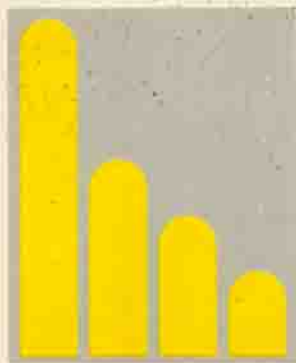


THE GOLDFINGER CRAFTBOOK FOR CREATIVE PHOTOGRAPHY



PURE GOLDFINGER

THE PHOTOGRAPHIC CORNUCOPIA

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A CRAFTBOOK FOR CREATIVE PHOTOGRAPHY

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the PRICE LIST and PAPER AVAILABILITY CHART
are a separate supplement

The contents of this handbook are intended to be in a logical order from choice of film, through processing to final presentation or storage of prints.

We have found that commercial and technical details tend to get confused with the purely informational, so have separated these out, marking some areas as PHOTOLOGY, being ideas and methods used in producing and presenting the fine print.

We admit the existence of a medium closely related to Photography, called Colour Photography, references to this medium occur occasionally in the text while practitioners of the art will find many materials listed in the prices section.

We hope this handbook will continue to evolve as a vehicle for the dissemination of opinions and techniques in contemporary photography.

PHOTOLOGY, fo-tol' o-ji, n.

We thought of calling it photographology, which seemed a bit ponderous, so coined photology, which we subsequently found to exist in the dictionary and to mean the doctrine or science of light..... close enough, our usage implies the study of contemporary methods in photography. Sections are denoted in here by the use of italic script, some overlap will inevitably occur!

Dedicated to those who have given part of their lives in devising, word processing, typing, drawing (straight lines as well), pasting up, scanning, printing and getting covered in ink, collating, binding and stuffing in envelopes....

Thanks to: Peter Benson, Peter Goldfield, Ben Haxworth, Martin Reed, Debbie, Sue, Jo, Christalla, Joan, Laura, Richard, Shelly and Janice, Munro and Georgia, special guest Nick Hayden.

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Photography as represented by the photographic print has two components of equal importance:- aesthetic vision and fine craftsmanship. One without the other is less than perfection. Our aim is to provide information on, and make available, standard, alternative and specialist products, that will allow your craft to match the extent of your vision.

This catalogue is unashamedly craft oriented, and for obvious reasons contains more detailed information on the excellent and comprehensive range of Agfa materials for which we are UK agents, including, in our opinion the highest quality printing papers in the world, as well as chemicals and films of unique characteristics. We also supply archival processing, storage, and preservation materials, including selenium and gold toners, acid-free museum mounting board, acid-free blotters, linen tape, mounting corners, print envelopes and portfolio or print boxes. Recent developments in conservation have led us to develop our negative and print storage systems in conjunction with leading conservators and manufacturers in this country. Items for the experimenters, Liquid Light, Silk Screen Emulsions, Tray Siphons, and Mat Cutters are examples of the growing range of difficult to obtain items that we are supplying, and in many cases have become distributors for. Our book section is growing and covers both 'art' and 'craft'.

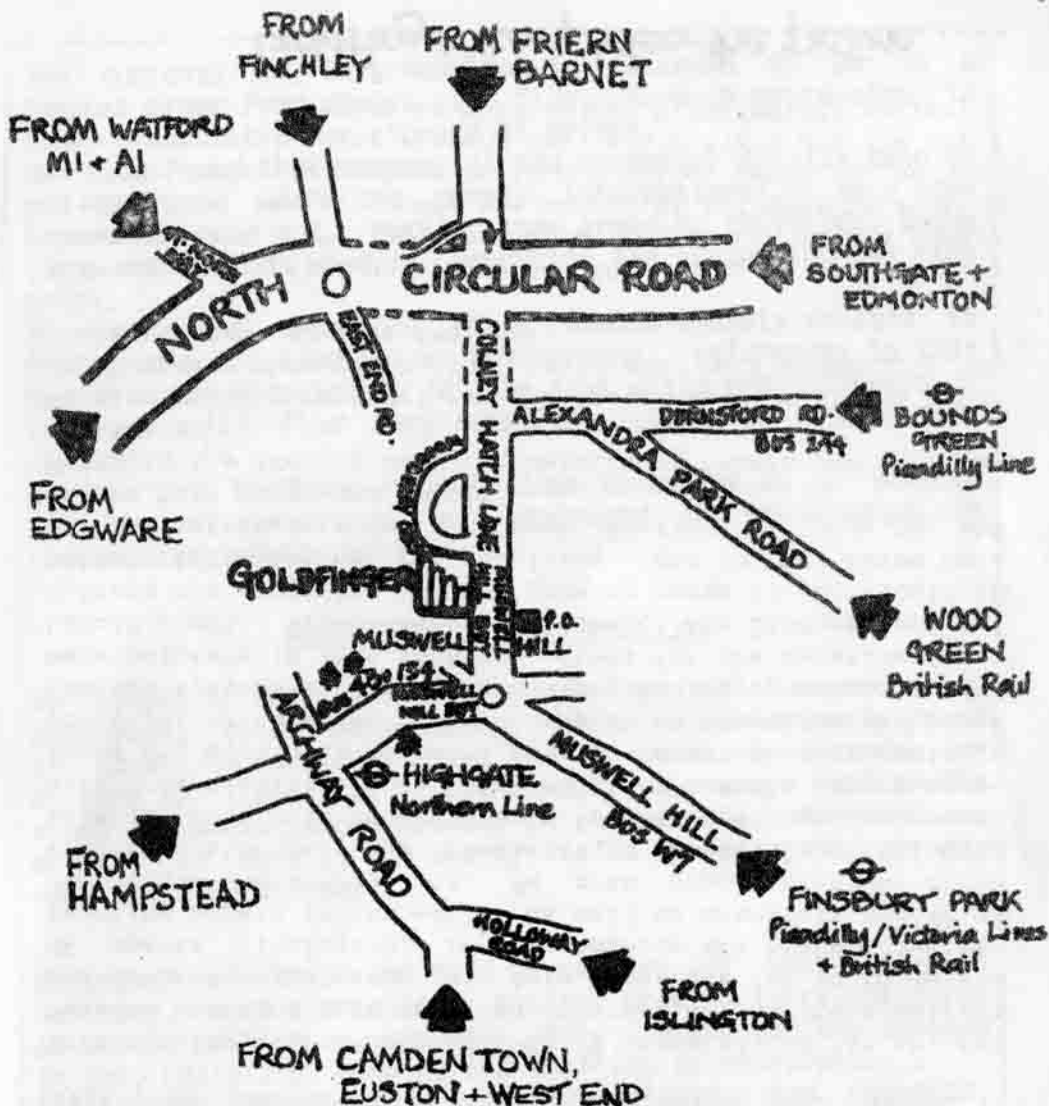
Refer to the framing page for details of frames and services available.

We also stock a range of raw chemicals. Details of new products appear throughout the text and more especially in 'revelations', towards the back.

Although we pride ourselves on the efficiency of our mail order service, if you can collect in person we are always pleased to see you, and the saving of our time in packing and your money in postage is to our mutual benefit! We also hope you will enjoy viewing the exhibitions and the small print collection which we hold in our FINGERPRINTS gallery.

Goldfinger completes the picture

The rule is really a map to retain awareness



HOW TO FIND US

Public transport - Highgate tube station is the nearest to us geographically ($\frac{1}{2}$ mile), and 43 and 134 buses run from there to Muswell Hill. Finsbury Park tube station is about 3 miles away, but is an easy route as the W7 flat fare bus runs directly up to Muswell Hill Broadway. Just take the whole ride. Buses 102 & 244 also come to Muswell Hill.

By car - We are 5 miles due north of the centre, and close to the north circular road. If in doubt, carry on A-Z map.

Assuming you have a camera, from pinhole to autofocus SLR, the first choice in the photographic odyssey is the film. Photographers sometimes attach little importance to film selection, seeming to inherit outdated opinions on obsolete products, often not viewing original prints to appreciate the qualities of a particular film- "four-x developed in b67 for ten minutes, absolutely marvellous"! As discernment grows, both from looking at others' prints, and examining the feel and impact of your own, so the choice of film merits greater attention.

Empathising with original prints, and understanding the craft behind them seems to be a subject that contemporary photographers shy away from. Not so with artists from other fields who are continually appraising their craft in its historical context.

Study the options available in the photographic craft, and after deciding that a particular finished print suits your psyche, experiment with available materials under your own working conditions.

Experiment with film format, make sure you are using the film at its correct speed, (not necessarily that quoted by the manufacturer), and check different developers for their graphic effects.

Do not necessarily accept what the manufacturers say. Everybody's techniques, and of course their objectives, differ. We are not suggesting chopping and changing film or processes constantly, but having run the gamut, and widened your choice, to select that combination which will satisfy you for most of your work.

FILM CHOICE

Film speed - to be taken literally? In the research laboratory film speed is evaluated by plotting characteristic exposure curves of a material and then mathematically working out the "light in" to "density out" which can be given a number. This relates it to other films that have been similarly plotted. The films we normally use have an ASA/ISO speed stamped on the box that has been worked out for "snapshot" photography as Kodak and Ilford put it, and most people tend to take it as gospel. When you start walking a finer line in the quality and consistency of negative you aim for, this suggested film speed may have to be re-evaluated.

Film manufacturers produce panchromatic (sensitive to all wavelengths of light), materials in three broad categories, slow, medium and fast ASA's; 25-50, 80-125, 200-400, respectively. Here are some common ones.

	KODAK	ILFORD	AGFA
SLOW, very fine grain, inherently contrasty	Pan-x	Pan f	Agfapan 25
MEDIUM, fine grain	Plus-x	F.p.4	Agfapan 100
FAST, grainy, softer	Tri-x	H.p.5	Agfapan 400

But also...

VARIABLE SPEED films, new technology based on colour negative films, A.S.A. from 50-1600, Agfa's VARIO XL and Ilford XP1.

SPECIALIST films- never promoted widely but offering characteristics the others don't, such as the extra high speed Kodak 2475 and High Speed Black & White Infra-Red.

UNUSUAL films- films that were never developed from the pictorial photographers point of view, but which have properties that make them worth investigating.

Particularly worth a mention are Kodak Technical Pan and Agfaortho, which are document (high contrast) films with phenomenal resolving power, needing low contrast development to produce the correct contrast with a normal subject. No ASA setting provided on the box- work your own speed out!

The selection of film and negative developer is the most important you can make, because nothing in these steps can be repeated. There are still a large variety of films and film formats, and advances in film technology, and developers continue apace. It will be very interesting to see what happens when the new 'tabular' grain technology from Kodak extends to films other than colour negative.

We cannot make recommendations, only suggestions! There is no "best" film, "best" developer or even "best" combination, merely combinations that will suit your eye, give you pleasure and fulfill your intention. This of course does not preclude us from mentioning our favourites, those that are in common use by our 'heroes' around the country, and those unobtainable but used fanatically in other countries.

AGFA PROFESSIONAL BLACK AND WHITE FILMSAGFAPAN 25

A slow 25 ASA film, extra fine grain and very high definition. (Technical notes- single coating emulsion with supercoat and 5.5 μ m thickness. It has a resolution of 185 lines per millimetre. Anyone in need of a complete technical specification for any of the Agfa materials please contact us for copies.)

AGFAPAN 100

The best thing Agfa ever did in many opinions. Medium speed 100 ASA film, and probably the most useful to the 35mm photographer. It has "the finest grain attainable in this speed category at the existing stage of development in emulsion technique", and in many independent tests has been proved to be the sharpest medium speed film in production. (It has a double-coated emulsion with a thickness of 7 μ m and a resolving power of the order of 145 lines per mm.)

AGFAPAN 400

The high speed film (400 ASA) of the Agfa range. It is softer in tonal rendition than either Tri-x or HP5, having more in common with discontinued HP4. Can be 'pushed' in speed, although not so far as Tri-X and HP5, and is tending to be used by photographers who need high speed but without the "grittiness" of the other comparable films. A recent test in a British magazine rated it as best on the market in its speed bracket, in terms of both graininess and sharpness. (A double coated emulsion with a thickness of 13 μ m and a resolution around 110 lines per mm.)

AGFA-ORTHO 25

An orthochromatic line film, (insensitive to red light), nominally 25 ASA, which Agfa aim at document copying applications. Its versatility extends beyond this and by taking it to a lower contrast (in crude terms overexpose and under develop), it may be successfully used with 'pictorial' subjects where unusual tonal scale and very high resolution may have applications. Try the special low contrast developers. It may also be reversal processed (using Agfa Neutral NE with

other chemicals- or a complete reversal kit, available from us), yielding transparencies of a higher contrast than Agfa Dia-Direct. It is also the only 'line' film currently produced in 120 format, and is now for the first time cut in 5x4". The emulsion thickness is 8 μ m, the resolution around 350 lines per mm.

OTHER B&W FILMS

ILFORD XPI and AGFAPAN VARIO XL PROFESSIONAL

'Chromogenic' B&W films with dyes forming the image, these films offer very wide exposure latitude, very fine grain and extended tonal range.

Vario XL is available in 120 rollfilm, and 35mm/36

Xpi in bulk lengths of 35mm, in addition to 35mm/36 frames.

AGFAPAN 25 & 100 PROFESSIONAL FOR MINOX

High resolution subminiature films for spies. We can also supply Minox developing tanks and specially formulated developer, as well as cameras and accessories.

AGFA DIA-DIRECT

Process paid B&W slide film, its fine grain and good contrast are suitable for preparing slide copies of prints for lectures or filing purposes. Agfa operate a speedy postal processing service.

KODAK TECHNICAL PAN

A favourite with the new topographers in the States. For the ultimate in resolution and fine grain from the 35mm format, document films such as Agfa-ortho and Kodak Technical Pan are being used in special low contrast developers, such as Tetenal Doku and Kodak Technidol. Some suggested ratings and times are reproduced in the negative-processing section. "For print sharpness you normally associate with sheet film" say Kodak. We would hesitate to say it makes large format photography obsolete, but using it certainly makes you think in large format terms- you begin to work at smaller apertures and the need for a tripod becomes paramount. Technical Pan is at present in 35mm 135-36 and bulk lengths, and in 5x4".

KODAK B&W HIGH SPEED INFRA RED FILM

Can be used with different filters at different film speeds, and to differing effect. A totally visually opaque filter, such as the Kodak Wratten 88A give the most dramatic effect, rendering foliage very light, blue skies dark, and red and yellow filters will give less, as the proportion of visible light is increased. The film is easily fogged just by background heat radiation and must be kept cool and processed promptly. In 135-36 and 5x4".

KODAK 2475 RECORDING FILM

Grainy, needs careful treatment in processing, but FAST. A nominal speed of 1000 ASA. Recommended developers DK50 and HC110. In 135-36 only.

ROYAL-X PAN

The 120 format equivalent of 2475, at nominal rating 1250. However in this format high film speed does not always equate with available light. Some people are using this film for its' versatility and excellent tonal gradation.

GOLDFINGER LTD also stocks a wide range of other films too numerous to detail, but including:

ILFORD: PAN F, FP4, HP5, Line film

KODAK: Plus X, Tri X, Panatomic X, Verichrome Pan, Rapid Copy Film

in COLOUR: Vericolor S & L, Kodacolor 100, 400, VR 1000, Ektachrome 64, 200, 400, 160, (tungsten), Kodachrome 25 and 64, Photomicrography Ektachrome, Infra-Red Ektachrome, PR10

AGFA Agfachrome 100S, Agfacolor 100S & 80L, Agfachrome 100S, Agfachrome 200, 50S, 50L, CT18 & 21

see price list

ZONE <> TONE <> TON <> TEN <> ZEN

craft

HEAVY!

aesthetic

TEN TONES

According to legend, Minor White said to Ansel Adams
'How's your ZONE system getting on?' Ansel replied.....
'How's your ZEN system?'

Without getting too heavily involved in Zone system theory, test your film as follows, using the basic concepts of Photography and the Zone system.

ASSUME ON FAITH....

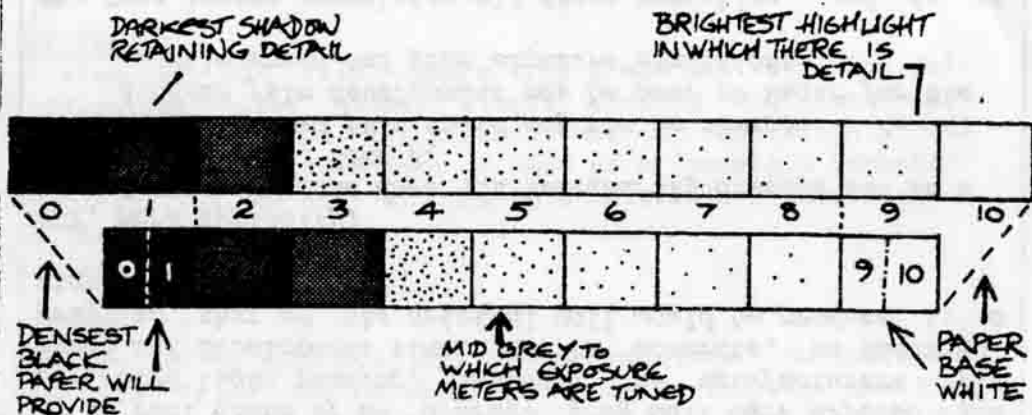
....that every halving or doubling of the light reaching the film on exposure alters the 'zone' on the negative by a factor of one, so ONE STOP = ONE ZONE.

A lightmeter averages everything within its field to zone 5. If a real scene of an 'average' grey wall were exposed by a reflected light reading, assuming the manufacturers film speed and development times to be accurate, an identical grey to that of the original wall would be produced in a standard print.

BUT, more typically;

- 1 A real scene does not necessarily average out to a mid grey, Zone 5.
- 2 The stated film speed may not be correct.
- 3 Your film development may be over or under for the film speed and your exposure conditions.

The Zone system correlates all these variables, and is an extension of the old adage, expose for the shadows, develop for the highlights. There are now 9 possible zones, which are followed through from first light measurements of the scene to the finished print.

PAPER ZONE WEDGES, PAST (TOP) AND PRESENT

Modern papers, in the main, do not show the range of luminous detail of the papers of, say, 20 years ago. For most purposes you can consider zones 9 & 10 to be paper base white (maximum density on negative), and 0 & 1 to be maximum black on print, (clear negative).

Some papers approach the ideal characteristics - we stock the ones we believe do this.

FIRST TEST YOUR FILM SPEED:-

with the following procedure, using a manufacturers standard developing technique.

Find an average scene that measures, by your lightmeter, a range of 8 zones, which is all that for practical purposes modern films and papers can handle. In other words we mean 8 stops, or the difference between $f/2$ and $f/16$ at $1/8$ 'th sec, or any one shutter speed.

In this scene, eg: a white car on a grey road in sunlight, find the area, usually under the car, which you want to reproduce on your finished print as the darkest area just containing some shadow detail. This, for modern papers is equivalent to about zone 2, and will produce an almost clear area on the negative, if it is exposed properly.

Meter this key area.....

Knowing that your light meter, if you used the reading it suggested, would place this on zone 5, stop down 3 stops to zone 2, remembering that one zone = one stop. Thus...

If your reading were $f/4$ at $1/60$ 'th, this would mean stopping down to $f/11$ OR changing speed to $1/500$ 'th second.

