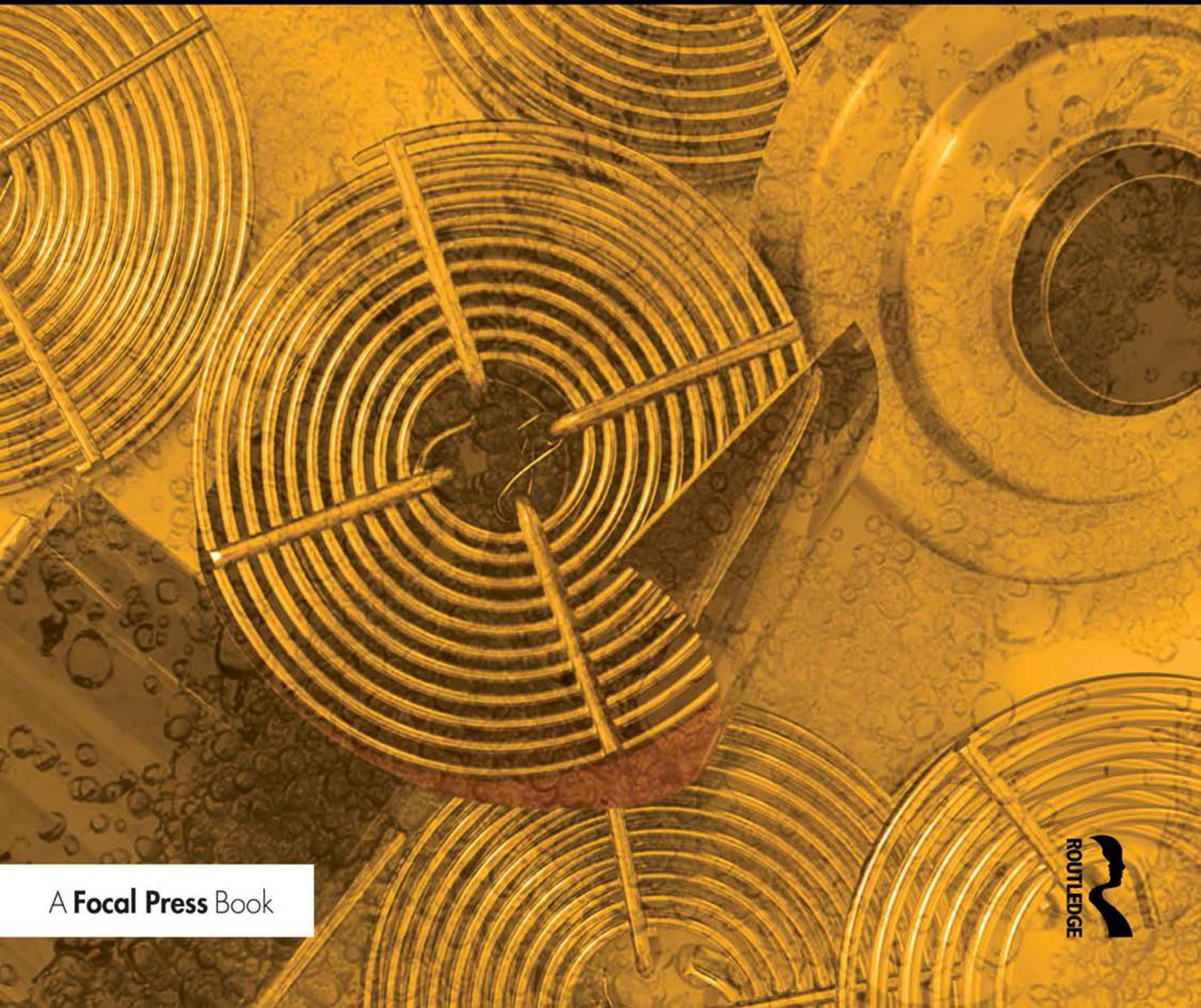
THE DARKROOM COOKBOOK

FOURTH EDITION

STEVE ANCHELL



A **Focal Press** Book

ROUTLEDGE

The Darkroom Cookbook

"For everyone working with traditional film and darkroom procedures—which I rely on exclusively for all my black and white work . . . because it's still the best—*The Darkroom Cookbook* is essential for your library. No other book puts it all together as thoroughly and understandably as this book."
—Bruce Barnbaum, author of *The Art of Photography*

