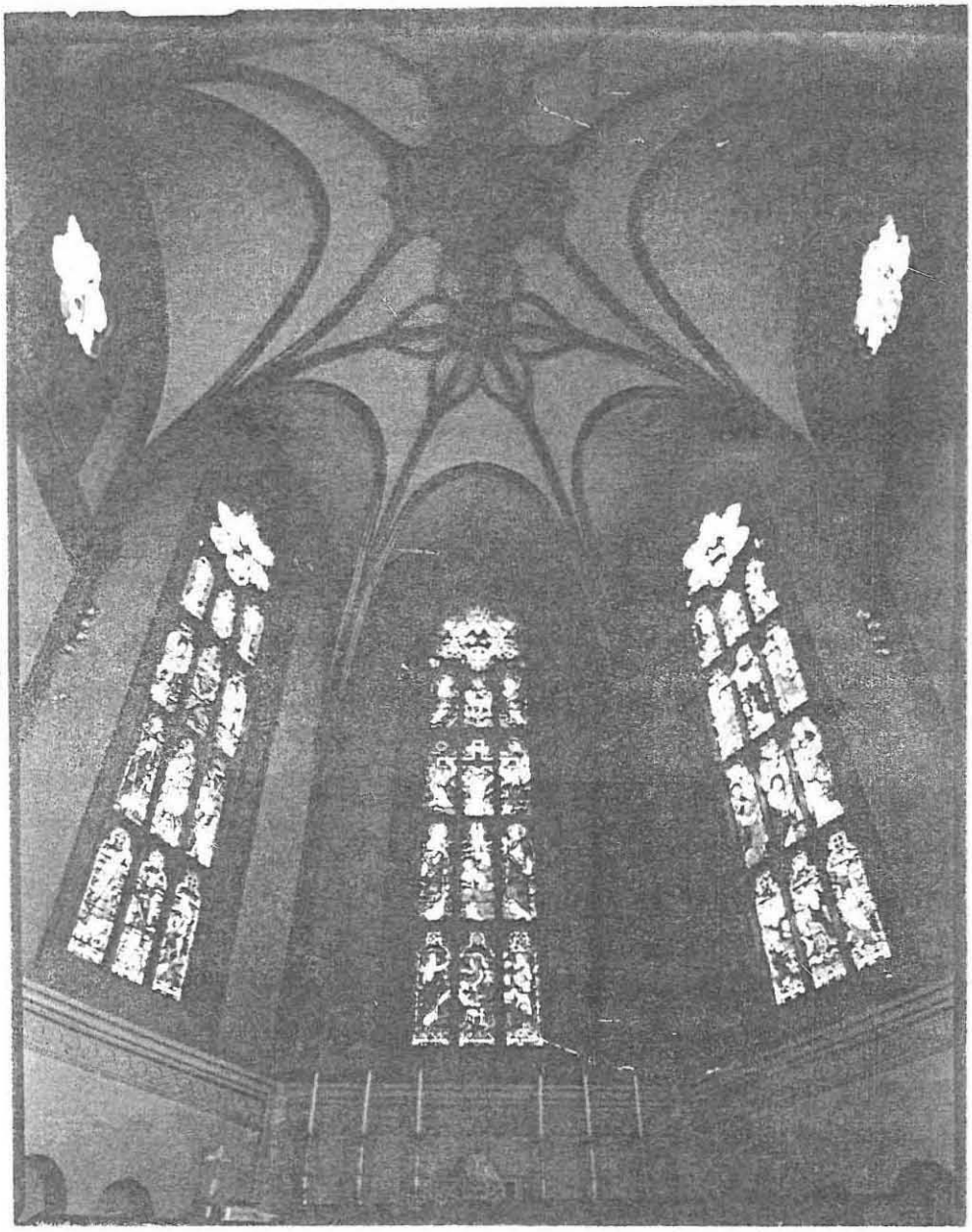

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EXAMPLE 6

This last example is of the stained glass windows in The Holy Trinity church in Johannesburg. This was made in the Royal Bavarian Stained Glass studios in Munich by F.X. Zettler. This work of art is awesomely beautiful and irreplaceable. As well as the windows, the church, with its gilded arches, is itself a sight to see.

This photograph is an exception in that it was taken on location. No flashes were used and I relied completely on natural light. I looked for a viewpoint which would do the stained glass windows justice, as well as including a little of the architecture. I eventually decided on this angle. The camera was fitted with a 90mm wide angle lens, and was pointing at a 45° angle. The picture included the stained glass windows behind the altar and the ceiling directly above it. The two side walls are also just coming into the picture. The wide angle lens distorted the windows and give the whole building a rounded, dome-like, appearance.

Due to their value, the glass is protected on the outside with hailproofing. This consists of metal grids, which unfortunately show up when the sunlight is bright or direct. I waited till the sun was behind me, before taking the picture. The interior of the church was fairly dim and I needed a one minute exposure at f16. I bracketed my exposure, as I was not sure how accurate my readings were.

Being in a church by oneself is, to me, a very relaxing, soul restoring, experience. I enjoyed making this photograph, as I was able to work in a different, more peaceful environment, with a far larger subject. Instead of bringing my subject into the studio, my camera and I went into the subject.

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CONCLUSION

Glassware calls for patience and willingness to experiment with different objects, lighting, colours, arrangements and exposure. The results are well worth the effort, and that is clear as crystal to photographers who focus on sparkling glassware.

(PSA Journal Jan. 1974)

During the past year I have done a great deal of experimentation and research in photographing glass. Occasionally I have become frustrated or tired of glass, but on the whole it has been interesting and good for me, as a photographer. I have learnt a great deal about photographing glass and I feel confident that I can handle almost any glass assignment given to me in the future.

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