Now make exposures around the manufacturers film index, if the film box says 100 ASA, expose for 64, 80, 100, 125, and 160 ASA. Develop in your favourite developer for the manufacturers recommended time. Look at your results. The frame of film that JUST has detail in the shadow area indicates the effective speed of the film.

To make a 'STANDARD PRINT' to evaluate all your results, see 'Photology' on paper, AFTER reading the following section.

NOW TEST YOUR DEVELOPER:-

So far we have pinned down the shadow area. The highlights, or dark areas of the negative, are much more susceptible to the effects of development, than to variation in exposure.

To pin down the development, make another series of equal exposures at the now established film rating, and develop them once again in your favourite developer, but for differing times based around the manufacturers recommended, e.g. if they suggest 9 minutes give a range of 7, 8, 9, 10, 11, minutes. Examine the results.

There should be little or no difference in the detail in the shadow areas, but the highlight areas (black on the negative) will alter appreciably.

Look for a part of the negative that you want to appear as the brightest, whitest area with detail in the print. This will appear as one of the darkest in the negative and might be, say, a highlight on the white car. This is your zone 8, and will correspond to the area in your original scene that is 6 stops or zones above the zone 2 fixed on for the shadows.

Find the processed frame where this area best corresponds to the original scene, and you have your correct developing time.

Following the above procedure, you have 'homed' in on the optimum film speed and development time, which may differ considerably from that recommended by the manufacturer, or from batch to batch of film.

HOWEVER, WITH FORESIGHT...

The above procedure would be much easier if you had a way of producing a standard print, which after all is the final objective, and much easier to 'read' than the negative.

Achieving this is even easier than for the negative, though essentially similar.

Follow the procedure in the print processing 'Photology' section and then come back and more easily test the negative material.

When all the stages have been completed, the procedure for a 'masterprint' should be

make an exposure in the camera with a film of predetermined speed, develop for a predetermined time, make a print without dodging or burning at a predetermined exposure, and develop for a predetermined time.

VOILA!

Nothing(?) of course, is perfect, but the aim is to use the materials to their limits, and to save time and effort in the darkroom.

This is not a recipe for total 'Previsualisation', merely a way of pinning down one discrete Zone, in an original scene (usually the shadow area in which detail is just required, zone 2) and translating that area accurately from 'reality' (original scene), to 'reality' (original print)!

Read the pages on print processing and the circle should be complete.

If not give us a call!!!!!!!!!!!!

CHOOSING A DEVELOPER

A few decades ago, many hours were being spent testing to establish the 'supersoup' that would give the ultimate negative quality. Modern films are of a much higher quality, and the need to 'fine-tune' with modifications to super-fine grain developers has gone. We now have sharper, finer grained films than have ever been available before, with the exception of one property. The thin emulsions of contemporary films are capable of less 'lifting' and 'lowering' in zones than the older thick emulsions. The one exception is Kodak Super XX sheet film, still available in the USA. If anyone is interested please let us know, we may be able to get hold of it.

There are many different manufactures, packings, and formulae, but those in common usage fall into several broad groups. Find which suits your work, a purely subjective choice with the proviso that different developers require a different original speed rating of the film. Various developing agents have been used at different times in the past, but practically all proprietary developers use either paraminophenol, or a combination of either metol or phenidone and hydroquinone- "MQ" and "PQ" respectively. By changing the mix of just a few basic ingredients a wide range of developing action is achieved, and there are not many possibilities unrepresented in the different manufacturers products.

FINE GRAIN DEVELOPERS

Such as time honoured Kodak D76, Ilford ID11 (the same), Agfa Atomal FF, are a good compromise between fine grain and normal emulsion speed. A feature of the fine grain development process is the action of a solvent, usually sodium sulphite, which works to prevent excessive silver 'clumping', usually at the expense of sharpness in the finished print. By diluting out the developer however, this solvent action is reduced, and a surprising balance between fine grain and sharpness achieved. Hence the popularity of Rodinal Special, D76 1+1, and HC 110. Try D76 diluted 1+3 for fast films (400ASA) for about 20 minutes!...and be amazed!

SUPERFINE GRAIN DEVELOPERS

Including such developers as Microdol X (Kodak) and Perceptol (Ilford). These usually need an increase in exposure.

ACUTANCE DEVELOPERS

An old formula, relying on a very dilute developing agent which quickly exhausts, giving extremely high 'edge sharpness', a tight grain pattern, and high sharpness. Including Rodinal, Neofin Blue and Red, they come into their own with low and medium speed films. Some may exhibit a restraining (or compensating) effect, holding back development of highlights while the shadows build (Macbeth, act 11?) This is controlled to some extent by agitation- less agitation= more restraining.

SPEED INCREASING DEVELOPERS

Microphen, Acuspeed, (especially used for 'push' processing), work vigorously in the shadow areas, trying to compensate for underexposure. The tonal range is normally somewhat compressed, highlight areas becoming very dense, thus the use of a speed increasing developer is not a substitute for a genuinely faster film.

TWO BATH DEVELOPMENT

Two bath developers have been around for a long time, but little used in recent years. The first bath contains the developing agent, preservative and restrainer, and the second one contains the alkaline activator. This 'ration' the amount of developing agent available and will give an appreciable compensating effect, when photographing very contrasty subjects. Also the timing, and temperature of the solutions becomes less important. We stock the Tetonal 'Emofin' 2 bath developer.

LOW CONTRAST DEVELOPERS

Most useful with conditions of great contrast, or as previously mentioned, with Document films to bring their extremely high contrast down to the normal range for pictorial photography. Apart from making them up yourself to formula there are two proprietary developers, Tetonal Neofin Doğu, and a new one, Kodak Technidol.

AGFA DEVELOPERSRODINAL

A one shot developer, based on para-aminophenol, which has been in constant use, unchanged in composition, since 1891! Two important attributes....

Extremely sharp - unsurpassed in maintaining the existing grain pattern of the film, and boosting edge sharpness. Higher dilutions than those suggested by Agfa enhance acutance still further.

Variable contrast - Rodinal has a very useful property in that development time can be altered without significantly affecting film speed. By selecting the correct balance between dilution and development time, a well developed negative for any subject luminance (contrast) range can be made, high contrast needing high dilution, and vice-versa. In the case of extremely high contrast subjects the developer may be diluted up to 1+200, but be careful not to cut yourself on the image! See our developing charts for starting points.

Life expectancy - Agfa claim indefinite life when the bottle is unopened, apparently a bottle buried by bombs in Dresden in the last war, and unearthed in the 1970's worked a treat! If you are using your Rodinal over a period of time, you will eventually see a colour change towards brown. Don't worry. Its performance is unimpaired! One customer astounded us by revealing that he had been using the same 500ml bottle for the last 30 years!

However Agfa do suggest that the bottle is kept airtight with the screw cap, ensuring a life of at least 6 months, and that when diluted to working strength, Rodinal keeps for only a short time and the developer solution must therefore be prepared just before use.

A warning... it is very easy when you first start using this developer to establish what you consider to be a well processed negative, but which might be over-developed for your purpose. It's well worth finding the time to do your own tests. The assortment of charts from different sources reprinted here show the great range of applications.



fingertip

For those who use plastic tanks that require approximately 300mls of solution, try diluting Rodinal 1+30 or 1+60 i.e. 10mls+300mls or 10mls+600mls, it makes measuring so much easier!

RODINAL SPECIAL

A phenidone/hydroquinone film developer, not to be confused with the 'original' Rodinal. It is a fine grain developer, which due to the high dilution of working strength solutions does not lose sharpness. This developer gives full emulsion speed. Supplied in 125ml plastic bottles, and very convenient to make up.

Agfa recommend dilution at 1+15, with a proportional time increase for each film processed. The suggested times on the 'Rodinal Pull-out Page', are for this dilution



fingertip

When using Rodinal Special we suggest increasing the dilution to 1+30, and one-shot usage, adding up to 100% to the stated times. Do your own tests - it has been used at 1+ 50 with Agfa-Pan 25.

ATOMAL

Agfa's standard fine grain developer for small tank use, giving extremely fine grain, especially useful with high speed films, and full emulsion speed.

Supplied in powder form, to make 1 litre. A well balanced alternative to products such as Kodak D76 or Ilfords ID11

ATOMAL FF

A modified form of Atomal which, with its replenisher, is designed for deep tank development. It has high consistency in emulsion speed yield, and consistently fine grain throughout its working life, which can be more than a year with replenishment.

MORE FILM DEVELOPERS

The Tetenal chemicals are of very high consistency and quality, and their range includes many formulae not produced by the other manufacturers. They are not always easy to get hold of, and we will shortly be getting them direct from the manufacturer. Here is a brief rundown of some of the range.

ULTRAFIN

If you are an occasional Rodinal user this may be an expensive but convenient alternative, as it is packaged in single ampoules for 1-2 films. Fine grain, high acutance.

NEOFIN BLUE

High acutance compensating developer (ie will hold detail in highlight and shadow when used with a high contrast subject). Designed for use with slow and medium speed films.

NEOFIN RED

A more energetic form of Neofin Blue, designed for high speed films, or for higher contrast with medium speed.

MONOTENAL

A monobath- all the rage at one time but now largely disregarded. Development and fixation in one process, but disadvantages are fixed contrast for a particular film type, and rather heavy grain. But useful, say, in a teaching situation when you need a result quickly.

NEOFIN DOKU!

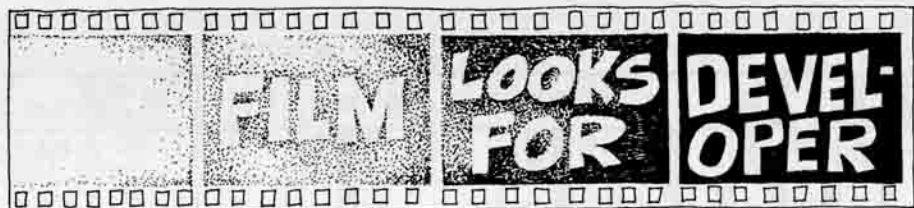
An extremely soft working film developer, unusual in retaining high film speed, making it possible to use some high contrast document films for continuous tone (pictorial) photography. Document films i.e Agfaortho (orthochromatic, only blue sensitive, red components of a scene appear darker, skys lighter, brickwork and skintones darker, watch out for excessive acne!) and Kodak's Technical Pan (panchromatic) are of extremely high resolution, thus when processed for continuous tone will give great sharpness and extremely fine grain. However there is little exposure tolerance- so bracket or get to know the zone system well.

a couple of thoughts on LOW CONTRAST DEVELOPMENT with Technical Pan & Agfaortho...

Although hailed in some quarters as being revolutionary, our consensus is that these films used in this way have their applications, but only supplement the conventional films. Technical Pan has no anti-halation backing as such, and is prone to this effect, noticeable in strong highlights as a 'flaring', so the film does not seem to be used to best effect under conditions of extreme contrast. But in dull conditions you may find it working extremely well, giving beautifully graded negatives of very fine grain. Also do not expect the density to resemble conventional negatives—your well processed Technical Pan neg will be more thin and delicate, and may need a higher grade of paper. Exposure, although more critical for good quality, is less easy to evaluate in these negatives and some tests before shooting anything unrepeatable is a good idea.

KODAK HC110

This developer has gained much popularity. It is an Eastman Kodak product, and comes as a small bottle of straw coloured syrupy fluid. This is then diluted to give a stock solution, which is further diluted to produce working solutions. It gives a good balance between fine grain and sharpness, gives plenty of shadow detail, and full film speed. Relating it to Rodinal, it is perhaps slightly better in tonal separation, but slightly inferior in sharpness. Also very economical. The off-putting aspect of it is the convolutions of dilution so we include a table overleaf with some suggestions.



The chart overleaf is intended to provide starting points when encountering different films and developers- it may also help to relate different films in the same developer.

THE RULES;


1 These times have, and are still being, collated from many sources, we cannot guarantee them, consider them a basis for your own tests. Ideally, run through a zone system check as outlined here, or at least shoot a piece of film under your anticipated conditions, and test the time. There is no "correct" time- you have your own type of water, way of agitating, idiosyncracies of exposure, and these are only starting points.

2 All, as far as we know, are based on 20 degrees C. and 30 seconds agitation on first immersion followed by 10 seconds in the minute except where marked in the notes at the end. Some films have differing characteristics in different formats- the time shown is for the 35mm version, and if this is not available, the 120 format.

3 As the different manufacturers, and other authorities evaluate their materials to different contrasts, there will be some variation in contrast between different combinations.

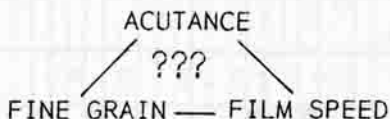
4 There are lots of gaps- in some cases because a combination will give you strange results (other people might say 'not recommended') but in most cases because it has yet to be worked out. If you can fill in a space, please send it to us- we intend to keep this chart expanding. Some of the most popular developers have spare columns for marking up your own times. There are quite a few developers not yet in the chart- let us know your favourites.

5 When there is a solid bar below a time, this indicates the film is being used at the manufacturers suggested speed, as indicated next to the film name. When a different speed rating is used, this is marked in the space instead.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
 GOLDFINGER BIG CHART	D76	D76	D76 1+1	D76 1+1	D76 1+3	D76 1+3	ID11	ID11 1+1	ID11 1+3	ATOMAL	ATOMAL	ATOMAL 1+1	ATOMAL 1+3	RODINAL S 1+15	RODINAL S 1+30	RODINAL S 1+60	PERCEPTOL	PERCEPTOL 1+1	PERCEPTOL 1+3	MICRODOL-X	DK50	HC110 D11 B (stock 1+7)		
A AGFAPAN 25										7				2½										
B AGFAORTHO 25																								
C TECHNICAL PAN																								
various																								
D PAN X	5		7				5	7	12					2½							7			
E PAN F	5½		11				6	8½	12½					2			11	12½	17	10				
F B&W INFRARED	10																25	32	32					
various																								
G AGFAPAN 100			12							7				4½										
H PLUS X	5½		8				6	8	13					5			8	9	12	7				
I FP 4			12				6½	9	15					3½	8		64	64	64				4½	
J VERICHROME PAN	7		9														64	100	100				80	
K AGFAPAN 400	9		10							11				4½										
L TRI X	8		10½				8	11	19					5			10	12	15	11			6½	
M HP 5	7½	12	12				8½	14	22					3½			32	32	32				200	
N 2475 RECORDING		800															11	14	21	9			6½	
O ROYAL X																	200	200	200				160	
P																					6			
																					6			

NOTES

- Standard speed/fine grain; ID11, D76, Atomal, Aculux. (7, 1, 10, 41)
- Standard speed/fine grain/high acutance; Rodinal S, HC110, Acutol, (14, 22, 40)
- Standard speed/high acutance/moderate grain; Rodinal, Neofin Red & Blue, Ultrafin. (26, 30, 31, 32)
- Speed REDUCTION; if you want the finest grain possible, (or you want to rescue a film you have over-exposed), try Perceptol, Microdol-X, (17, 20)
- Speed INCREASING; in approximate order of degree, Microphen, Promicrol, Perfection XR1, Nucleol BF, Acuspeed. (33, 37, 43, 44, 39)



- C45 This is from Kodak data- they recommend 15, but you may find about 11 minutes more suitable. Lower loaded reel into dev. rather than pouring, to avoid 'air bells'.
- C46 Reduce to 7 mins with continuous agitation.
- B46 Reduce to 8 mins with continuous agitation.
- 45/46 Use for 'pictorial' results with the document films- other devs may be too contrasty.
- 10 Not enough people using Atomal yet- used by D.B. whoever he is.
- N 2475 Recording- be careful, very prone to chemical fog because of its high speed. Kodak only recommend a couple of their developers.
- L1 Tri-X/D76, the old standard bearer- still an excellent combination.
- G27 Goldfinger tip for the top- yields razor sharp image, lovely tonal range.
- 22/23 As with Rodinal, tailor your dilution to the brightness of
- 24/25 your subject- the greater the brightness range the greater your dilution should be.
- 15 Rodinal Special 1+30, Martin likes this, not least of all because one 10ml hypodermic syringe into 300ml water at th right temperature equals one Paterson spiral. Good compromise between fine grain and sharpness.



Rodinal DEVELOPMENT CHARTS

Roll Films, 35 mm film and sheet films in developing tanks or trays	ASA	Developed as ASA	Recommended dilutions	Time/Temperature at 68° F (20° C)
AGFA				
AGFAPAN®	25	—	1:50	8-10 min.
AGFAPAN®	100	—	1:50	8-10 min.
AGFAPAN®	400	—	1:25	6-8 min.
AGFAPAN®	400	—	1:50	10-20 min.
KODAK				
PANATOMIC-X	32	32	1:100	16 min.
PLUS-X	125	125	1:100	10 1/2 min.
PLUS-X	125	160	1:75	11 1/2 min.
PLUS-X	125	400	1:75	12 1/2 min.
PLUS-X	125	800	1:50	16 1/2 min.
TRI-X	400	400	1:50	14 1/2 min.
TRI-X	400	800	1:100	17 1/2 min.
TRI-X	400	1600	1:50	18 1/2 min.
2475 RECORDING	1000	1000	1:25	11 min.
ILFORD				
HP-5	400	250	1:25	7 min.
HP-4	—	400	1:25	6 min.
FP-4	125	125	1:25	5 min.
PAN F	50	50	1:25	4 min.

Rodinal Film-Developing Recommendations For Brilliance, Gradation, and Sharpness			
Dilution	1+50	1+75	1+100
Kodak Tri-X Ilford HP-5 Agfapan 400	8-10 min. 9-11 min. 9-11 min.	12-14 min. 13-15 min. 13-15 min.	NR NR 14-16 min.
Plus-X Kodak Ilford FP-4 Agfapan 100	9-11 min. 7-9 min. 7-9 min.	10-13 min. 8-11 min. 8-11 min.	14-16 min. 10-13 min. 10-13 min.
Kodak Panatomic-X Ilford Pan F	NR 5-6 min.	5-7 min. 7-9 min.	8-10 min. 9-11 min.

Suggested development times at 20C. with continuous agitation for the first minute, and 5 secs. in each 30 thereafter.

The chart at the top left is from Agfa in America, the bottom one from the

Agfa European data sheets, and the top right from an excellent article in Popular Photography (December '79) which is well worth getting hold of.

As you can see, due to Rodinals' properties much variation in timing is possible—use them as a basis for your own trials.

Subject contrast	low		normal		high	
	contrasty		normal		soft	
Film to be developed	approx. 0.8		approx. 0.7		approx. 0.6	

Recom- mended dilution	Time in minutes	Recom- mended dilution	Time in minutes	Recom- mended dilution	Time in minutes
------------------------------	--------------------	------------------------------	--------------------	------------------------------	--------------------

Amateur films

Isopan®	1 + 25	9	1 + 25	6		
	1 + 50	16	1 + 50	10	1 + 50	7

Professional films

Agfapan® 25	1 + 25	5'30"	1 + 25	4		
	1 + 50	15	1 + 50	9	1 + 50	5
Agfapan 100					1 + 75	8
	1 + 25	7	1 + 25	5		
	1 + 50	16	1 + 50	9	1 + 50	6
Agfapan 200					1 + 75	8
	1 + 25	10	1 + 25	6	1 + 25	4
Agfapan 400					1 + 50	7
	1 + 25	10	1 + 25	7	1 + 25	5

HC110 "DO-IT-YOURSELF KIT"



HC110 is a developer that comes as a small bottle of syrup that needs great dilution. It is NOT advisable to dilute directly from this, as it is very difficult to make the developer disperse evenly. Instead, make up a stock solution from the concentrate, which can then be diluted further.