"For many decades, Steve Anchell has dedicated himself to solid no-nonsense research and information gathering on the entire breadth of black and white film and paper processing. And he is still at it. I consider this book essential for all darkroom work and keep a much used copy right in my darkroom. This book now stands alone for information of this kind."
—Gordon Hutchings, photographer and author of *The Book of Pyro*

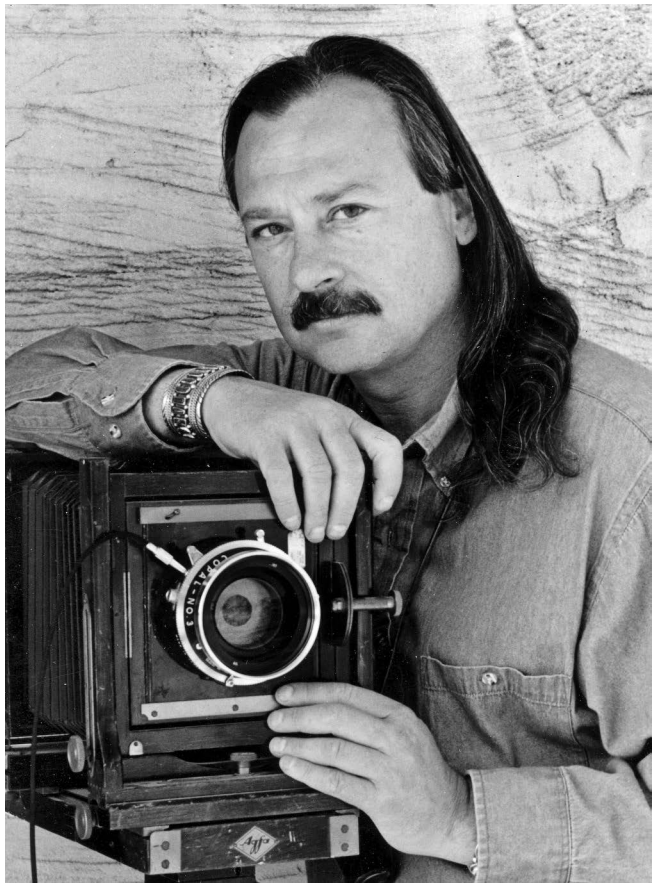
"Steve Anchell has done a fantastic job of creating THE essential reference for everyone who uses film or prints in a darkroom. *The Darkroom Cookbook* contains the best and most useful of film photography's formulas, plus an immense amount of information on how to use them correctly."
—John Wimberley, photographer

The Darkroom Cookbook is the classic guide for analog photography enthusiasts interested in high-quality darkroom work. The fourth edition from darkroom master Steve Anchell is packed with techniques for silver-based processing. In addition to "recipes" for darkroom experiments, this book contains invaluable information on developers, push-processing, reversal processing, enlarged negatives, pyro formulas, printing, and toning prints. *The Darkroom Cookbook* also offers advice about where to get darkroom equipment, how to set up a darkroom, safe darkroom working spaces, and more.

Key features of this edition include:

- More than 200 step-by-step or do-it-yourself formulas
- Tips for mastering the "ingredients" of analog photography processing, namely the chemicals used to develop, fix, stop and tone
- Special technique contributions and stunning black and white imagery by professionals such as Christina Z. Anderson, Bruce Barnbaum, Tim Rudman, John Sexton, and more

Steve Anchell has taught digital and darkroom classes at Oregon State University, and has conducted workshops since 1979 at institutions such as the International Center for Photography, Santa Fe Photographic Workshops, and UCLA. Steve is a former contributing editor to *Outdoor Photographer* and *Camera & Darkroom*, and has written articles for *Shutterbug*, *photo technique*, and many other major photography magazines. He is the author of *Digital Photo Assignments* and *The Variable Contrast Printing Manual*, and coauthor of *The Film Developing Cookbook*, published by Focal Press.



Henry and Steve, 1999. © 2016 Donna Conrad. All rights reserved. Courtesy of the artist.

The DARKROOM COOKBOOK

Fourth Edition

Steve Anchell

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Dedication

This book is dedicated to all the selfless photographers who have shared their experience and darkroom discoveries. To these photographers, known and unknown, we owe a debt of gratitude.

I believe the function of the artist in all media is a creation of affirmations; the search for and the realization of beauty.

The function of art includes an establishment of communication, at the imaginative and constructive level, and placing the emphasis of thought and emotion in relationship to an ideal world.

The glorification of decay, filth, disease, despair, and evil succeeds only in blunting our necessary awareness of these negative qualities …

I believe the artist can accomplish most on the agenda for survival by creating beauty, by setting examples of beauty in order, by embracing the concept of the essential dignity of the human mind and spirit.

—Ansel Adams

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APPENDIXES

Thoughts About Traditional Photography

The darkroom is the final tool for bringing your photographic vision to full flower. It all begins in the camera when you expose a negative. But it doesn't end there; the negative is a malleable entity. If it's overall too dense it can be bleached back to remove excess density. You can, if you desire, carefully bleach back portions of a negative to remove items that are bothersome; increase density and contrast in the negative via intensification; and various types of masks can be employed to alter the look of the print. At one time or another I have employed all of the above options, and others, for my "final" negative.

But once you arrive at your final negative, it's the contrast you choose, the length of exposure, the degree of burning and dodging you employ, and the amount of bleaching that determines the final image, as well as any toning you may do to the print. Options abound.

Since the advent of digital photography I have been besieged by any number of digital enthusiasts encouraging me to switch to digital because the controls are so vast. My reasons for refusing to switch to digital are several. First, I feel no lack of control options available to me in the standard darkroom. Therefore the vaunted digital control has no greater lure to me. Second, although digital imagery has improved markedly over the years, I still do not see it surpassing or even equaling traditional silver prints in quality and glow, especially with today's extraordinary enlarging papers.

Finally, I enjoy the traditional printing process a whole lot more. Once I get into my darkroom to print, I am alone in my fiefdom. Nothing can interrupt me unless I want it to interrupt me. I am in the safelight environment of my darkroom, working slowly and methodically—literally hands on—toward the print that I am seeking. I feel that working in that process is nothing less than a gift.

I'm a professional photographer in the sense that I earn my living through photography exclusively. But I am still a true amateur in the sense that I do it for the love of doing it. That is what lured me into photography 45 years ago, and is what keeps me in it today. I love both the process of working in the darkroom, and the final product that it produces, which I feel is unmatched by any digital process.

Even so, if as a professional I saw that digital processes surpassed the traditional process in quality, I would be a fool to stick with traditional processes. Even if I enjoyed the process better, I would know I was producing second-rate products. But I'm not. I'm still producing first-rate products, in which today's traditional silver-gelatin print remains the gold standard for the finest quality of fine art photographs.

Bruce Barnbaum
June 22, 2015

Preface

The Darkroom Cookbook is based upon a series of articles originally appearing in *Camera & Darkroom* magazine. The articles were inspired by a brief encounter at a camera store. I was browsing the chemical section searching for potassium bromide. When I found it, a woman inquired what it was used for. I pointed to the paper developer she was holding and said, "An ounce of 10% bromide solution in that developer will improve the highlights in your prints."

"Oh my goodness! That sounds too technical to me!"

This made me realize that one photographer's basic craft is another photographer's "Oh my goodness!" Yet, I have never considered myself to be technical. Even though I learned the Zone System in 1976, half the time I do not use light meters and have no use for a densito-meter. To me, adding bromide or carbonate to a developer is about as technical as exposing for the shadows. Every photographer should know that!

Since the first columns appeared in *Camera & Darkroom* magazine, *The Darkroom Cookbook* has taken on a further significance. As a photographer, educator, and writer, I put great importance on the future of the silver-based process. I have a strong desire to keep the flame alive, to pass on experience and techniques to new generations of photographers.

At the turn of the nineteenth century, platinum/palladium printing was the most popular printing process among professionals. It was not until well into the 1920s that silver printing became widely accepted. When it did, platinum/palladium all but disappeared.

Today platinum/palladium is enjoying a resurgence of interest among fine-art photographers. Unfortunately, though there have continued to be a number of practitioners through the years, the wealth of information and techniques developed by thousands of platinum/palladium printers has been lost. The publishing and, specifically, "how-to" book industry was not what it is in our time, and most photographers either abandoned the process or simply took their skills with them to the grave. Today's practitioners are in the position of having to rediscover, or reinvent, techniques that were often considered standard practice.