To make stock solution from the '2 US Gall' bottle:

1. Pour the entire contents into a 2 litre bottle, rinse out the residue and add to the developer.
2. Add water to make 1.89 litres.
3. Close the container and shake until the mixture is uniform

Many people get confused because two dilutions are applied to the developer, the ultimate dilution from the original concentrate, and the more comprehensible figure from the prepared stock solution. On the chart on the previous page we have detailed dilution from the stock- this seems to be the figure to standardise on, but bear in mind that the developer has already been diluted 1+3 in making the stock, so don't confuse this with figures from other sources which might give the total dilution.

The two most popular dilutions are:

Dilution A, 1 part stock to 3 parts water.

Dilution B, 1 part stock to 7 parts water.

The other defined dilutions, CDEF are used mainly instead of DK50 for sheet film, where processing times are directly comparable. However, intermediate dilutions may suit your purpose, and we have detailed times for 1+15 on the main chart.

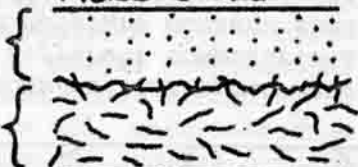
	DILUTE STOCK	for dilution	giving 'Ultimate' dilution (ref. only)	
MAKE UP STOCK AS ABOVE-	1 + 3	A	1 + 15	USE and DISCARD
'2 US GALL' BOTTLE MADE UP TO 1.89L.	1 + 7	B	1 + 31	
	1 + 4	C	1 + 19	
	1 + 9	D	1 + 39	
	1 + 11	E	1 + 47	
	1 + 19	F	1 + 79	

INTRODUCTION AND THE RC/FIBRE CONTROVERSY

Photographic paper is usually defined as an 'emulsion' of light sensitive silver salts, silver chloride, bromide, or both suspended in gelatin, which is coated or supported on a paper base.

Since the early '70's there have been two types of black and white paper available, 'resin-coated' and conventional 'fibre' paper.

Resin-coated paper has a base which is sealed in with polyethylene waterproof coatings to prevent it taking up moisture, which means it can be processed rapidly as no chemical need be washed from the paper, or dried from it.

RESIN COATEDFIBRE BASED

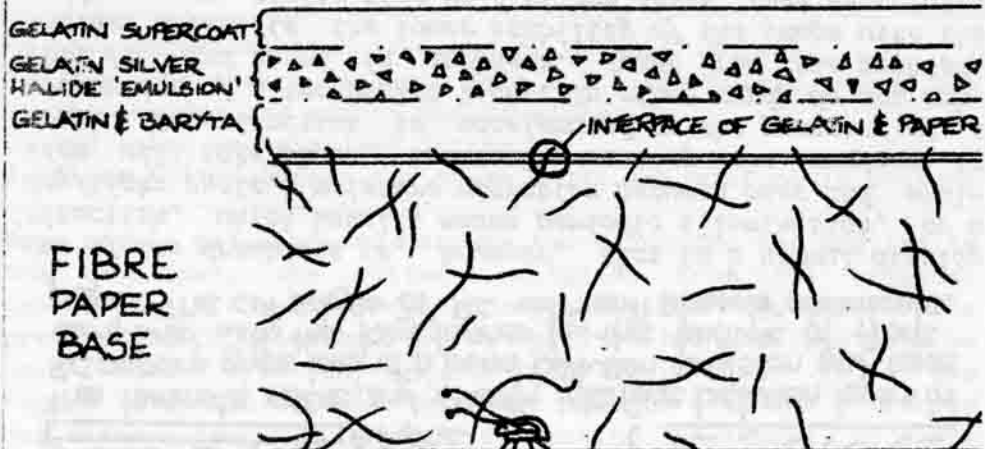
The laminate nature, and smooth interface between layers in RC papers gives less of a bond between emulsion and base compared with the key formed by the texture of fibre paper. The cut edges of RC will still absorb chemicals.

One of the drawbacks is, however, that in a normal display situation, which usually means periodic illumination, or a day/night cycle, moisture migration between base and emulsion will take place, eventually causing the surface to crack. Deterioration is accelerated by the presence of a proportion of ultra violet light. In other words do not exhibit it, and store in darkness. Apart from this problem, another aspect is the lower stability of the image with the resin papers, giving rise to a silver sheen, seen especially towards the edges of the print. Research so far concludes this is due to the inability of the RC base to accept and stabilise the by-products of the slight decomposition taking place under unprotected storage conditions.

So Resin-Coated material is not being designated, even by manufacturers, as being suitable for long term preservation and in addition has generally lower quality of surface and tonal range.

When choosing which paper to use for both exhibition and long term storage, inevitably the only choice is still conventional paper, otherwise known as 'fibre' or 'baryta' paper, so called because of the white baryta toner layer between the base and the emulsion.

CROSS SECTION OF FIBRE PAPER



The diagram shows that paper is more complex than appearance suggests. It has several layers of different compositions and the gelatin binder has a certain moisture content even when dry. During processing it is flooded with water and various chemicals which must all be removed.

Compared to a painted canvas or watercolour, no wonder the photographic printing medium is in a class of its own. We have to think about factors affecting the quality and longevity of the print, including types of chemicals, time in these chemical baths, efficiency of washing, and methods of drying and storing, in order to get the best from the materials.

The way we react to, and 'read' a photograph has a lot to do with the characteristics of the paper used.

Fortunately the manufacturers still leave some choice in selecting a particular image tone, surface and paper base tint, which can be used to suggest to the viewer some of the conditions that existed when the picture was taken, or accentuate some aspect of the photograph that is important.

Bromide papers are generally neutral to cold black and are little affected by modifications to processing chemistry. The warmer tone chloro-bromide papers have, as the name suggests, a combination of two silver salts which by behaving in different ways make possible variations in the 'coldness' (towards blue), or 'warmth' (towards brown), of the image as the developer and development procedure is changed. Agfa produce an excellent series of matched 'Neutol' developers to exploit this property, and similarly with Eastman Kodak and their 'Dektol' and 'Selectol' developers.

Another advantage of the chloro-bromide is in its ability to separate and hold shadow detail that may prove difficult with a bromide paper. To utilise these characteristics while still obtaining a reasonably neutral image, a chloro-bromide with a white base (Record Rapid) in combination with a cold-working developer (eg Neutol BL) is a useful combination. Chloro-bromide paper will also respond more markedly to different toning techniques. So, all in all, chloro-bromide is a more versatile material, but requires greater control for consistency.

The greatest limitation of the print, compared with the original scene, or a transparency of it, is that we are viewing light reflected from it, which limits the available tonal range. At one end of the scale, the brightest highlight is decided by the maximum reflectance, or whiteness of the paper base. But consider the blackest parts of the print.

Not only is there a small amount of reflection from the silver image itself, but a substantial amount from the gelatin surface of the print. The texture and surface becomes important, as it determines the 'depth' of the maximum black. A matt surface will diffuse light, tending to mask shadow detail, whereas a glazed glossy will give a long brightness range, but mirrorlike reflections.

Many printers prefer a glossy paper air dried to give a natural finish, a good compromise between these extremes.

COMPLETES

GOLDFINGER



THE PICTURE

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Agfa

Goldfinger imports and stocks the full range of Agfa baryta papers, which are world famous for their high quality, the result of very high technology in production, evident in high maximum density, excellent tonal gradation, and wide exposure and development latitude. Visually speaking you will find delicate separation in the highlights, a full range of mid tones, and most elusive of all, the ability to hold and separate detail in the shadows.

The following four pages contain the technical specification of the Agfa double-weight fibre papers, but some of this information is applicable to other manufacturers papers.

AGFA BLACK & WHITE PRINTING PAPERS

The three types of Agfa fibre based papers, mainly distinguished by image colour are.....

BROVIRA

A bromide enlarging paper, giving neutral to cold tones. In 5 grades, extra hard (grade 5), being considerably harder than Ilford 5. Extra white base, in glossy, and filigran glossy which is a textured gloss or stipple.

RECORD RAPID

A chlorobromide enlarging paper in four grades yielding a variety of warm tones depending on the type of development (see paper developers). The base though designated extra white, does not have the whiter than white fluorescence of most paper bases, and is in harmony with the tone of the image. Record Rapid is the most acclaimed paper for exhibition purposes in use today. The surface is designated glossy, which depending on processing can when dried naturally, give a semi-matt through to smooth lustre surface.

PORTRIGA RAPID

A chlorobromide paper in three grades. Although designated white it has a slight ivory tint, and can be used to produce warmth greater than that of Record Rapid. Available in filigran semi-matt (textured matt, eggshell) and produced specially for us in 'glossy'.

(At the time of writing, June '83, PR glossy is unavailable - please check with us before ordering.)

GRADING CODES

<u>Brovira</u>	soft	BW (weich)
	special	BS (spezial)
	normal	BN (normal)
	hard	BH (hart)
	extra hard	BEH (extra hart)
<u>Record Rapid</u>	soft	RRW
	special	RRS
	normal	RRN
	hard	RRH
<u>Portrigo Rapid</u>	soft	PRW
	normal	PRN
	contrasty	PRK (kraftig)

PAPER DESIGNATION:

SURFACE is indicated by numbers which mean as follows:

- 1 = glossy
- 2 = smooth semi-matt
- 8 = filigran semi-matt
- 9 = filigran glossy

THICKNESS of the paper base is indicated in the code by a hundreds digit. This is not used for single weight papers, whereas double weight papers are indicated by 100.

TINT a number in the tens digit position is now superfluous, as there are no tints, but remain it does, and is always 1.

At present available are

- B111 : Brovira, white, smooth, glossy, D/W
- B119 : Brovira, white, fine, lustre, D/W
- RR111: Record rapid, white, smooth, glossy, D/W
- PR111: Portrigo rapid, white, smooth, glossy, D/W
- PR118: Portrigo rapid, white, filigran, semi-matt, D/W

The Light wording marked on the back of all the fibre papers is, in the case of glossy, enhanced with straight underlines, to help in sorting out in the wash, those papers intended for glazing and heat drying.

STORAGE For unprocessed paper this is ideally at 12-20 degrees C (53-68 degrees F), relative humidity 50-60%

SENSITIVITY Relative exposures for the types and grades, relative to Brovira=10 producing a density of $D=0.6$

	soft	spec	norm	hard	ex.hard
Brovira	10	10	10	10	20
Record-Rapid	12.5	12.5	12.5	16	--
Portrigo-Rapid	12.5	---	12.5	12.5	--

Thus if you had just printed on Brovira normal, for 10secs and wished to change say, to Record rapid hard, exposure time would be 16secs, i.e. 60% increase.

EMULSION STRUCTURE (measured in millimetres)

	paper base	baryta coating	emulsion	supercoat
Brovira	0.245	0.015		0.008
Record-Rapid	0.245	0.015		0.008
Portrigo-Rapid	0.245	0.015		0.008

PAPER BASE High quality raw card. Weight per square metre for Double weight= 240g

BARYTA COATING The Baryta coating (barium sulphate) is a layer between base and emulsion and influences brightness and character. The emulsion is prevented from sinking into the paper, thus enhancing detail and shadow depth. In 'Extra white' (Brovira and Record rapid), the baryta coating contains optical brighteners. Weight of coating is 45g/sq.m.

EMULSION Silver bromide, or a mixture of silver chloride and silver bromide crystals, in suspension with gelatine. Silver coating depends upon the grade and surface:

Brovira	1.2-2.0g/sq.m.
Record-Rapid	1.1-1.6g/sq.m.
Portrigo-Rapid	1.3-1.6g/sq.m.

SUPERCOAT A thin coat of gelatine protects the paper from abrasion and mechanical damage. All the papers have this protective layer. The amount that this layer is prehardened appears to have an effect on the appearance of the finished print, and is one of the trade secrets that manufacturers might usefully reveal.

PRINTING RANGE The following table compares the contrast range of different grades of paper. A mythical internationally standard 'normal' paper is given the logarithmic contrast range of '1.00', thus it can be seen that Brovira and Record Rapid normal are slightly harder than this 'standard' while Portrigo Rapid is slightly softer (longer tonal range).

	W	S	N	H (K)	EH
<i>Brovira</i>	1.30	1.05	0.85	0.65	0.5
<i>Record-Rapid</i>	1.30	1.05	0.85	0.65	—
<i>Portrigo-Rapid</i>	1.35	—	1.05	0.85	—

we have found this is only approximate, and you may find variations, eg PRK despite the specification may be slightly harder than RRN.

ILFORD GALERIE

It is encouraging to have a major manufacturer with a new black and white BARYTA(fibre) paper aimed at promoting higher standards of print quality

A relatively new product on the market, Gallerie was introduced by Ilford Ltd as a high quality material designed for exhibition, or applications involving direct viewing, and was marketed with a new hypo clearing agent termed Ilford Washaid. This is basically similar to other proprietary hypo clearing aids, including a wetting agent and additives to deal with hard water. Ilford Washaid may, of course be used with other fibre papers. Ilford researches simultaneously produced a 'trimmed down' archival processing sequence, based on a very short time in rapid fixer followed by two five minute washes with a ten minute washaid step in between. Total processing time is about twenty minutes.

The paper itself has a bromide emulsion and is slightly on the warm side of neutral, falling between Record Rapid and Brovira in tone. Why you would choose this paper relative to others really depends upon your application. With excellent separation in the mid tones some may find Gallerie most useful for higher key pictures, while for separation in the most dense shadows the Agfa papers come into their own.



broken fingers?

While we think that Ilford's 'archival processing sequence' is of academic interest, we think it fair to assume that most people are in no great hurry when producing high quality prints, and in fact a deviation from the suggested times, especially extending the fix time, will have a drastic effect on the permanence of the print. So unless you are desperately trying to turn some prints out at three in the morning it is probably better to use a more leisurely conventional sequence!

PAPER POSTSCRIPT

To correct a possible impression over the previous pages that we think resin-coated paper should be made illegal, we will now set the record straight. They are unequalled for the fast production of commercial prints, especially long runs, but are also useful in personal work for producing first stage, or 'work' prints.

Considerations:

Certainly at present no resin-coated paper is an adequate substitute for final, exhibition quality printing, or for applications requiring prints which last any great length of time without degradation. However, since RC or 'PE' for poly-ethylene, papers are quick to process, wash and also dry flat, they are ideal for contacts and proof prints.

The two Agfa resin-coated varieties that we stock have been received very favourably, and it seems that some of the undisputed quality of the fibre papers has filtered through!

PORTRIGA-SPEED

A unique chlorobromide PE paper yielding warm tones. (Don't confus it with the fibre based Portriga RAPID, where 'Rapid' denotes that this is an enlarging rather than a contact speed paper). Many photographers are using Portriga-Speed for work prints as its tone is very similar to fibre Record-Rapid and Portriga-Rapid.

BROVIRA-SPEED

A steely blue-black toned PE paper, ideal for press proofs and whenever warmer tones would be inappropriate.

Both papers are available in gloss, Brovira-Speed also comes in semi-matt while Portriga-Speed offers a textured fine grain matt.

PRINTING AND PRINT PROCESSING

Paper developers usually contain two developing agents. One 'soft', usually metol or phenidone, and one 'hard', hydroquinone. Metol on its own will give a very low contrast result, and hydroquinone on its own will give high contrast with poor tonal range. Together the two form a system, giving full tonal range with a maximum black. However the ratio of the developing agents to each other can be varied, as with soft working developers Agfa Adaptol or Kodak Selectol Soft, which work about a grade softer than standard.

A favourite technique is that of two-bath development, in which a soft-working developer and a fullcontrast developer are used, giving a proportion of the development time in each. By taking 'two bites' at it, an extended range of tones may be obtained, as the highlight detail can be formed before the shadows are built up.

The ultimate system developer is the Beers variable contrast developer, in which two solutions are mixed in different ratios to give a range of contrasts within one grade of paper. Although a significant reduction of contrast is possible with this developer, only a relatively small uplift is possible - bear in mind when ordering paper grades.

Although good results are obtained with all the Agfa papers using most proprietary developers, with the chloro-bromide papers in particular, a certain amount of investigation may be necessary to find the desired image tone. The Agfa 'Neutol' range offers a consistent way of achieving this.

Point to watch - make sure you are developing fully. Manufacturers recommend 1 - 2 minutes, but do your own tests - some workers have evolved their technique to include much longer development times to get the range of tones they want.

Perhaps even. ...

CARRY ON ZONING !

To 'home' in on the characteristics of your paper, use a series of tests similar to those described for negatives. A photo paper may be usefully compared to a piece of film with a sheet of white paper at the back; the same principle for success applies, viz: expose for the shadows, develop for the highlights.

So to find the correct exposure to give in the case of paper, which must be that which produces a maximum black, make a test strip under the enlarger with a blank piece of film in the negative carrier.

Expose at your usual 'f' stop, eg f/5.6, for a range of times around what you know will give you maximum black on the paper, eg 7,8,9,10,11,12,13,14,15, seconds. Develop for the paper manufacturers recommended time, usually about 2 minutes.

Examine the paper and find that strip beyond which no extra exposure gives a more dense black.

But is the black you are looking at the most that the paper can give? Take another sheet of paper, and expose it all for the determined time, eg 10 secs at f/5.6, but before processing cut it into 6 equal squares. Develop each of the squares for a range of times around the paper manufacturers recommended times, ie 1'30, 1'45, 2, 2'30, 3'30. You will usually be amazed to see that the black at 1 minute 30 seconds is distinctly lighter than that of the 1'45 and 2 minute strips, while the more extended times show no difference in maximum black.

Pick that square which has just produced a maximum black. Any perfectly exposed and developed negative (if such exists) printed on the paper you have just used (the choice is yours, the test should be on a 'normal' paper, or one whose characteristics you happen to like) that contains a brightness range of no more than 8 zones, exposed for 10 seconds and developed for your determined time will give you the ultimate 'fine print'.

Underdeveloping will thus not retain detail, merely produce a muddy print, but extended development will tend to bring down the brightest areas of the print, possibly zones 8 & 9, contract slightly the middle zones, while little effect will be seen in the shadow areas, zones 1 & 2.

BACK TO THE NEGATIVE.

In our section on negative developers, we purposely omitted talking about contrast control in negative development, as shown above for the print.

A rule of thumb exists that if the brightness range of your subject (sunny day?) extends over 8 stops (wave your light meter around and see how many stops there are between lightest and darkest areas). Reducing negative development will hardly affect shadow areas (mainly transparent parts of the negative, but will reduce the build up of silver in the highlights.)

As a starter, assume that a 10% reduction in negative development will 'condense' the negative by one zone, so that zone 9 will 'come down' to zone 8, and that negative will then be printable on a standard paper.

In practice a 20% reduction in development time is all that is possible before shadow detail is affected. Thus a brightness range of 10 zones is just possible, ie 'two stops' underdevelopment.

The opposite of course exists....

Under original scene conditions where the brightness range is only 2-3 zones (typical grey english day?), overdevelopment in this case will also have little effect on the shadow areas, but will build up silver in the highlights and increase the 'zone' range, once again 10% extra development to expand 3 zones into 4, 20% to expand 3 zones to 5.

AGFA PAPER DEVELOPERS

NEUTOL BL (ue black), NEUTOL NE (eutral), NEUTOL WA (rm)
 Brilliant working, universal developers with good tonal consistency, high emulsion speed, and excellent stabilization against staining and hardness of water. Characteristic features of these developers are a quick build-up of image followed by slow but progressive development. They have good working capacity and maintain their characteristics even at high dilution. Available as packs to make 2.5 litres stock solution, which is diluted from 1:1 to 1:3 for use, or as 5litre liquid concentrates, diluted 1+7 to 1+15. The life of the stock solution once mixed is several months. As this chart indicates, the developers fit together as a system which can be used to manipulate the image colour to where you want it. Note- BL liquid works slightly cooler than the powder BL, so bear this in mind if you intend to switch from one to the other in a run of prints.

COLD ←————→ WARM

Brovira		\longleftrightarrow BL	\longleftrightarrow NE	\longleftrightarrow WA				
Record-Rapid				\longleftrightarrow BL	\longleftrightarrow NE	\longleftrightarrow WA		
Portinga-Rapid				\longleftrightarrow BL	\longleftrightarrow NE	\longleftrightarrow WA		

BLUE
BLACK

NEUTRAL
BLUE
BLACK

NEUTRAL

NEUTRAL
BROWN
BLACK

BROWN
BLACK

ADAPTOL

Soft working paper developer which on its own results in a warm toned image with chlorobromide papers, and about a grade softer than Neutol. Despite this, full blacks are preserved. Image build-up proceeds rather more slowly than with the Neutols. Adaptol is particularly recommended in two bath development, the image colour is influenced by the Neutol selected as the second developer.

METINOL

A developer designed for production of large prints and giant enlargements, whose main characteristic is a very slow build-up of image, taking about 4 minutes to reach a full tonal range. This helps to prevent spots caused by air bubbles or papers overlaying each other.

EASTMAN KODAK PAPER DEVELOPERS

Standard products in the USA which are often referred to in darkroom manuals. Hitherto unavailable in the UK, and not matched by Kodak Ltd (UK) products, now specially imported by us.

DEKTOL

Energetic developer yielding cold tones on Brovira (bromide) and relatively cool tones on the chloro-bromides Record Rapid and Portrigras Rapid. Packed as a single powder to make a stock solution of 3.8l (1 us gallon). Dilute this stock solution 1+2 with water for working strength solution.

SELECTOL AND SELECTOL-SOFT

Selectol and Selectol Soft, are a pair of developers designed specifically for chloro-bromide papers. Warm working developers, the Selectol-Soft produces a contrast about a grade lower than Selectol, and may be used with Selectol or Dektol in a two bath system.

Selectol comes as a powder to make 3.8 litres of stock solution, dilute 1+1 with water for working strength solution. Selectol soft is also packed as 3.8 litres, and diluted 1+1 for working strength solution.

Other controlling factors...DEVELOPER ADDITIVES-

BENZOTRIAZOLE will give a restraining effect, slightly higher contrast and a cooling down of print tone. Use 2 grams in 100 ml of water, then use this 1 + 50.

POTASSIUM BROMIDE will give slightly higher contrast and be warmer in tone. Add a pinch, or for consistency measure in amounts of a 10% solution.

Be prepared with both of these additives to increase your print exposure.

BEFORE YOU DEVELOP.....

No printing paper can obtain the luminance values of an original scene, and to convey our representation of it we manipulate the tones, firstly as we make the negative, and secondly in the way we present this negative to a printing paper.

In the enlarger the two common classifications of light source are DIFFUSE, usually called 'cold cathode' from the type of discharge tube in the light source, and CONDENSER.

Diffuse illumination has an illuminated opal screen somewhat larger than the negative format being used, and directly above the negative, which by providing 'directionless' illumination, (for comparison think of an overcast sky) gives an undistorted rendition of the tonal range in the negative.

Condenser illumination however, generates a parallel beam of light using lenses (compare to sunlight!), which by being scattered by the silver grains in the dense negative areas will boost contrast in the highlights.

If you want to enhance the edge effects produced by acutance development go for condenser lighting, but if you are aiming for the 'open-ness' of tonal values in the print that is the goal of many American workers, you may find diffuse illumination more useful.

In practice this difference will result in cold-cathode enlargers needing to go up about one contrast grade on condenser enlargers. A lot of enlargers use illumination pitched halfway between these extremes. Bear in mind it is very easy to add some diffusion to a condenser enlarger, say by putting a piece of ground glass in a filter drawer.

This only really applies to silver negatives - the dyes used in the chromo-genic films do not scatter, only absorb, and there should be no contrast difference in their use between the two light systems.

FLASHING

Put somewhere between dodging, shading, and ferricyanide in your list of darkroom tools. In the case where you have a lot of highlight detail in various parts of the image area and need either a lower grade of paper (which might close up shadow detail, making it 'muddy'), or much local control (not possible if the areas needing work are many and small), contrast control by FLASHING is a useful technique.

This is controlled fogging, but not to the point at which a visible density is produced. If either before, after or during your main exposure the paper receives a small fogging exposure to white light, the highlights will be attenuated, and 'drifted down' into the contrast range of the paper, while the shadows will be little affected. The exposure needed for this is very small, and must be determined experimentally. The effect is, of course, greater as the flash exposure is increased. Use the enlarger, minus negative, with the lens stopped down. If you have a timer, a zero setting usually gives small, consistent 'jots' of light that can be used to give a 'flashing number' to a particular box of paper.

TEST STRIPS

Most people use a logarithmic series of exposures on their test strip when they are testing a new negative (2,4,8,16 seconds etc), the alternative being a linear test in which you use a constant time between each step and obtain a smaller spread of densities.

Try the ZONE STRIP:-

A timing sequence derived by extrapolating aperture changes, i.e. halving or doubling of light; 4,5.6,8,11,16, etc. Choose a suitable enlarger lens fstop to give an approximate exposure time of 10-15 secs then test:-

expose	:	5secs	2	3	4	6	10
total time:		5secs	7	10	14	20	30

A very useful test strip for basic exposure and any dodging or burning required.

PROCESSING A.D. (After Development)

The stages of print processing after development are often neglected, but have a lasting effect on the appearance of the finished print and especially its life expectancy.

STOPPING

Use a stop-bath for all papers after development, which can be either a 2-3% acetic acid solution or 4% sodium metabisulphite, or one of a number of commercially available baths that include an indicator. The stop-bath neutralizes the alkaline activator of the developer carried over in the emulsion and base of the paper, terminating development quickly, and preventing staining as the paper hits the fixer. Especially recommended before a rapid fixer, and essential when a fixer contains no acid.

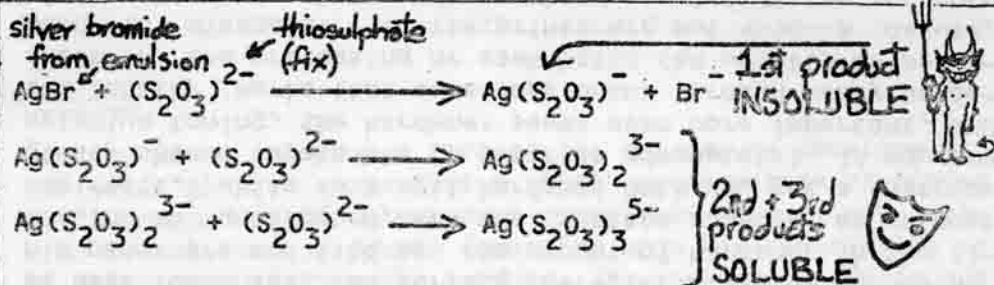
PATERSON ACUSTOP

Indicator stop bath, small packings of 55mls or 500mls, dilute 1+30 with water. The indicator does not seem to have the problem of flocculation that we have noticed with some other stop baths.

FIXING

The print must be fixed to remove undeveloped silver halide which if remaining would 'print out' to silver and mask the developed image. However the fixing agent used, usually sodium or ammonium thiosulphate, must itself be removed, as it contains sulphur and will react with the silver of the image, converting it into silver sulphide. Even a trace quantity remaining provides a handy source for this reaction, which may not be apparent for many years.

A related problem is the quantity of the silver/thiosulphate product building up in the fixer bath. Fixing, although usually explained as a single step, is a series of reactions involving several successive stages of complex molecule formation. (By complex molecule we mean an unstable, transient grouping of the atoms involved).

STAGE ONE

The first fixation product formed is almost insoluble, not easily washed away.

STAGE TWO

The second and third are more soluble, but only form when there is plenty of excess thiosulphate available.

THEREFORE, if a print is fixed in an exhausted bath, a large proportion of the insoluble complex will remain, to degrade, and assist in the degradation of the image, to yellow silver sulphide.

To safeguard against this, we can either process only a small amount of paper in a fixer bath, i.e. so many prints per litre of solution, before the 'silver safety level' is reached, or use a two bath fixing system.

The first bath will take the print to stage one, the production of the insoluble complex, and the second bath will finish the job by rendering this product soluble (now a stage two thiosulphate compound) and capable of being washed from the paper

OVERFIXING

Out of the frying pan..... Extended fixing will give thio-sulphate and silver thiosulphate molecules a chance to 'bond' onto the fibres of the paper and should be avoided as much as inefficient fixing. It is because this is so easy to do with concentrated fixer that we do not recommend its use as outlined in Ilford's archival processing sequence.

GETTING FIXED

Most standard fixers can be used with our range of Agfa papers. Three fixers that we know and love (and stock), all rapid fixers based on ammonium thiosulphate:

AGFA AGEFIX

Liquid fixer, 5 litre concentrate, dilute 1+4 for film, 1+9 for paper. CONTAINS NO HARDENER.

AGFA ADITAN HARDENER

Add at the rate of about 15parts of Aditan to 1000 parts of working strength fixer, (15mls to 1litre).

KODAFIX

Liquid fixer, 500mls and 5litre containers, dilute 1+3 for film, 1+7 for paper. HARDENER INCORPORATED.

ILFORD HYPAM

liquid fixer, 1litre packing, dilute 1+4 for film, 1+9 for paper. CONTAINS NO HARDENER.

ILFORD RAPID HARDENER

Add at the rate of 1+80 or 1+160 to working strength Hypam.



We recommend the use of a hardener in all fibre paper fixes (BUT DON'T OVER-DO IT -see later. We would be interested to hear of any situations where a non-hardening fix is preferable). The

emulsion of Portriga Rapid is hardened less than the other papers, swells to a greater degree, and so when heat dried (ugh!) must be used with a hardening fixer.

We have found that the surface characteristics of Record Rapid paper are modified by the amount of hardener in the fixer. In an unhardened bath the surface appears as almost semi-matt, while in a well hardened bath you get a lustrous glossy sheen- impossible to describe adequately! If you are selenium toning, the hardener seems even more important, and the 'chalky' marks that sometimes occur through heavy handedness in the processing or wash baths can usually be persuaded to disappear if the prints are put into a dilute, plain, hardening bath, (Hypam hardener 1+160) for a couple of minutes.

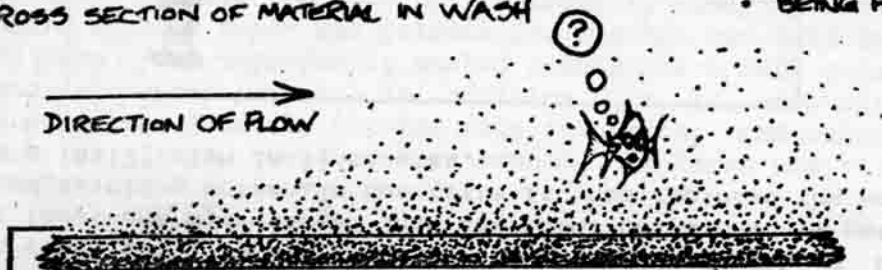
WASHING

Washing is as integral a part of the process as development, and it is at this stage that a high concentration of fixing agent trapped inside the porous paper must diffuse out, the rate at which it diffuses depending upon how efficiently it is being removed from the surface. The most important aspect of the washing system must then be the movement of water over the surface of the print. Assuming this is doing its job we now have wash water which is actually dilute fixer, and the presence in the wash water of the product we are trying to cleanse inhibits the washing process. So if we can "dump" the whole wash bath at regular intervals or at least ensure a regular replacement of water throughout the washtank we have an efficient system.

CROSS SECTION OF MATERIAL IN WASH

"." BEING HYPO

→
DIRECTION OF FLOW



WASH MADE EFFECTIVE BY RAPID REPLACEMENT OF WATER
IN THIS BOUNDARY AREA

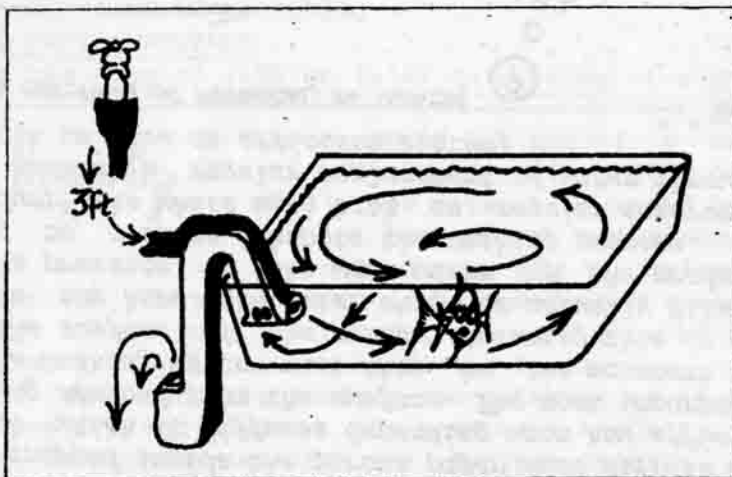
There are several types of wash system that combine in different ways the two factors of turbulence and water replacement. Some even go to elaborate lengths to rock the print. We have found the 'EPIC' wash sink to be most effective, the main feature being water entering at the bottom, producing swirling, large volume for dilution, and a siphon which empties the sink periodically.

KODAK AUTOMATIC TRAY SIPHON

The wash sink is, however a permanent installation, requiring a fair amount of space. A useful device is the KODAK AUTOMATIC TRAY (or Dish for British readers) SIPHON, which clips onto any developing dish converting it into an efficient washer.

This must be one of the oldest gadgets still in production, evident from its 'Odeon' styling. It first came on the market in the '20's, manufacture was discontinued by Kodak Ltd over here in the '60's, but continued in the USA, whence we now import it.

It comes complete with hose and should be used with a dish at least one size larger than the print being used to get a good swirling action. In our tests it has replaced the water in a 16x12" dish in 1½ minutes.



Useful if you cannot afford the space for a permanent washer, or if you need a wash at an intermediate point in the process line, such as a 'holding tray' gathering prints prior to selenium toning.

DRYING

Having produced a quality print to the highest specification, it seems pointless to take short cuts in the drying stage which can damage its surface, shorten its life and thus reduce its potential value.

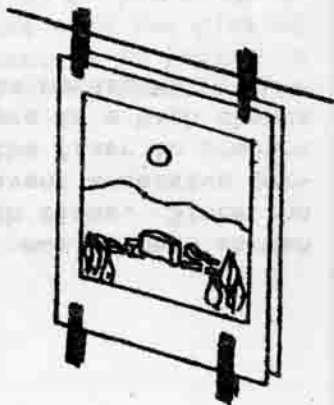
Of all current methods, we prefer the 'line drying' method outlined below.

The most popular way of drying fibre prints normally is by some form of heated drying machine, a rotary glazer or a flat-bed glazer, in which the print is held onto a heated metal surface by a canvas apron. Avoid it!

Heat will curtail the life of the print by damaging the structure of both paper and gelatin. The blanket can hold traces of hypo from imperfectly washed prints which will transfer onto subsequent prints. In addition, it is very easy to embed fibres from the blanket into the print, and otherwise mark it. If you must use this method, at least use a good blanket and wash it frequently.

**fingertip**

In the final wash put two prints back to back, and pull them out of the water, whereupon they will immediately cling to each other. Peg them on the line, preferably with plastic clothespegs, and attach two clothespegs to the lower corners. A single print will curl severely, but as two prints dry the curl of each will counteract, and when dry after a few hours will give relatively flat prints which can be finished by pressing. On prints of 16x12" and over we recommend pegs along the edges as well, to prevent buckling.



SCREEN DRYING

The American method using a plastic or muslin mesh screen with freedom for air to circulate on both sides. Since the prints must be placed face down to prevent excessive curling, some hardener must be present in the fixer to prevent marking on the print surface. Even so there is a high chance of damage. When dry some flattening may be necessary.

ARCHIVAL BLOTTING PAPER

The material we stock is white, wood based, and entirely acid free. Packed in 50's of 21"x17".

Squeegee the first print, and place on a blotter. Place another blotter on top, followed by another print, and so on until all the prints are stacked between single blotters. Now turn the stack over and repeat the operation, but placing each print between three blotters. Place an evenly distributed weight over the pile, and leave for about half an hour. Finally, repeat the process again placing each print between three blotters, and leave until dry. If you've still got enough energy try our line drying method and go to bed.

In other words, not especially recommended. Anything which involves touching the surface of the print, most of all the soft-emulsions chloro-bromide papers, is a source of damage. While some people are successful with blotters, many others find they are having to cope with a lot of re-printing.

FLATTENING

After all the above methods of drying, a certain amount of curl may remain in the print. An effective method of removing this is by flattening each print in a dry mounting press between two sheets of acid free board or paper for about 30 seconds at about 250 degrees F. Make sure that the material in contact with the print has been dried beforehand in the press, or the print surface may be marked.

If you do not have access to a press, flattening beneath a weight is just as effective, but takes longer, start at 24 hours.

While we feel that moderate heat, on a DRY print is not too deleterious, its absence in true archival processing is preferable.

An old method of flattening is by 'breaking', consisting of pulling the print face up over an angle, such as the edge of a table. This is definitely not recommended with modern glossy papers as it will crack the supercoat.

GLAZINGMIRASOL

Glazing is a little used process these days, if you do glaze we have Tetenal's 'Mirasol', one of the very few glazing solutions left in manufacture, which assists in giving a mirror like surface, and separating the print cleanly from the glazing plate or drum.



The surface of baryta papers is very sensitive to drying conditions, you may vary the degree of gloss to a level which you find most pleasing by altering the drying temperature or time.

Faster drying (warm darkroom), produces a higher gloss, whilst slower drying gives a more matt finish and reduces paper curl - the choice is yours! It is possible to increase gloss by soaking prints in a dilute solution of hardener in water and redrying after a short wash, but be aware of the possible effects of extra hardener on the prints life.



Black marks on print edges or blue black smudges which sometimes appear on lighter areas of a print, are most commonly caused by contact with tongs, especial care is needed in the first

few seconds of development. The importance of a fresh stop bath is often underestimated. Restrain and resist the temptation to put the white light on too soon after the print has entered the fix, a pity to spoil a master print at this stage.



Portriga-Rapid in filigran semi-matt surface- many people have complained of small white spots appearing at random their prints. Before you start suspecting a paper fault, try adding a few

drops of wetting agent, and you will probably cure the fault. The fine texture of the surface holds small air bubbles as the paper enters the developer, which prevent development at these points. Apart from wetting agent, also try changing the way in which you slide the print into the developer, and if you are still plagued with spots, try a water bath before developing.

PRINT PROCESSING FOR ARCHIVAL PERMANENCE

ARCHIVALISING

There is nothing mystical about this. It means that instead of processing to the bare minimum requirement for normal use and storage we extend our processing sequence to give maximum possible stability to the materials.