The purpose of this book, then, is twofold. The first is to enable photographers to create images in the darkroom which reflect their emotional state and response to their subject. The second is to preserve and share the knowledge and techniques that have been so arduously developed by creators in silver.

For those reading this who are already familiar with the first three editions of *The Darkroom Cookbook*, I hope this fourth edition will add to your knowledge and enjoyment of the traditional black and white darkroom process. For those of you just starting to work in a black and white darkroom, or just discovering *The Cookbook*, you are in for a pleasant surprise.

When I first set out to write *The Darkroom Cookbook* in 1992, it was my intent to share little-known photographic facts and formulas which I had gathered over the years. Many of these were on scraps of paper lying about my darkroom, and some were stored in my head. Although I felt there was a need for this information to be shared, the number of photographers that were thirsting for this information came as a great surprise. *The Darkroom Cookbook* not only contains many useful formulas for processing your film and paper, but it is also a compendium of tips, tricks, and techniques handed down from one photographer to the next during the last century.

The Darkroom Cookbook is meant to be a point of departure for creative photographers to discover and explore new techniques and formulas in order to create a unique signature. It is also meant to be a potpourri for photographers who just want to play with their craft. As I like to tell my students, when photography ceases to be fun, it's time to find a different outlet for your creativity.

In spite of what you may think, or have heard, this is not a book about chemistry, darkroom or otherwise. The "complex" chemical formulas in the back of the book are no more than mixtures of powders. The names of the chemicals are on the bottles, you use an inexpensive scale, or teaspoons if a scale is not available, and you mix the published amounts in water. It's no different than mixing flour and eggs with a little milk to make pancakes.

Despite its seeming complexity and daunting technicality, *photography ain't rocket science*. You have to be pretty far off to fail completely. For example, if a formula calls for sodium carbonate anhydrous and you accidentally use monohydrate, what's going to happen? Well, for one, it's not like being on a bomb squad and cutting the wrong wire. The worst that will happen is that the batch of negatives will probably be slightly underdeveloped and you will have to print on grade 3 paper instead of your usual grade 2.

While some of this book remains the same as the second edition there are numerous changes and improvements. For one, I have eliminated formulas which I no longer feel are of value to the modern darkroom worker. These include special developers for Kodak Tech Pan film, which is no longer being made, and intensifiers which contain mercuric chloride, a highly toxic chemical. Silver nitrate intensifiers are nearly as good as mercuric chloride and not as toxic, though they do stain everything. You'll find stain removing formulas under Miscellaneous Formulas.

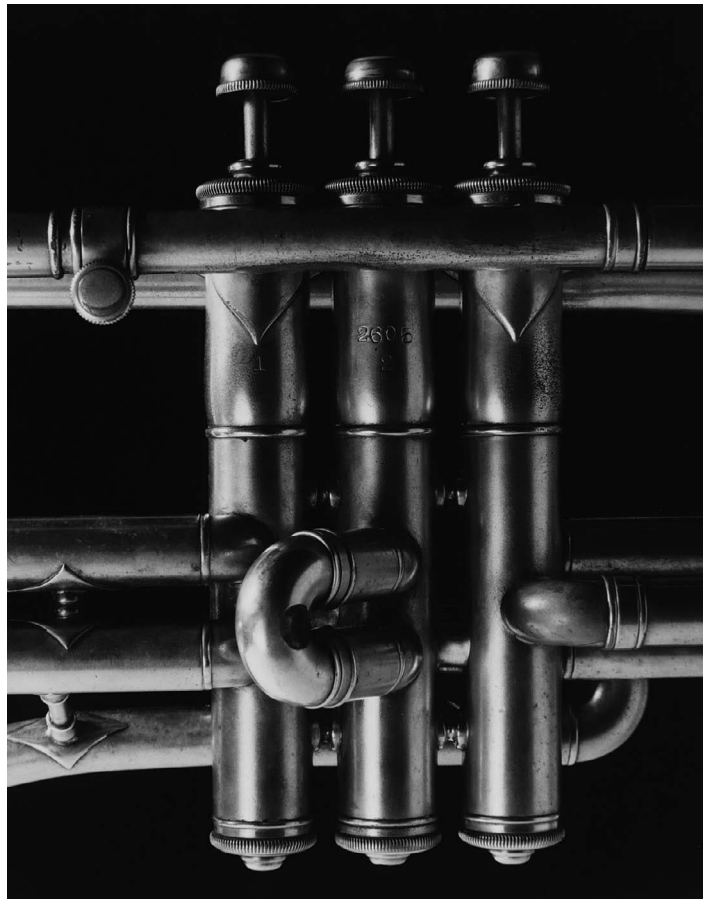
Just for fun there are a few new pyro formulas for those who like to dabble with pyro. More importantly is a chapter on making enlarged negatives for the growing number of darkroom workers who wish to express themselves through alternative processes. A new chapter on printing techniques has been further embellished by contributions from Bruce Barnbaum, Rod Dresser, Henry Gilpin, Les McLean, Saïd Nuseibeh, and John Sexton.