NEWTINK - recent research by Ilford, as discussed in 'fixing' section indicates that total elimination of hypo is undesirable, and a trace amount should remain... however this trace amount is so small that until we find a practical method of checking it, use HYPO CLEAR as detailed over the page, and assume you are clearing down to this level.

In addition, for 'state of the art' image protection some form of TONING is desirable... see overleaf.

TECHNICAL BACKGROUND - Silver photographic material can be stabilised, or 'fixed' by several different agents. One of the reasons why the major agents in use today, sodium and ammonium thiosulphate, give good image stability is that during fixing a proportion of silver sulphide is formed, which can be as high as 10% by weight of the image silver*. As with sulphide or selenium toning this protects the silver image from oxidation. A very small amount of thiosulphate remains in the photographic emulsion, in balance with the sulphide. Total removal of ALL thiosulphate at some point after fixing will have the effect of reducing the proportion of silver sulphide formed, and thus the stability of the image. Consequently hypo-elimination should be looked on with suspicion- the trace remnants of thiosulphate remaining after hypo-clearing would seem to be about right. If this basic protection can be re-inforced, the print stability will be improved further, and this can be done using a toner on the material.

If you are not toning your prints, or want to use a treatment that does not change the appearance of the image in any way, another treatment is a bath containing thiourea, which encourages the formation of a larger amount of sulphide. This is the main constituent of the Agfa stabilising bath 'Sistan'.

The two processes that both work to reduce hypo in the print are often confused with each other.

HYPO CLEARING

If you go no further it is worth using this low cost bath, which greatly increases the speed and efficiency of the wash, especially when this is using cold water.

In the second world war it was discovered that sea water washed hypo from photographic materials more readily than fresh water. Adapting this, a combination of salts was found which was harmless to the print but had the same effect. It works by ion exchange, displacing thio-sulphate in the emulsion, baryta layer and paper base which can then be more readily washed out.

If used for standard print processing it can be considered to cut washing time to one third, for example a ten minute wash for single weight paper instead of thirty. However when applied to archival print processing requirements, Hypo clear followed by an extended wash will give a freedom from residual chemicals impossible to achieve by washing alone. This bath masquerades under various manufacturers guises, including Ilford Washaid, Permawash, Speedwash.

Hypo clearing is essential when selenium toning and generally good practice before washing all films and papers. Gets rid of hypo, saves water by reducing washing times, a boon for conservationists!

KODAK HYPO CLEARING AGENT

Perhaps the cheapest part of photography, powder packing to make 5 litres of stock solution, dilute 1+4 with water and treat prints for 3 minutes.

There are many people who think that the use of Hypo clear is of even more value with the negative than the print. Point for debate?

HYPO ELIMINATION

The stage that should never be necessary, and which now begins to look of dubious value. Some conservationists categorically state that it should not be used as it will damage the paper fibre. If overfixing has taken place, this final bath of ammonia and hydrogen peroxide breaks down any remaining 'bonded on' thiosulphate complexes into soluble sulphate, which can be readily washed out of the paper. You have to make it up yourself and it has a VERY short working life. Do not store the mixed solution in a stoppered bottle or the gas evolved may break the bottle. For interest, here is the formula:

FOI LA:

Kodak Hypo Eliminator HE1

Water	500 ml
Hydrogen Peroxide 3%	125 ml
Ammonia solution	100 ml
(1 part 28% ammonia to 9 parts water)	
Water to make	1 litre

The ingredients are available from your local chemist! Use immediately after preparation, after the hypo clear stage, prior to washing. Treatment time about 6 minutes. Capacity about 10 prints per litre. Not recommended for film.

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REVELATIONS

EASTMAN KODAK RAPID SELENIUM TONER.....

"I feel that selenium toning is the most vital and effective modification of the plain silver image.... producing a print image of maximum beauty.... I urge the photographer to see for himself how great the advantages of toning really are.... definite enrichment of values throughout the print; the illusion of luminosity is enhanced.... it has a profound emotional effect.... I prefer the Kodak Selenium Toner".... to quote from Ansel Adams technique classic, 'The Print'.

TONING FOR PERMANENCE

Here we mean the use of a "toning" solution, not for a graphic effect, but to replace or surround the silver grains of the image with a more stable metal, rendering the image more permanent, as silver is a reactive metal and susceptible to attack from various gaseous pollutants, and storage materials.

We are the sole UK agents for Kodak Rapid Selenium Toner, which has been long established in the USA, but hitherto unobtainable here. Kodak aren't giving the formula away, and it is generally regarded as being the most versatile of its type. It is possible to produce your own toner, but not to be recommended as selenium is an accumulative poison (like lead), so unless you have access to a fume cupboard, forget it. We stress that when using selenium toner you must take sensible precautions to avoid skin contact with it, use gloves and tongs, it can be absorbed through cuts and possibly skin itself! Be especially careful if you are using it at higher than room temperature.

KODAK RAPID SELENIUM TONER

A single solution, Kodaks Rapid Selenium Toner gives a variety of effects depending on the type of paper and the dilution. Tonal shift is most marked with chlorobromide papers in which a cool brown with purplish overtones is produced at a dilution of 1+3 parts of water. At higher dilutions, 1+10 to 1+15, the process proceeds more slowly and can be terminated before a colour change takes place. Instead a slight 'cooling off' takes place, and the print is generally enhanced in appearance, the blacks becoming deeper and the highlights more luminous.

Caught at the right moment, an effect called "split toning" takes place, in which the lower densities change in colour while higher densities remain unchanged. This occurs readily with Record Rapid and is most apparent with contact speed papers. The secret lies in the temperature, of the DEVELOPER, which should be higher than normal, and for consistent results maintained very accurately.

GOLD TONING

A gold toning bath has always had an ambiguous place in processing. It was first used on calotype prints in 1847 as a treatment to improve image tone and permanise, and while it still does both of these, most texts refer to either one or the other aspect.

Used on a previously sepia toned print it will give a rich red tone, but on an untoned print will 'cool' the image, to a greater extent than dilute selenium, and as usual this is most evident on the warm chloro-bromides. It will give the coldest tones we have ever seen on Record-Rapid, which can be taken to the same sort of tone as a bromide paper.

Bearing in mind the grievous cost of gold and its salts, it must now be the most expensive method of obtaining a red tone available, so if this is what you need, investigate the other methods first.

Used on toned or untoned papers, gold will give a high degree of image protection- but not to the same level as selenium. This is according to recent research by Ilford, and reverses thinking up till now. With the difference in price, we're not arguing!

There are several formulae, all similar. Here is an example:

Water	750ml
Gold Chloride,	
1% stock soln.	10ml
Sodium Thiocyanate	10g
Water to make	1l

The gold chloride is supplied as sodium chloro-aurate, and to make a 1% solution dissolve 1gm in 100ml water. The working life of the mixed toner is short, so if you need a quantity mix up the gold chloride and sodium thiocyanate separately in 500ml each, and mix them just before use. The litre of working solution will treat about 8 10x8" prints.

Alternatively, we have one of the very few proprietary gold toners...

TETENAL GOLD TONER

Somehow Tetenal have contrived to produce a single solution Gold Toner, and the 1 litre working solution supplied can be re-used until exhausted, which will be in approximately 40 10x8" prints.

A SUGGESTED PROCESSING SEQUENCE

- Develop To completion. Manufacturers recommend 1.5-2.5 minutes, but do your own tests.
- Stopbath Minimum 10 seconds. Preferably use a stop bath with built in indicator.
- High Speed Fixer 2 bath fixation, 5 minutes in each bath. Make up two separate baths of the same volume, fix for half the total time in the first, and the remainder in the second. When the first bath has had approximately 40 10 x 8" prints per litre, discard it, replacing it with the second, and make up a new second bath.
- Wash Quick rinse. A more thorough wash of one minute will prolong the life of the hypo clear bath, but hypo clear is cheap and normally discarded before exhausted. Prints can be 'held' at this point before hypo clearing or toning.
- Hypo Clearing Bath 2 minutes, Kodak Hypo Clearing Agent, stock solution diluted 1 + 4. Agitate continuously.
- OR Toning Kodak Rapid Selenium toner made up at 1+15 in working strength hypo clearing agent. Hypo clearing and toning proceed simultaneously. Agitate continuously. Remove when the desired change has taken place, which in the case of chlorobromide papers will be about 5 minutes. Perform this step in daylight, or at any rate good light, with a reference print alongside in water. Keep looking away from the toning print so that your eye does not adapt to it's changes.
- Wash 30-60 minutes in an efficient print washing system.

TONING TO CHANGE COLOUR

Other toners also act on image silver, producing compounds such as silver sulphide which are also extremely stable. Image colour is appreciably altered, changes in tonal range occur, and prints are permanized to varying degrees. Most toners work more effectively on chlorobromide papers. The effect on resin coated papers is less predictable and there seems little point in using them for extended permanence as print life is limited by the low stability of the base.

Here is a brief rundown of the approximate colours produced by the different salts.

Sulphur	Warm black to sepia
Hydrosulphite	Warm brown/sepia
Gold (untoned prints)	Bluish-'cooler'
Gold (on sepia toned prints)	Red
Tin (stannous)	Purple-black/sepia
Selenium (full tone)	Purple-brown to warm brown
Selenium (light tone)	'Cooler', but splitting as print reaches full tone stage.
Copper	Warm black to red metallic
Uranium	Warm black to brick red
Vanadium (on untuned prints)	Yellow
Vanadium (on iron toned prints)	Green
Nickel	Red, red-brown to magenta.
Iron	Blue

Some of these are not commercially available and have to be made up to formula. Some of them are hazardous materials to deal with and great care should be taken with all metal salts.

AGFA VIRADON

Europe's favourite, brown toner similar in action to the Eastman Kodak product in a small packing of 100mls. Diluted 1+50, (or even further) gives neutral brown tones.

TETENAL TRIPONAL 1.251 stock soln.

A two bath sepia toner with a characteristic ginger brown hue. Excellent, but illegal and immoral, for forgeries, age can be classified according to amount of bleaching.

BERG BLUE TONER 1 US quart and gallon

Brilliant blue toner, single solution. The quart size is sufficient for about 30 8"x10" prints. It is controllable, and by varying immersion time varying depths of colour are achieved.

BERG BROWN/COPPER TONER 1 US quart and gallon

Single bath toner giving very controllable results from slightly warm brown to rich metallic copper. Original tones can be recovered in print developer, thus allowing greater experimentation.

TETENAL ORANGE and UMBRA TONER 1.251

Two toners in one. A kit containing a bleach, which is followed by either an orange toning solution or umbra (deep brown) solution. The capacity of each part is about 50 10x8" prints.

N.B. A toner using a bleach (usually ferricyanide) before the toning stage, is working on the re-halogenised image silver, that is, which has been converted back into colourless silver bromide/iodide/chloride. A single bath toner is displacing, or forming an amalgam with, the original silver itself. Consequently a single bath toner will tend to retain the darkest tones, and let one use a lighter, or more pastel colour change.

EASTMAN KODAK POLY-TONER

Specially imported from the U.S., this toner, can give depending upon dilution (1+3 to 1+50), a variety of effects. At full strength (1+3), it is similar to Rapid Selenium toner, while at maximum dilution(1+50), gives a pure brown (no red/purple). Intermediate dilutions give intermediate colours. The toner has both sulphide and selenium components and thus gives good protection to the print.

EASTMAN KODAK BROWN TONER

Another special import, this is a sulphide based toner used at a dilution of around 1 + 40 to give a pure brown tone. It is a single solution, and immersion times can be varied to give intermediate tones. Contrary to bleach out processes, it maintains a good maximum density, and no 'overprinting' before toning is needed.

When using toners you may run into the problem of a dulling of the print surface when dry, possibly coupled with 'chalky' marks on the surface, wherever the print has been touched. Here is a list of the remedies we have assembled so far:

- 1 Increase the hardener content of the fixer or try a separate hardening bath at the end of the process. See hardening section.*
- 2 If you are toning regularly, try re-using your toner and replenishing it, that is, discarding a certain amount, and topping up with fresh solution. Several workers are doing this with selenium, and recommend it highly.*
- 3 Lightly swab the print as it comes out of the wash.*

Try one or all, if you discover anything new please report in!

As well as the above sulphur and metal toners, yet another spinoff from colour material technology is DYE-COUPLED DEVELOPMENT toning, in which a coloured dye, or series of dyes is produced in proportion to image silver, which is then removed to leave only the dye image. They are more complex to use, but offer a wide spectrum of colours. They do not offer outstanding image permanence, which will be comparable to standard colour materials.

Another adjunct is in the sets of PRINT DYES, which dye the paper base, leaving the image untinted.

TETENAL MULTITONER

Chromogenic toning kit, working by dye-coupled development, as with colour film processes. Literally any type of black and white material may be processed to a wide variety of coloured tones.

COLORVIR

A highly versatile toning/tinting kit, which although requiring some degree of manual/mental dexterity, to achieve predictable results, offers effects such as posterization, solarization and others, which are normally only obtainable with colour papers. Not recommended for fibre paper.

Full instructions in a separate Colovir manual.

SELECTACHROME by Rockland Colloid

We are sole agents for this USA product, which is a basic low cost chromogenic developing kit, but still offering the possibility of producing 2 and 3 colour images with successive exposures and developments. Includes the three couplers yellow, magenta, and blue.

PRINTINT by Rockland Colloid

Sole agent. Contains three dyes, which are used drop-wise, either singly or in combination to cover the whole colour spectrum. Dyes the base, NOT the image.

PHOTO-COLOUR DYES

For hand tinting small details in black and white images, as opposed to the whole print, this kit of 12 colours is excellent value for money.

ROCKLAND COLLOID PRODUCTS

Rockland are an American manufacturer who specialise in producing photographic treatments that stretch the material and the imagination, and since we became sole distributor over here we have brought in several new products.

LIQUID LIGHT

Subversive action...do away with paper manufacturers?

This material is a liquid emulsion which you can coat onto almost any surface. Glass, wood, ceramic, acrylic, stone, canvas, cloth - you name it! Each pack contains sufficient emulsion to cover about 8 square feet.

Ag+

A de-luxe Liquid Light, being faster, and with a greater silver content, making it suitable for very large images, or where a transparent image with high maximum density is needed.

FABRIC SENSITIZER

Liquid light is a relatively expensive way of covering large areas of fabric, and this is a more suitable alternative. It relies upon the fibre of the fabric to hold the silver particles, instead of the gelatin binder in Liquid Light, and for this reason is only suitable for porous natural fibres, and not synthetics. It needs a full size negative to contact print onto the sensitized fabric.

SILK SCREEN EMULSION

This is an enlarging speed silk-screen emulsion, which cuts out the need for a same-size positive and U.V. light source, and makes the silk screen process much easier to perform under domestic conditions.

HALOCHROME

Silver toner! It deposits silver metal onto the black silver of a print image, leaving a shiny metallic finish.

MASKSTRIP RESIST

Not by Rockland Colloid, but it seems to fit in here. This is a liquid plastic which can be painted onto any photographic surface. It dries quickly to form a water and chemical proof skin, which will protect the painted areas from subsequent dyeing and toning. After use it is peeled off in one piece. Another toner could then be used...the possibilities are endless. Unless you are going to throw a brush away every time you use it, you will also need the brush cleaner solution.

P.S. Also can be used as a resist for making etched printed circuits!

LAST WORD... on 'hardening' - a modern mystery

The sole official function of an hardener is to limit the amount of water taken up by a photographic emulsion, by cross linking gelatin molecules, thus stopping it swelling to its normal extent, and making it more resistant to abrasion, especially while wet.

If you are selenium toning, you may find the surface of your processed print broken by chalky marks, particularly in areas where it has been handled. An overall 'dullness' to the surface may be apparent. Our theory, backed by Kodak, is that the series of baths from alkali through acid and back again to alkali, is breaking the supercoat of the paper. To cure; start increasing the hardener in your fixing bath, or if you have marked prints that you wish to save, put them through a plain hardening bath, followed by a thorough wash. The hardener appears to reform the surface of the paper, and give an added sheen.

The emulsions of most papers have been prehardened to a certain extent, to prevent them from disintegration during the rigours of processing. Some papers appear to have less inherent hardening than others, in the Agfa range these being Record Rapid and Portriga Rapid, and these are the papers most liable to damage in processing. Some manufacturers do not recommend the use of an additional hardener in paper fix, but this could have much to do with their insistence upon minimum processing times. The compactness of the hardened emulsion demands somewhat longer washing, but because most printers work with a flow process, longer washing is not much of a problem.

Exactly how hardeners work with the paper in the long term is still debatable; research has only just begun. However, it is reasonable to assume that it is one of the most important factors governing the state of the processed silver/gelatin paper emulsion and its potential life in our collectives.

The hardening agent used in the paper may be alum or formaldehyde, and formaldehyde in particular has questionable properties, being an agent giving 'after-hardening', in which hardening of the emulsion continues long after the treatment has ceased.

The consensus is, then, for contemporary prints, to use as much additional hardener as is needed to the paper fix, to ensure protection, when wet, against physical damage, but until we have a fuller picture of its effects, certainly no more than that.

Conservationists on the other hand, when dealing with antique prints, rather than use a treatment of uncertain properties on valuable material, are deferring the use of hardeners as recommended in many restoration techniques.

Something we at Goldfinger, amongst others, would like to see are the hardening agents incorporated in the paper, as well as all other components, stated by the manufacturers on the paper box. Let us work towards it!

SPOTONE 3 & 6 bottle kits

The most effective print retouching system that we know of, which we import from the U.S.A. It consists of a set of six dyes, no 1, (blue-black), no 2 (selenium-brown), no 3 (neutral black), no 0 (olive black), B (brown) and S (sepia). Using these a mix may be obtained to match any black and white paper.

A comprehensive mixing chart is included in the kit. An outstanding feature of the system is that the dye penetrates the emulsion leaving no visible surface residue, thus making it undetectable.

A three bottle kit, suitable for all except toned or very warm papers is also available, containing dyes 1,3,and 0.

**SPOTTOFF**

A two solution controllable bleaching outfit, for removing black spots on the print, or general reduction work. The solutions are 'A', an activator, and 'B', a bleaching agent. They can be mixed in different ratio, and with water depending upon the type of action required. An advantage of Spottoff is that the dried print may be worked on, although

it is easier to manipulate a 'wet' print. Slight changes in colour between the bleached and unbleached image may be easily restored by using a light wash of one of the Spotone retouching colours.



DROPPER BOTTLES

Once you have the right mix of Spotone don't let it dry up on the palette, keep it for posterity.

RETOUCHING BRUSHES

Graded 00 - 5, 00&0 being the finest. For normal work 0 or 1 will prove the most useful.

RETOUCHING KNIVES

Knifing is an art which has largely died with the uprise of the miniature camera, and its main use is in removing black marks from the print. We have several kits of knives which include grindstone, or original Swann-Morton Scalpels with interchangeable blades. A slight flexing of the blade is desirable, which is drawn lightly over the surface, held almost perpendicular to it, so that a fine 'spray' of gelatin is removed.

Several strokes should be necessary to get a perceptible effect. You would be advised to practice on scrap prints until your skill has developed.

COTTON PADS

3" square, in packs of 100, made of a specially prepared cotton material which does not break up or scratch. Devised for graphic arts applications, these are useful in any application where the print must have friction brought upon it, as in removing fingerprints, or applying solutions to the emulsion during processing.

COTTON GLOVES

Sold per ambidextrous pair, essential when handling prints during mounting, or print retouching.