The importance of this book to the future of darkroom workers was foreseen in the Preface to the first edition of *The Darkroom Cookbook*, published in 1994. The last sentence of that Preface reads, "Today, it is possible to take negatives to a lab for processing and printing tomorrow." Well, tomorrow is here. Good black and white labs, while still around, may not be for much longer. If you intend to work with black and white film you should at least know how to develop your own film. You may, or may not, wish to mix your own formulas. I say this because there are many excellent pre-mix developers available today, among them Ilford Ilfotec DD-X, Tetenal Ultrafin, as well as John Wimberley's WD2H (available from the Photographers' Formulary, see Material Sources).

Which brings us to the question, why work with black and white film at all? What we are witnessing today is not much different than the transition from platinum/palladium printing to silver printing in the 1920s. In fact, it was oft said that silver-based emulsions could never replace platinum printing because of the inherent beauty of the platinum print. Yet it was not long before platinum/palladium printers of the stature of Edward Weston and Imogen Cunningham were printing on silver-based emulsions.

This is not to say that silver printing will disappear. Platinum/palladium printing is still with us, even if Weston and Cunningham did jump ship. As is gum dichromate, cyanotype, albumen, and printing-out paper, among other alternative processes. But is the digital print better than silver? Is it as good as platinum? Gum? In every case, it's not a matter of one being better than the other. It is simply a matter of difference. And as our French counterparts would say, *vive la différence*!

For the artist, it comes down to how do you wish to spend your creative time? Those of us who work in silver choose to spend our time in the cool quiet of the darkroom, under the subdued otherworldly glow of an orange light, hearing the flow of water, experiencing the solitude which is near impossible to find outside of the creative darkroom space, padding softly from the enlarger to the trays and back again, watching the miracle of the image appear on the surface of the paper . . .



Cornet, 1984. © 2016 Larry Hussar. All rights reserved. Courtesy of the artist. 4 × 5 inch Tri-X Film developed in Kodak D-76.

Introduction to the Fourth Edition

Not very long ago I had a conversation with University of Illinois at Chicago Professor Emeritus, Alfred Maurice. Fred—as he prefers to be known—began his career while still in high school, painting murals for the WPA during the Great Depression. In his long and illustrious career both as a painter and professor of art, Fred taught photographic print making to his students as one of four branches of fine art printing. Fred said he considers printing negatives akin to silkscreen; only instead of using ink one uses light.

For his part, Ansel Adams was fond of saying that he was not as much a photographer as he was a printer. This was his way of acknowledging his friends, Wynn Bullock, maxim that photography is twenty percent in the camera and eighty percent in the darkroom. This is as true today as it was in the last century.

It is fortunate for fine art photographers/printmakers that digital imaging has stepped in to take over the commercial-advertising end of photography. This frees the rest of us to utilize the photographic process purely to express ourselves and to record the world that we live in a way that one million selfies can never hope to match. Each image we develop, whether it is on a roll of thirty-six or a 4 × 5-inch negative, is singular, in that it is handcrafted in a way digital imagers can never hope to accomplish with their point-and-shoot process.

Each print that we make is also unique. You will never see a pile of darkroom prints being casually walked over on the showroom of a photography convention, the way I have personally seen digital fine art prints treated; the "artist" blithely aware that he or she can press a button and create a new one instantly—the fast food of art. Collectors of fine art prints understand this as well.