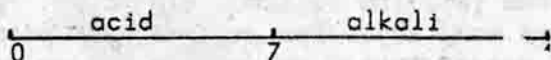
PRESENTATION AND PRESERVATION**(Protect & Survive!)**

Mounting has several functions; to present your photographs, to prevent physical damage, and to prevent chemical deterioration. Choice:- One, two, or all three? Consider to what standard you have processed your prints, and how long you want them to endure.

Physically, it is desirable to mount/matt prints to avoid damage in handling or from neglect.

Assuming the print has been processed correctly, (and for long storage we mean archivally), chemical damage originates from acid bearing materials it comes into contact with, these being impure mounting board, wooden backing material, standard adhesive tapes and adhesives, as well as acidic and sulphur laden substances dissolved in air borne water vapour. These may be absorbed by the print and its environment. The main contributors here are industrial, petrol and domestic oil fumes. To combat these you will find many materials designed for long term storage described as 'buffered' to a certain 'pH', and hopefully declared 'sulphur free'.

n.b. The pH scale, moving from 0 to 14 is a measure of acidity, or lack of it (alkalinity). So called 'neutral', really a balance between acid and alkali is designated pH 7. A solution of a substance in water with a pH less than 7 is termed acidic, greater than 7 is termed alkaline.



Consequently a material may be manufactured incorporating 'alkaline' elements to neutralise incoming 'acidic' elements from the atmosphere. This is termed 'buffering'.

Ideally in an archival mount there is no bond between the print and the mount. The print can be removed and subsequently rehoused, when the 'alkaline reserve' has been depleted. A wide border around the print, serves to protect the print from acid or sulphur migration from the sides of the frame itself. If a dry mounting material must be used, it should be one designed for maximum stability and permanence. (see later)

ACID FREE MOUNTING BOARD

Cheap papers and board are made from chopped and chemically processed wood pulp and consist of short fibred material which easily absorbs and holds onto airborne acidic and sulphurous droplets. Board is made by laminating several sheets of paper together, cheap board is often faced with a quality paper while behind it is incompletely processed wood pulp material. Lignin and other materials contained in incompletely processed woodpulp form acids and peroxides on aging which will form yellow silver sulphide from the silver in a print in close proximity.

Paper art works may be adequately protected with an acid free material. Photographic works with a gelatin silver image, however require more stringent controls and, in particular must be sulphur free.

We can make a distinction between types of apparently suitable quality mounting boards -

1. 'Museum Board', prepared to the highest possible specification, from fully processed 'rag' pulp (usually long fibre cotton). The board will be acid and sulphur free and 'buffered' with an alkaline medium (usually calcium carbonate) to maintain a neutral pH.
2. 'Conservation Board', similar in appearance and usually lower in price, frequently made of wood pulp and often part of a range including dyes for colouring. 'Acid free', but may contain traces of sulphur.

It is possible to apply relatively simple tests to doubtful materials to check on their acid, sulphur and lignin (ground wood) content. (see testing section)

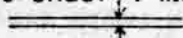
GOLDFINGER MUSEUM BOARD

The material we stock is made by laminating sheets of 'Heritage' paper with acid and sulphur free adhesives. This paper was originally developed as a photographic base material, and consequently will pass any sulphur test. It is made from 100% cotton linters, acid free, and buffered with calcium carbonate to a pH of 8.5 to maintain neutrality.

The finished board has a pleasantly smooth surface, and is available from us in natural white, in two thicknesses;

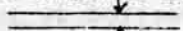
2 ply - 863 microns (just under 1 mm) weight 615g/sq.m.

looks like



4 ply - 1800 microns (just under 2 mm) weight 1220g/sq.m.

...and



This is cut into a range of 'photographic' sizes. We suggest 4ply for overmats, 2ply for backing sheets, up to 16"x20", after which 4ply backing is advisable.

ACID FREE LINEN OR PAPER TAPES

Both are acid and sulphur free, with a neutral pH, PVA (poly vinyl acetate) adhesive, which must be moistened prior to application. Both tapes can be used for fastening down corners, and attaching the overmat to the backing board.



YOU CAN'T LICK IT!
(tap water is acceptable)

Linen tape should be used in situations where flexibility is needed, such as window mats which are being frequently transported and opened, paper tapes where flexibility is of less importance, or as a sealing tape.

SILVER-SAFE PAPER

Ideas have been changing in photographic conservation lately, and the ruling is now that while alkaline buffered paper is highly suitable for outer enclosures, paper in direct contact with the emulsion should be completely neutral, with no chemical content of any sort. Consequently we now have a new paper termed 'Silver-Safe', which passes the accelerated silver tarnish test detailed a few pages on, and thus is 'state of the art' photographic conservation paper. It comes in sheets 25x32"-[these are difficult to send unfolded through the post so when ordering please let us know if they can be folded or not.]

SILVER-SAFE PHOTO CORNERS

Construct your own using the template on the next page. We used to import ready-cut corners from the States at about £3 a 100! Attach to mount preferably with linen tape or archival paper tape, but one of the PVA or starch paste adhesives can be used.

RICE STARCH ADHESIVE

Cooking instructions: in a stainless steel or porcelain pot mix two heaped teaspoonfuls of rice starch with a small amount of cold water to form a smooth paste. Add approximately half a pint of boiling water and simmer until it forms a thick paste of glassy appearance. Use at room temperature. Any left-overs might make a reasonable cheese sauce.

SEKISHU OR JAPANESE TISSUE

Long fibre tissue, similar in nature to Crompton tissue, but without adhesive. Generally used with starch or PVA adhesives to make a hinge between print and board when the print has been trimmed down to the image area.

PRESENTATION: MOUNTING AND MATTING

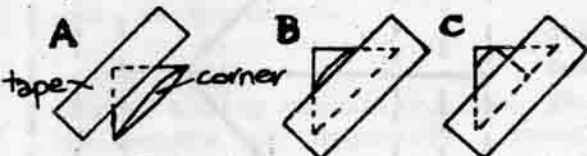
GOLDFINGERS ARCHIVAL CORNER
MANUFACTURING PLANT

Previously available in one size only, ready cut at \$6.20 per hundred. Now at 10P for 128 and two minutes origami!

Depending on which of the dotted lines you cut, three different corners are available:-

A. Simple triangle, tape "over-mounting" only.

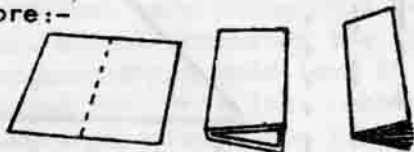
B. & C. Lower lip or overtaping possible



INSTRUCTIONS- read before you chop up the page!

1. Carefully tear out page and divide in half to give two templates. (see over!)

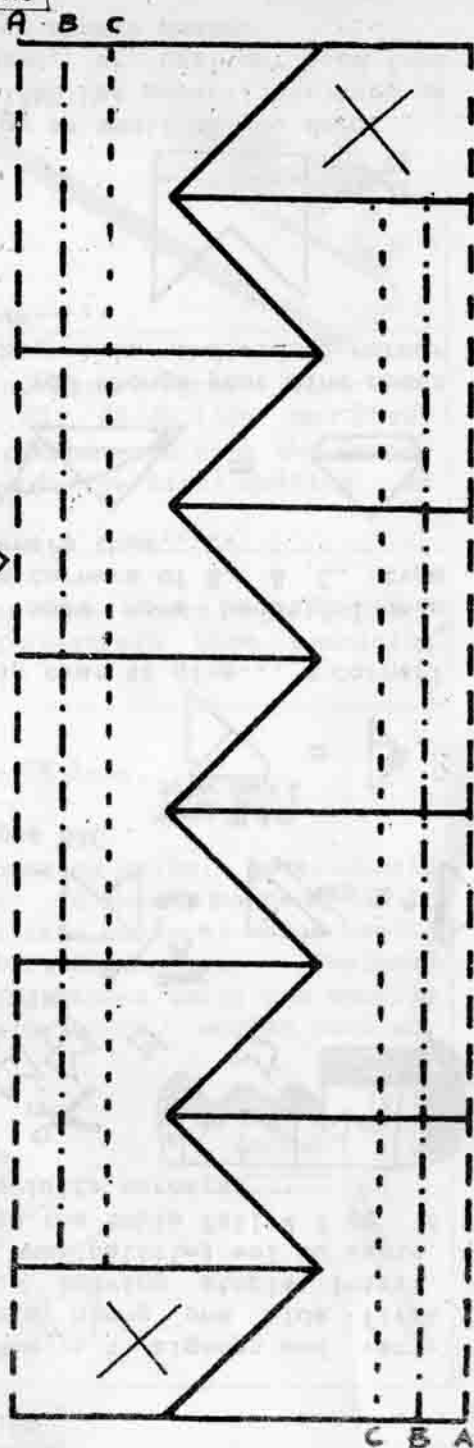
2. Take a piece of approx. A4 GOLDFINGER archival paper (or larger) and fold twice or more:-



With scissors 8 layers is possible, with a Stanley knife we've done 16.

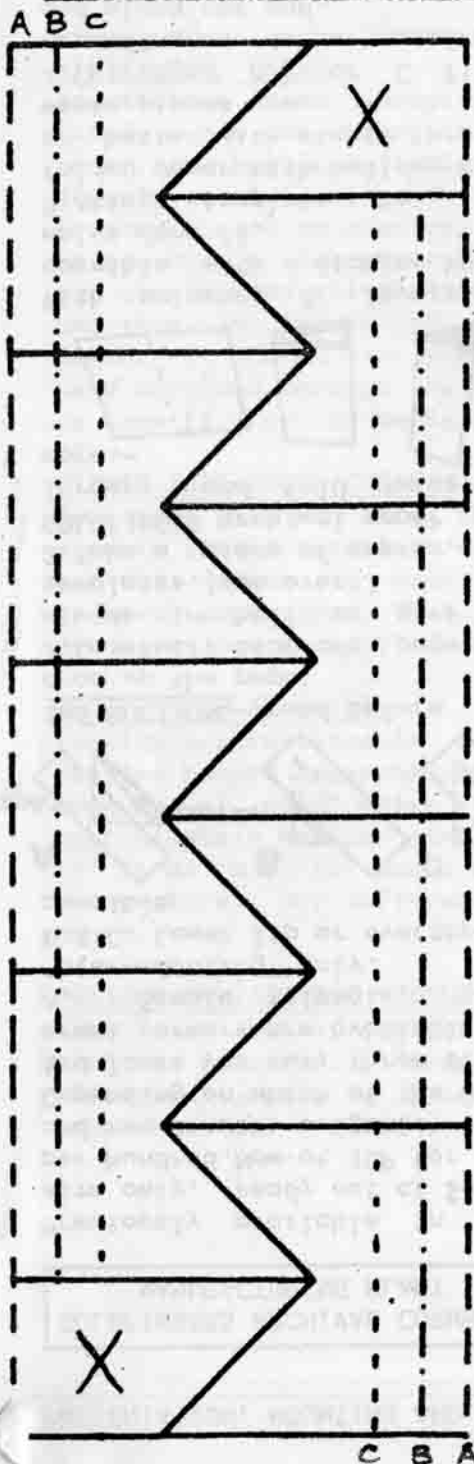
3. Attach template to the folded paper with bulldog clip or better with staple through waste pieces x-x

4. Cut edges A, B or C first depending on corner required, and along one end.



C B A

PRESENTATION: MOUNTING AND MATTING



5. Now cut zigzags and verticals along one side first thus leaving staple intact. OK, mon petit(e) vol au vents, onto the table fall 4, 8 or 16 exquisite corners!

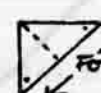


FOLDING

Type A..



FOLD 1

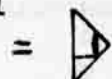


FOLD 2 =



Types B&C..

TYPE B&C after fold 1



Flip over to give... a corner!

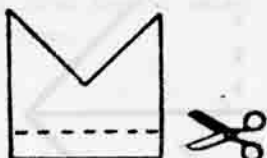
To make more beautiful snip the corners of B. & C. type corners thus.....



=



If you change your mind about size, trim individual corner thus.....

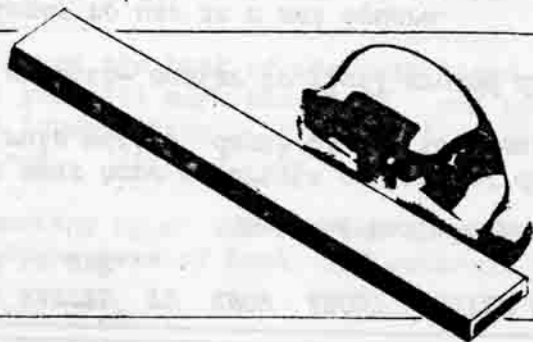


..go as small as you dare!
FIXING: Use paper/linen tape as above, or use an acid free rice starch paste.

C B A

RUBBER GRIP RULE

Non slip thick aluminium rule, with flush and bevel edges. A rubber grip runs its length. In 50 and 100cm, calibrated.

CUTTING MATS

Self healing, anti slip cutting surfaces, green (clear to special order), in sizes 45x30, (A3) 60x45, (A2) and 90x60 (A1) centimetres. Although they can be used with the Dexter mat-cutter, they are most useful for vertical cutting, as when sizing board.

LINEN TESTER

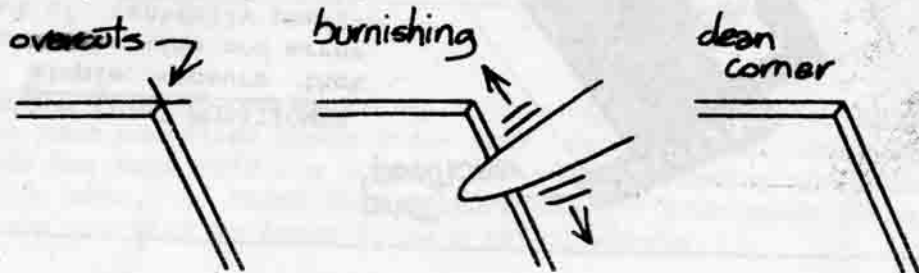
Small folding magnifier, used for fixed focus magnification of prints or negatives. Saves eyestrain when examining contacts or spotting.

8x LUPE

Clear plastic cone topped with an 8X lens.

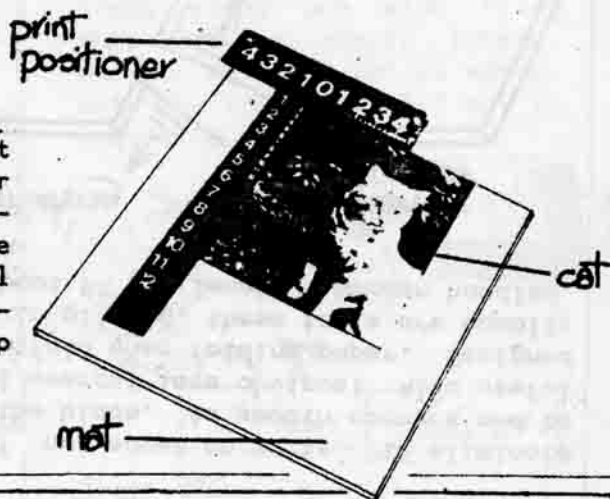
BURNISHING TOOL

Use for fine finishing of cut edges on mats; to eliminate rough edges caused by the blade, to smooth corners and to make that very occasional overcut less obvious! Also useful for cleanly creasing the fold when folding paper. Designed for burnishing gold leaf in gilding, these tools are equally suited for this job. About 9" in length, wooden handled, with a polished agate tip.

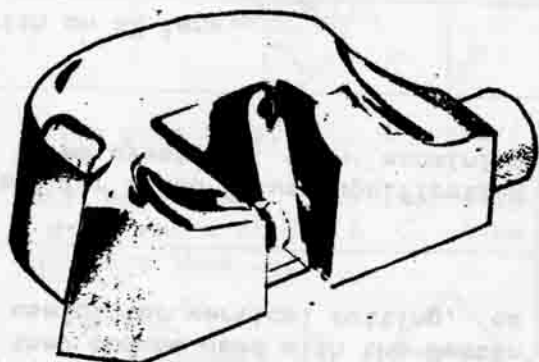


FALCON PRINT POSITIONER

A simple measure that takes the time and error out of centrally positioning the print on the mount. Also very useful as a lightweight set-square when marking up board for cutting.

DEXTER MAT CUTTER

Having looked at every hand matt-cutter on the market, (and used them) we concluded that the Dexter is the only one in its price range which will cope with even the heaviest board, give a clean corner, as well as being a nice device to use! Outlined below is a working procedure we use,



but if you don't get on with it, work out your own.

EVERYTHING YOU ALWAYS WANTED TO KNOW ABOUT DEXTER MATT-CUTTERS but were afraid to ask...

Dexter and blades

Get the tools together.

Rule to cut against- it must have a certain amount of depth, and the rubber gripped rule with a depth of 1cm is ideal for this.

A thin ruler to mark up with- easier to flail around during measuring.

Possibly a print positioner to use as a set square.

A piece of board to cut on, and a completely flat table.

Mark up your 'hole' to be on the back of the matt board- if you cut from the front you will mark the board, and stand little chance of avoiding 'overcutting'. It makes life easier to work in millimetres, cutting out fractions of measurements.

As an example, this is marking up a 10x8" print on a 12x16" board. First measure the dimensions of both, and subtract the print from the board:

Board size 305 x 406

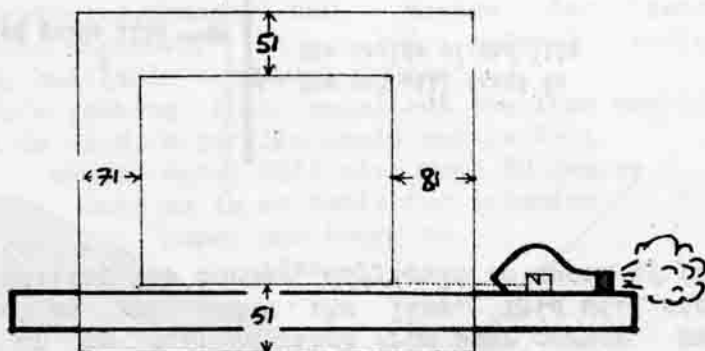
Image size 203 x 254

subtract to give... 102 x 152

then divide by two to give the space for each border:

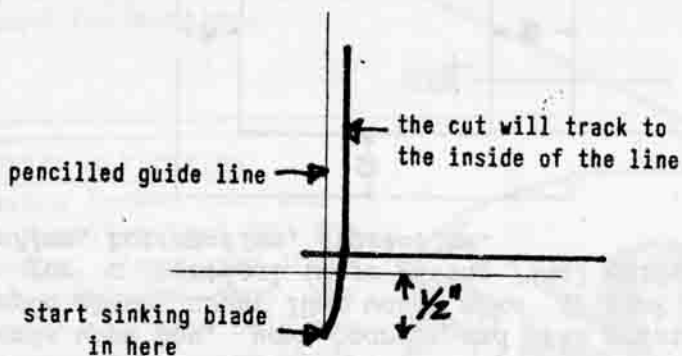
51 x 76

and then 'weight' the measurements to taste. An image placed centrally in a board will for some optical quirk look as if it is positioned too low, and to counteract this increase the bottom measurement and decrease the top. Exactly how much depends upon you, your board, and the print, but in the example above, about 10mm would make it look psychologically OK, for a vertical image giving final cutting measurements top=71mm, bottom=81mm, sides=51mm.



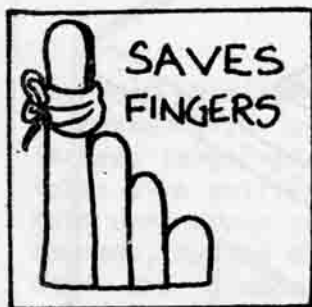
It is easy to cut by lining up the tip of the cutter blade with your pencilled guide line- bear in mind that once the blade has sunk into the board, it will be running about 1mm inside this, so knock this measurement off your guide lines, unless you want to leave it as a safety margin.

Check that the blade depth is set correctly, which should be just piercing the board, but no further, and cut on top of a similar piece of board. Do a couple of test cuts to check you have the setting correct, and that the blade is sharp. Get lined up, hold down the rubber backed rule, get a firm grip on the Dexter, and begin to sink the tip of the blade in anything up to half an inch from your corner, pushing it fully home as you reach the line. This will stop little 'nicks' spoiling the corner, difficult to avoid if forcing it straight in.



Repeat all the way round and the centre should drop out as you turn the board over. If not...a razor blade to gently chip out any undercuts will sort it out. Finish off by burnishing the cuts from the front.

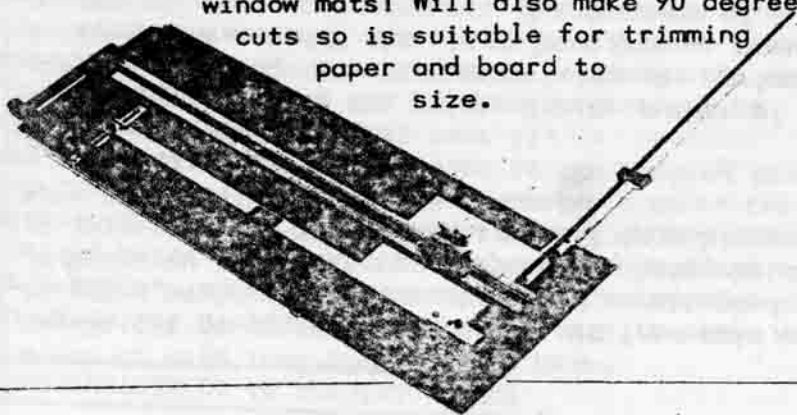
The Dexter does not actually give a 45 degree cut, unless you break off the blunt end of the blade, but is about 60 degrees, which most people find more pleasing. Apart from the original American blades we now have a British made variety which are quite a bit cheaper and seem to last as long. You can expect anything up to 10 finished matts per blade. The Dexter is only in a right handed version, but we should shortly have a new 'Mini-Dexter' which is ambi-Dexter-ous.



C & H MOUNT CUTTER

Mount cutting in quantity? Have you ever wondered how to get perfect bevelled edges on window mounts without the skill of a Michaelangelo with a sharp blade and a straight edge? To quote from some of the advertising, " No other brand compares with C & H in price, quality, features, warranty and service....proven and tested for years....no wobble....no hangover (!)....100 percent satisfaction guarantee, available from your jobber".

Guess who's jobbing this excellent American machine with which, it is said, a gorilla could cut perfect window mats! Will also make 90 degree cuts so is suitable for trimming paper and board to size.

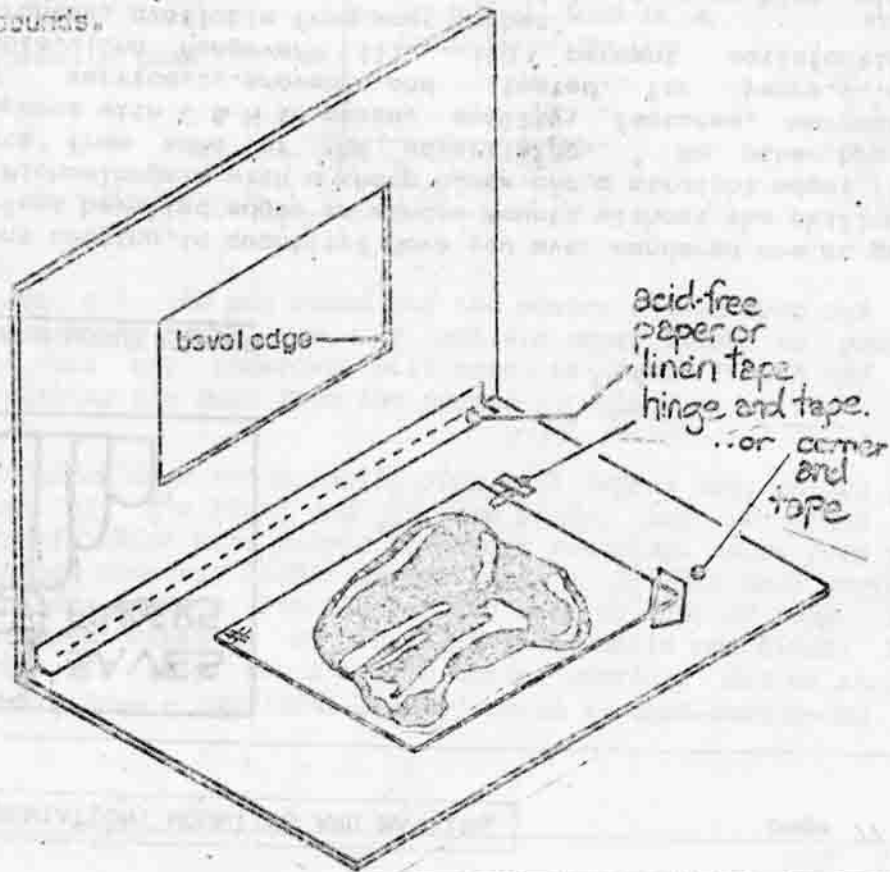


CONSTRUCTION OF AN ARCHIVAL MOUNT

An archival window mat should be cut from acid and sulphur free board. The window overmat should be attached to another backing piece of similar quality board, being held along one side only by a flexible linen or paper tape hinge which allows the assembly to open like a book.

The print can then be attached to the backing board and the window mat closed in place over it.

This package protects the print in a number of ways. The thickness of the bevelled edge holds the print's surface away from contact with the glass in a frame, preventing the transfer of condensed moisture. The presence of a window mat also protects the edges against being dog-eared, and it serves chemically to buffer the print against migratory acidic compounds.



For good physical strength but economy, a 4-ply overmatt can be backed with a 2-ply backing board for sizes up to 16x20 inches; larger pieces should have 4-ply backing. 2-ply overmatts with stiffer 4-ply backing is often used, the print is held very close to the glass and if it expands with humidity changes, may be damaged by touching it.

Once the window mat has been cut and assembled, the print must be attached to the backing board. Contemporary prints made for this type of presentation and storage should be made with at least a $\frac{1}{2}$ inch border. This allows the use of photocorners made from Permalife paper, and attached to the backing board with linen or paper tape. This method is to be preferred, as no adhesive is in contact with the print itself.

Another method has to be used if the print has been trimmed flush with the image, as is often the case with old prints. Here hinges must be made directly between the print and the board, which can be made by using an acid free long fibre paper, adhered with rice starch adhesive. A small light-weight photograph can be hinged by applying a small amount of adhesive directly between print and mount.

No matter what the method, the primary criterion for an archival mat demands that it be possible to remove the print from the mat whenever necessary, or when the mat has become damaged (linen tape and mounting pastes can be removed with steam or warm moisture).

When positioning the print precisely under the window mat, it is helpful to use a weight placed on the print to hold it in position while the corners are attached and taped down. A suitable weight might be any inert material that will not damage the surface of the print, e.g. a paper weight with a piece of acid free board on its base.

DRY MOUNTING

Generally the golden rule for archivists is never use a process which is irreversible.

In the dry mounting process, a sheet of mounting tissue is applied to the print which is then trimmed to remove excess tissue, tacked onto mounting board and placed in a dry mount press, where at a temperature of approximately 150 degrees Centigrade an adhesive coated on both sides of the tissue melts, into both print and board, and when cooled forms a firm bond.

Conservationists have discovered that in the dry mounting process the scene is set for tensions between print and board which can lead to eventual breakdown of the paper/board bond, or in the worst cases rupturing of the paper itself. This is due to bonding two materials with different rates of expansion and contraction in varying humidity. In the archival mount outlined above the print is free to make these slight dimensional changes.

HOWEVER...

for short term storage and display, dry mounting has definite advantages:-

Prints will be held absolutely flat, invisibly, and if necessary obviating the need for any overmatt. It is advisable not to use ordinary dry mount tissue, as the base and adhesive, are unlikely to be stable in the long term.

If you have access to a heat press for dry mounting, remember that it will also flatten air dried prints most successfully, even on very low heat. A print flattened between two pieces of acid free board (pre-dried in the press) will end up with a very satisfying surface, with non of the lint problem, or the drastic change in humidity that may result from flat-bed or rotary drying treatment of a wet print.

DRY MOUNTING TISSUES

Different manufacturers produce ranges of dry mounting materials for different applications. Particularly recommended for their stability are the following.

ADEMCO DOUBLE SIDED LAMATEC

This has an acid and sulphur free bleached wood based tissue, coated either side with Ademco Lamatec adhesive. This specially developed adhesive has been artificially aged up to 170 years without measurable change in its properties. It has a neutral pH, and in use actually assists in preventing migration of acids from the mount onto the print. The bond may be removed by saturating the mounting board in industrial alcohol, and as the adhesive softens, stripping the print from it.

UNSUPPORTED LAMATEC

It is possible to use a sheet of pure Lamatec adhesive, which has no fibrous base, and which is applied in a double operation, that of adhering it to the print, followed by stripping a backing sheet and applying it to the mount.

SEAL FUSION 4000

This has no fibrous base, but is a pure neutral pH adhesive, melting at a relatively low temperature and forming an extremely strong bond. Several pieces may be overlapped, as it "flows" in the press. As with unsupported Lamatec, the mounting operation is more complex than with tissue.

ACCESSORIESSILICON RELEASE PAPER.

The silicon surface treatment of this material resists any adhesive, and is the normal cover and protection for the print while in the press.

PFTE CLOTH.

This may be regarded as a long lasting alternative to silicon release paper. It is heavier than silicon release paper, and in one metre lengths. Not, however, recommended for glazed glossy prints, where it may impress its pattern on the surface.

TACKING IRONS The prime criterion is that it doesn't fall to bits quickly. A lot of tacking irons are soldering irons with a differently shaped 'bit' in them, and may not be up to the force exerted when pressed onto a surface. We now keep several irons including:

ADEMCO TACKING IRON.

"Its very small bit and light weight make this a pleasant instrument to work with." Quote, honest!

SEAL TACKING IRON.

With built in thermostat and temperature control, teflon coated for space age non stickiness! Of great use when working with low melting point materials. Expensive, but the best on the market.

SEAL DRY MOUNTING PRESSES

Easy to use, thermostatically controlled, soft bed presses, to suit all sizes and pockets. All of them are soft-bed. Contact us for more details.

There are models with different platten sizes:

- 1 MASTERPIECE 210M - massive 26x34" platten taking prints up to 52" wide, 1700 watt heater.
- 2 COMMERCIAL 210M - slightly smaller, 18.5x23" with 1300 watt heater.
- 3 JUMBO 160M - Platten size 18.5x15.5", 1000 watt heater.
- 4 COMPRESS 110S - Smaller and more compact with a 12x15" platten that can cope with prints up to 24" wide.

some!

1 STONE AGE CAVE PAINTINGS HAVE LASTED OVER 6000 YEARS!....

Until recently most photographers, photographic collectors and curators have stored their negatives in standard glassine envelopes, and their prints in any box that happened to be the right size, and thought no more about it!

As with the mounting of the print, the choice of storage material has a direct bearing upon the durability of the negative or print. Once it has been produced the print is susceptible to scratching, buckling, splitting, fading, or even total image disappearance, and this is evident in many old and even relatively recent photographs.

The object, then, must be to protect materials from sources of physical and chemical damage, within financial constraints, and with the ability to extract, view, and use, whenever necessary.

Gradually, work upon the requirements for long term storage is coming together, but there is still much controversy concerning different methods and approaches to the problems. Photo-conservation is a young science, and changing very quickly.

NEGATIVE STORAGE MATERIALS: CRITERIA:-

Any enclosure should allow movement of air to give a 'micro-environment' of water vapour in balance with the gelatin.

The negative is liable to 'ferro-typing' (glazing) if stored under pressure in contact with a smooth surface, eg MYLAR plastic.

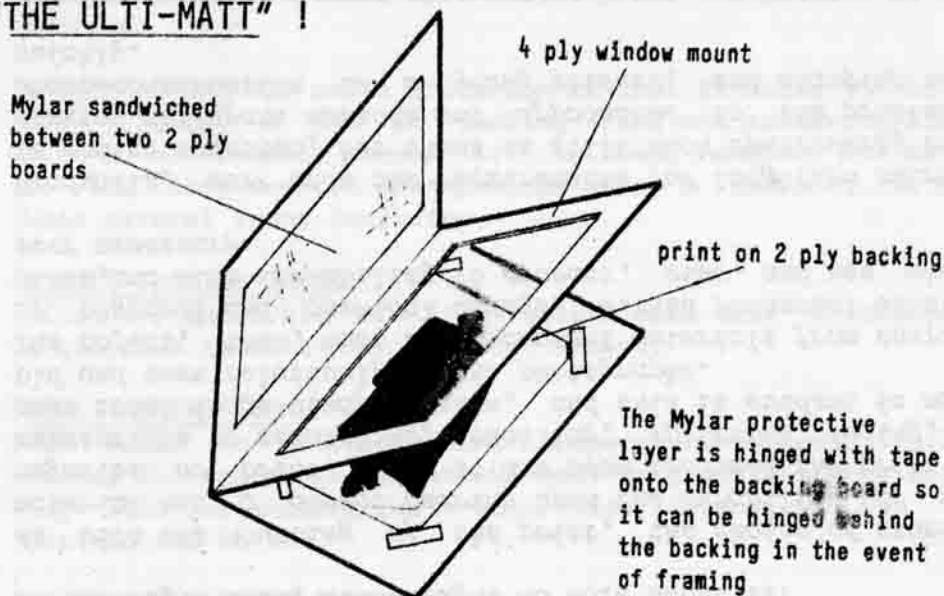
Glassine, used widely for making negative enclosures, cannot in view of new knowledge, be used for long term storage.

If acid-free buffered paper envelopes are used, care should be taken that no seams run over the image area, which, with slight pressure over time, or through the adhesive used, may cause a density difference.

PRINT STORAGE MATERIALS, CRITERIA:-

For long term storage, do not dry mount.

The print is considerably more susceptible to damage than the negative, and for best protection should be held in a museum board window mat. As with the negative, it should be able to 'breathe', and if an inert plastic is used for covering protection, this should be held at a distance, from the gelatin surface, as in a special 'archival storage mat:-

"THE ULTI-MATT" !

(for interest rather than every-day use- a print must have to be rather valuable to merit this treatment)

STORAGE CONDITIONS

Both negative and print should be maintained at a low humidity, if possible around 45%. As this is not usually possible in practice, at least avoid high humidity, and extreme CHANGES in humidity.

STORAGE MATERIALS

Many materials being currently used in the construction of negative and print storage systems are potentially hazardous in the long term, including many plastic, board, wood, and metal materials, and even some conservation materials are unsuitable, not being designed with photographic use in mind.

We feel that contemporary photographers are entitled to select the suitability of materials according to a grading system. This we suggest below, grouping materials according to their known qualities, and these must be used under the constraints of the photographic medium to be stored.

As far as we know, with the present state of the science we stock no materials in group 0.

- 0 = materials totally unsuitable for photographic storage and presentation, in particular those proving positive to a sulphur test.
- 1 = materials very suitable for short to medium term storage and presentation, including glassine, dry mounting tissue, conservation board, standard photo-corners and albums.
- 2 = acceptable archival materials to a given budget and aesthetic appeal, including acid free paper tape, print boxes, special quality Mylar plastic sheeting & other inert plastics, acid free tissue, poly vinyl acetate adhesives.
- 3 = totally acceptable and proven archival materials where commercial considerations do not apply, and appearance is an added benefit. Museum board, portfolio storage boxes, linen tape, 'silver-safe' paper, permalife paper acid free buffered interleaving tissue, inert metal filing cabinets.

SEAMLESS ENVELOPES

Made from Silver-Safe paper, these envelopes avoid the use of adhesives. The folding construction lessens the chance of scratches or fingermarks, as the negative is not withdrawn, rather 'unpacked'.

In size 5x4".

Alternatively you can construct your own by making up a template.

GOLDFINGER FILM FILE SHEETS

We looked at every negative storage sheet on the market, including some that said they were of archival quality, and weren't, and finally designed our own. They are constructed from 'Mylar' plastic, which is now accepted as the most suitable material currently available. This is completely transparent, allowing contact printing through. The sheets are designed to make extraction and insertion of the negative easy, and an opaque area on the spine allows you to write information onto the sheet- we advise chinagraph pencil for this. The sheets will fit into a standard negative file, but are slightly wider than the norm, to allow the entire strip to be printed, avoiding lines over the image area.

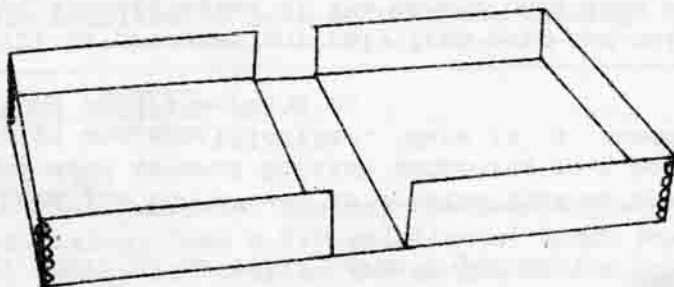
GOLDFINGER PRINT POCKETS

Also constructed from Mylar, but in a heavier guage, these are sealed on three sides, and protect a print while making it easy to inspect. Removing one of the sides enables you to flip up the corner of the sleeve to see the surface of the print. In sizes 10x8, 10x12, 12x16, 20x16.

GOLDFINGER ARCHIVAL PHOTO-PRINT BOXES

Constructed from the latest archival quality buffered box-board, which is cream in colour. It is of the same high quality throughout, obviating the need for lining. The corners are metal reinforced. No glues of any sort are used in the construction.

They are now specially manufactured for us in the States in a 'clamshell' design. In use it opens up to provide two trays, and matted prints can be shuffled from one side to the other without having to withdraw them and lay them on a possibly unclean surface. The largest 20x24" box is in two piece construction with one drop side. To constantly remind you where to re-order, our logo is discreetly embossed on the lower spine.



Available in:

- 8x10
- 10x12
- 11x14
- 12x16
- 16x20
- 20x24

All the specifications are generous interior sizes in inches, and the boxes are three inches in depth. Designed for secure long term storage and viewing of large quantities of prints at exceedingly low cost, while at the same time rugged enough to be treated as a portable portfolio box.

ARCHIVAL PORTFOLIO BOXES

Probably the most elegant method of storing and presenting prints available. For economy, store the bulk of your work in the print boxes, and use the portfolio box for prints in current use for presentation and more rigid protection in transit.

HOWEVER...

At present, July 83 we still haven't got any!

Supplies from the USA proved so erratic that we are at present working with several British companies on a box of equivalent design and specification. Here is a rundown of the specification we are working on:

The box will be produced entirely from acid and sulphur free board- most storage boxes at the moment have some acid content. All other materials used in the box will be to a similar standard- including the adhesives used, the covering, and interior lining. The box is to be lined with metal foil, the only 100% sure way of blocking unwanted chemical intrusion, which will then be covered with 'silver-safe' paper.

Our problem now is getting the price down low enough!

Although we have not yet got to the point of putting a portfolio box into production that we can 'nail our colours to' if you need a portfolio box for presentation purposes, contact us, as we can arrange to produce one to your specification, although we will not guarantee it to be of our considered archival quality.

for testing.....STOP BATH

PH PAPERS

Sets of 10 books, 20 leaves each, giving a colour change according to degree of acidity or alkalinity. Use if you do not have a "built-in" indicator in your stop bath.

for testing.....FIXER

SILVER ESTIMATING PAPERS

Sets of 10 books, 20 leaves, giving a colour change according to silver level of fixing bath, which is compared with a colour scale supplied to give an accurate reading.

for testing.....PRINTS

THE SELENIUM TEST

To test a finished print for any residual silver, left by inefficient fixing, use a 1+9 solution of Kodak Rapid Selenium Toner, place a drop on the margin of the print, any yellowing of the spot other than a barely visible cream tint, indicates the presence of silver.

KODAK HYPO TEST HT2

To test a finished print for residual hypo, remaining after inefficient washing, place one drop of the solution on the margin of the print and read the colour formed after two minutes. Any appreciable colour over a very light buff, indicates inefficient washing.....Rewash!

FORMULA:

water	750mls
28% acetic acid	125mls
silver nitrate	7.5gms
water to make	1000mls

for testing.....MOUNTING AND STORAGE MATERIALS

pH PAPERS

To test material for acids that may cause image deterioration. Moisten paper with distilled water and place in close contact under a microscope slide with the material to be tested, envelopes, boards, tapes, boxes. Or use.....

pHYDRION PENCIL SET

Application of an indicator directly to the moistened material, usually gives a more accurate reading, remains to monitor changes of long periods of time, but of course leaves a small stain on the material.

The pHydrion pencil set contains four pencils for testing accurately over a wide range of pH.

PHLOROGLUCINOL TEST

Used for testing for the presence of lignin (groundwood) in materials which will on ageing produce acids and peroxides which will attack and degrade a silver image.

To a small sample of the material add a drop of Phloroglucinol solution, after two minutes add a drop of concentrated hydrochloric acid to the same spot. A pink to magenta colour indicates the presence of lignin, and the unsuitability of the material.

FORMULA:

phloroglucinol	1gm
methanol	25mls

SILVER TARNISHING TEST

Used for testing for sulphur in any material. A positive reaction to this test is considered to be the death knell for any material used in any photographic display or storage. A small piece of the material, moistened with dilute acetic acid, is placed in contact with a clean piece of silver foil. Maintaining a humid atmosphere in a petri dish, incubation takes place in an oven for 16-24 hours.

The SLIGHTEST tarnish on the silver, caused by the production of silver sulphide, is reason to DISCARD the material.



HOPE?

It is hoped that manufacturers will indicate whether this test has been performed on their materials, and that quality control tests will be performed regularly between batches.



PHOTO MARKET PLACE

We've got it all

Beware of the pitfalls of dealing with "Hole-In-The Wall" companies who are earning interest on your money and playing "games" while you wait, wait, wait!



DYNAMITE DISCOUNTS

"I would much rather buy from you than from a come-on artist"

G.J. Boulder, Colo.

Change Photos to art

Great for doing

- Portraits
- Homes
- Boats
- Sell your art for \$\$\$

\$15.95 Money back Guarantee

CHANGE BLACK AND WHITE PHOTOS TO ART
NO SPECIAL TALENT NEEDED

Amazing values

FOREIGN ORDERS
FILLED PROMPTLY

NO NONSENSE.
NO GIMMICKS!
NO FOOLIN' AROUND

No Nonsense
with your
money

MASTER CHARGE &
BANKAMERICARD (VISA)
ACCEPTED

All Brand
New
No Demos

Let's Play The ...
"Low Price Game"!

NEW!



\$23.95

RING THE BELL!
EVERYTHING BRAND NEW!

WE BUY BY THE TRUCKLOAD—YOU SAVE

A Price Buster for
17 years

Full pack NO shorting



FABULOUS
GIRL
WATCHER
LENSES™

GRAB 'EM
WHILE
THEY LAST

FOR THE PRO
When performance counts.

Call us...
let's talk it over.



NO BOOTLEG MERCHANDISE
Full pack NO shorting

ONE CALL DOES IT ALL!

THE PRICE YOU SEE
IS THE PRICE YOU'LL PAY!

TOP
DOLLAR
ON
TRADES
FOR
CAMERAS

★ FOR PEOPLE WITH MORE SENSE THAN DOLLARS ★

Incredibly Low Prices Backed By Honesty And Service—

LOCAL RESIDENTS WELCOME

Happy Holidays to You

COMPLETES THE PICTURE

Two types of frames are most commonly used for photographs; metal and wood.

For protection against physical damage or dirty fingerprints, and protection from the atmosphere, glass is recommended. However it seems a shame after having gone to extreme lengths in determining the final colour and surface characteristics of a master print, to hide those qualities under a shiny piece of reflective green or blue glass or plastic.

Contemporary photographers who are not selling to the V & A or Bond Street Galleries, should weigh up the options, considering the reproducibility of the photographic print.

CUSTOM FRAMING SERVICE

Using aluminium or wooden frames made to your specifications, we can offer (with plenty of advance warning, please) a full dry mounting, matting, archival mounting and framing service. Our mounting press platten is 20 x 30", and our matt-cutting is performed on a C & H matt cutting machine.

Cheaper matts in lower grade board are contracted out, and can usually be produced in bulk at shorter notice.

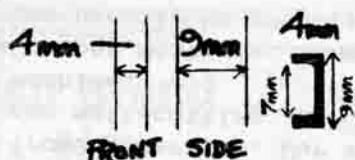
Both types will be on show in "FINGERPRINTS" gallery

GOLDFINGER ALUMINIUM FRAMES

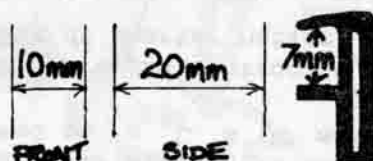
We supply a complete aluminium framing system, in two basic designs, termed MARK 1, and MARK 2. Etched to give a silky matt finish in Mk 1, and a bright sheen in Mk 2. They are available in silver and black (stock), and gold to special order.

The Mk 1 has a 4mm, matt flat front overlap (ie the edge you see viewing the frame straight on), and is 9mm deep. It provides a neat narrow surround to separate the print from the wall.

Mk1 (actual size)

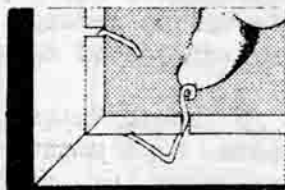


Mk2 (actual size)



The Mk 2 has a 10mm, polished, rounded front overlap and is 20mm deep, appearing heavier looking than the Mk1.

Whereas the Mk1 consists of four side pieces which are held at the corners by special clips, the Mk2 frame is clamped at the corners by a crimped-in bracket, and is loaded from the back. Prints can be changed in both frames very rapidly.



MK.1 CLIP



MK.2 CLIP

Whichever system you use is largely a matter of personal taste, but bear in mind that the Mk2 can look cumbersome with small prints (5x7" and 8x10"), but is often preferable with very large prints because of the great weight of glass.

Both Mk1 and 2 are normally supplied with ordinary 2mm picture glass. Non-reflecting glass or acrylic sheet are available to special order at extra cost.

At this stage of our production, we feel at liberty to indulge our esoteric fancies, and thus submit the following quotation, culled we believe from the letters of Henry James, and make no apologies for unashamedly applying the concepts to the practice of photography.

WHAT ARE YOU TRYING TO DO?
DID IT SUCCEED?
WAS IT WORTH IT?

In determining what you are trying to do, we suggest that looking at photographs, either in books on gallery walls, is a useful undertaking, as well as visiting a workshop or two, wonderfully clearing for the mind!
Thus we include a section on books and will provide details of workshops around the country.

As a measure of success we suggest deep soul searching OR an exhibition at FINGERPRINTS gallery

The answer to the last question is always the most difficult and will always remain.....





BOOKS

It seemed a logical step for us to move from just recommending certain books to stocking them. Here is a selection of titles that we think are well worth looking at and you are unlikely to find on most bookshop photography shelves.

The first book in your collection will undoubtedly be the **GOLDFINGER CORNUCOPEIA (HANDBOOK, MANUAL, BOOK, CRAFTBOOK FOR CREATIVE PHOTOGRAPHY, THING - please let us know if you can think of a good title)**, first, because if you're reading this it must be in your hand. To help you appreciate the value of your purchase, we humbly reproduce some of the accolades accorded to us in the last few years, especially the extract from the British Journal of Photography's article on "Desert Island Photobooks":-

More Books Brought Ashore

It is not an easy nor an idle task to reduce a library to essentials....

It is some lean matter to further reduce a photographic library to just four books

... 1. Theory — Lewis

Larmore: *Introduction to Photographic Principles*, 2. Practice — 'Goldfinger' *The Photographic Cornucopia, A Craftbook of Creative Photography*

3. What photographers do — Joachim Giebelhausen (Ed) (English Language edn E F Linssen) *Manual of Applied Photography* 4. What photographers think — Beaumont Newhall (Ed) *Photography, Essays and Images*. Of his first two choices....

... They are I think the only "textbooks" not bedevilled with misleading statements and errors of fact

- "P.S. I always thought value for money was not possible until now!!" (Newark)
- "Thankyou for your excellent catalogue- worth every penny- cheque enclosed." (Woking)
- "Many thanks for your superb service." (E. Yorks)
- "Such excellent value for so small a sum. There is more concise information in your book than one can find in a library. Thankyou so much for this Goldfinger gem!" (Eastleigh)
- "Ever thought of going 'hardback' and out-Langfording the Langfords?" (Hartlepool)
- "Who-ever is responsible for the new 'Photographic Cornucopia'- there's more useful information in it than an entire public library." (Didsbury)
- "...better than most textbooks- thanks for taking away much of the mysticism of photography through your notes." (Mablethorpe)
- "We have been using grade 2 paper for all our darkroom work, and now realise that paper grade plays a great part in the success of print-making" (*****)
- "Congratulations on your new catalogue/manual- everyone here is very impressed. It has been in such demand we have included a request for extra copies on our order." (Cambridge)
- "My compliments on the lucid handling of the English language, and the 'puckish' humour that adds spice. Could easily become a best seller!" (Wirral)
- "I almost forgot to write and say thank-you, I was so engrossed in your booklet." (Birmingham)
- "In my opinion it is an excellent little thing. You should publish on a weekly basis on the open market and give the amateur comics a fright and a run for their money. It is not often that you get something that is lively, interesting, and useful to read. Full marks!." (Dunbartonshire)
- "I am very pleased you got it to me so fast"- Don
- "With thanks for your speed"- David
- "Could you advise me if you have an agent in Australia" (Sydney, Australia)

Honest Injun. All true and unsolicited, photocopies supplied on request!



The Lustrum Library of contemporary Photographic Theory:
Each of these books examines the methods and motivations of
leading photographers working in particular fields.

Darkroom 1

edited by ELEANOR LEWIS

Really gets down to how individual artists pursue their
personal vision, WYNN BULLOCK, RALPH GIBSON, DUANE MICHALS,
JERRY UELSMAN and others divulge their methods in striving
for perfection. A bit shy on some practical points, we have
filled those in in the GOLDFINGER HANDBOOK.

Darkroom 2

edited by JAIN KELLY

As Darkroom 1 Includes JUDY DATER, CHARLES HARBUTT, EMMET
GOWIN, LISETTE MODEL, AARON SISKIND.

Contact Theory

edited by RALPH GIBSON

43 photographers bare their creative decision-making
machinery when explaining how they chose from their contact
sheets, the frame that became famous!

Landscape Theory

edited by CAROL DIGRAPPA

What is a landscape? ROBERT ADAMS, HARRY CALLAHAN, PAUL
CAPONIGRO, HAMISH FULTON, BRETT WESTON and all, point out
where they are coming from with some great pictures.

Portrait Theory

edited by KELLY WISE

If portraiture is your passion then this book will help you
to expand your definition of 'portrait'. It will make you
redefine and show you over 100 beautiful photographs on the
way.

Zone VI Workshop:- The Fine Print in Black & White

FRED PICKER

Ansel does the zone system like war and peace, Minor like
the New York Sunday Times, Fred's treatise is reasonably
sized and contains other nuggets of American photolore. A
useful addition once you've read the GOLDFINGER HANDBOOK!

Preservation of Photographs

KODAK

Good introduction to looking after old photos and taking
care of your own new ones.



KODAK Black & White Data Guide

With pop up enlarger guides! Good in the darkroom when you've lost the bit of paper that comes with the pack.

The Somnambulist RALPH GIBSON

Deja Vu RALPH GIBSON

Days at Sea RALPH GIBSON

The Ralph Gibson trilogy:- acknowledged landmarks in photographic publication. Stimulating images beautifully printed.

Murmurs at Every Turn RAY MOORE

The great British photographs of a great British photographer.

Approaching Photography PAUL HILL

The first book aimed at photographic 'outsiders' that is not a 'how to', but looks at the way photographs are influenced by the people who make them. Yet this is THE book that demystifies the term 'photographer'

The Keepers of Light written by BILL CRAWFORD

A unique and distinctive history and working guide to early photographic processes. Unusually well written and comprehensive.

New Zone System Manual MINOR WHITE, RICHARD ZAKIA, PETER LORENZ

Only a quarter the length of Ansel's version, great after you know what you're doing. (Having read the GOLDFINGER HANDBOOK)

ANSEL ADAMS new photography series

vol 1 The Camera.

vol 2 The Negative.

vol 3 The Print.

Completely revised and re-presented versions of the most justifiably famous craftsmans 'how to' book. Seriously, if any technique books are needed on your shelves (come on own up), these are the ones.



The Daybooks of EDWARD WESTON

When you're losing faith in our medium, read these and rediscover that there is intelligent life on earth and that it has sometimes resided in photographers.

Photographic Lab Handbook JOHN S CARROLL

Details, facts and figures.

Basic Photography MICHAEL LANGFORD

Advanced Photography MICHAEL LANGFORD

The books you shouldn't need to read if only you had MICHAEL LANGFORD by your side as a teacher - a good second best if you can't get to college.

MAGAZINES

Creative camera

Aperture

European Photography

We are agents for these magazines and can sometimes provide you with back numbers.

FULL LIST

We do not have one!

If you look in the prices section you will see an expanded list of books that depending on availability are sometimes in stock, and normally easily obtainable.

The essence of our growing book service is that YOU should ask US to obtain your favourite tome, we don't promise anything, but we do have good connections and it means we get to see books we might otherwise have missed!

PHOTOGRAPHY WORKSHOPS

Education in photography tends towards the technical, and of necessity the many, often excellent, courses in our schools usually miss a crucial lesson in every artists apprenticeship, that of meeting, working with and discussing the aesthetics and craft of the photographic process with other photographers. The photographic workshop is just such a meeting point.

In the U.S.A. the concept of workshops is well developed, some may say overdeveloped, not so here where the numbers may be counted on the fingers of half a hand. One place, THE PHOTOGRAPHERS PLACE, seems to have done more than it s fair share in providing the sort of alternative education for which there is a growing demand.

Consisting of two 300-year-old cottages, a lecture block, and an annexe, it is owned by Paul and Angela Hill. Visiting friends over the last few years include; Ray Moore, John Blakemore, Ralph Gibson, Charles Harbutt, Lewis Baltz, Paul Caponigro, and many many others, either practising photographers or connected via institutions or galleries with interests in historical or contemporary photography.

THE PHOTOGRAPHERS PLACE is located just outside the village of Bradbourne, which is five miles northeast of the market town of Ashbourne. Surrounded by fields and rock outcrops The Place is on the edge of the Peak National Park, and is near Dovedale and the spa towns of Matlock and Burton.

The two darkrooms are equipped for 35mm and 120 negatives. There is an extensive library of rare and contemporary books and magazines, a lecture room, and a gallery of vintage and modern prints.

Don't go to a workshop expecting to be spoon fed, take along your camera and your brain, the period of time spent living with people of similar obsessions has an amazing effect of polarizing ones intentions, apart from what is learnt in technique from the 'masters' and other students.

Details of this years courses and application forms can be obtained from us, or give Paul a ring directly on Parwich(033 525) 392.

FINGERPRINTS GALLERY

A gallery for the exhibition of photographic prints.

This gallery area has been set aside amidst Goldfingers photographic company. The exhibition area is a corridor and lobby on the first floor of the building. It has no commercial links with the business, but has evolved out of an ever present need by those at Goldfinger, who share concerns about the aesthetics and craft involved in the medium of photography, to view original prints.

It is now proving essential to expand this idea and make room for others who to exhibit their work. We intend to encourage photographers who have not exhibited before and are perhaps diffident about taking the traumatic plunge of showing their photographs to sometimes overworked gallery staff.

Our gallery is modest in size, although we hope soon to be expanding, to include the second floor of the building, so before you commit yourself to making any moves please come and see the available space. You will always be most welcome.

The selection of work will preferably be by request, due to lack of time and space for continual viewing of portfolios - business of survival must take precedence!

We aim to put on shows in a spirit of co-operation sharing responsibility for the mounting and framing of prints and publicity, thereby keeping expenses to a minimum for all concerned, as well as giving photographers an all round view of what is involved in staging an exhibition.

**HAS GOLDFINGER
GOT THE SECRET OF
ETERNAL LIFE?**

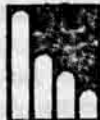
Your B & W prints will have a far greater chance of retaining their originality when you process and print with the specialist products stocked by Goldfinger.

We can supply all the following from stock:
Agfa fibre papers - Browns, Record-Rapid & Portrait-Rapid, in a range of surfaces.

Film Agfaortho 25, Agfaapan 25, 100, 400 Vario XI, XP1 and Kodak Technical Pan.

Kodak Rapid Selenium Toner and Agfa Rodinal

Archive quality negatives and print fixing systems.
Acid-free mounting materials, viz. museum board, pages and corners, and archival portfolios boxes.



Mounting equipment and frames and framing too.

Write, phone or drop in for our informative brochure and prepare for a revelation.

GOLDFINGER LTD.
229 THE BROADWAY SURREY, HILL
LONDON W19 7JG 01-838 8899 01-838 8888

THE WIND-UP

Not only but also...

This publication started a few years ago as a couple of sheets of paper, and is growing in all directions as a result of news and information from photographers everywhere- keep it coming!

We have not been able to detail all the products we stock, so if what you are looking for is not in the text, check the price list, (which will be either bound in below, or available as a separate supplement), or give us a ring.

e.g. BEARD masking frames (adjustable inner margins, very heavy construction)...

RAW CHEMICALS for when there is no manufactured version...

Stocks of all KODAK and ILFORD black and white and colour films...

Also the AGFA COLOUR materials including AGFACHROME SPEED and the E6 transparency films...

Cameras, enlargers, new and secondhand...

Filters, Tripods, Nuts and Bolts and Screws...

Passport photos, ear piercing and pregnancy testing by appointment.

Updated price lists are always available free of charge.

PRICE LIST THIS WAY