While creating this 4th edition I became acutely aware that only one woman artist, France Scully Osterman, was represented. In this edition I have tried to rectify the lack of parity. In addition to France, you will find submissions by Christina Z. Anderson, Martha Casanave, Marie M. Curtis, Jill Enfield, Amanda Means, Alexandra Opie, and Kimberly Schneider.

There are several additions to this revision. Chief among these is "How to Make Digital Negatives." This may be controversial for some photographers. However, the ability to create a digital negative is an important skill for those working with alternative processes. The method is that of Ron Reeder and written by Christina Z. Anderson.

An addition to the *Cookbook* that I personally feel is important is the calculation for print times when enlarging and reducing a print. This is for me one of the most valuable calculations for the printmaker. You will find this simple mathematical formula in Appendix 6, Time Adjustment for Enlarging and Reducing Prints.

I have also added a section in Chapter 1, Planning a Darkroom, about septic systems. This is an area largely ignored in most darkroom books, but it is essential knowledge for those workers in silver living in remote areas.

A section on lith printing has been added along with the formula for D-85 aka Kodalith. A formaldehyde-free formula than can be used for lith printing, Defender 15-D, has also been added. (Defender 15-D is also known as DuPont 15-D; DuPont bought Defender and all of their formulas and renamed them.) Ilford ID-13 is also said to work well for lith printing, though I have not had the opportunity to try it. All three formulas will be found under the heading of High-Contrast Developers for Film as they were originally intended for that purpose.

The unrevised 3rd edition contained six errors, four of which were corrected in subsequent printings. The single most important and embarrassing error was leaving out sodium metaborate in John Wimberley's WD2H+ formula. This has finally been corrected in this revision. I take full credit for this *faux pas*. To add insult to injury, John's last name was misspelled in the original 3rd edition—but only once. That, too, has been corrected.

Finally, suppliers, emergency hotlines, and online resources have been updated in this revision.

For this edition I am reinstalling the Darkroom Cookbook Forum on my web site. It was taken down because my original site became corrupted and I had to rebuild it from scratch. Rebuilding the forum was too much for me at the time. I now have a better grasp of how to build web sites and will do my best to maintain the forum in the future. You'll find it at www.darkroomcookbook.com.

I wish you many hours of darkroom creativity and fine print making.

Introduction to the First Edition

Today everybody seems to be a genius, but nobody can draw a hand anymore.
—Renoir

Why invest the time and money necessary to develop and print your own photographs? Historically there have been many photographers, especially in the field of photojournalism and commercial photography, who have never printed their own images; one of the most famous would be Henri Cartier-Bresson, proponent of capturing the "decisive moment."

But consider that the camera only records what we see. Tripping the shutter only freezes a moment in time. The moments recorded by Cartier-Bresson have become images only after they have been developed and printed in a way they can be presented and shared with others in magazines or through books and exhibits. The fulfillment of the photographer's inner vision is not realized until the film has been processed and reproduced.

If your interest in photography does not go beyond recording moments in time, there is no reason to practice darkroom techniques. The question to ask yourself is, do you wish to become a creator of images? If you do, then you must learn to develop and print your own work.

Brett Weston, one of the greatest practitioners of the West Coast School of Photography, pioneered by his father, Edward Weston, Ansel Adams, Wynn Bullock, and Imogen Cunningham, destroyed almost seventy years' worth of negatives on his eightieth birthday because he refused to allow anyone else to print his work. Why? To paraphrase Brett, there may be someone who could print his work better, but then it wouldn't be his.

Wynn Bullock was fond of saying that photography was 20 percent in the camera and 80 percent in the darkroom. Ansel was heard to say he wasn't as much a photographer as he was a printer, while Imogen said that printing was the hardest thing one could do in photography, but she refused to allow anyone else to do it for her. When Edward was no longer able to print his own negatives because of Parkinson's disease he spent ten years training his sons Brett and then Cole to print his work exactly as he would, including watching over their shoulders for each negative and preparing copious notes for them to follow so there could be no deviation after he was gone.

There was a time when photographers each had their own version of a particular formula and knew several others that enabled them to achieve specific results. In the field, the photographer could concentrate on composing images and achieving the best possible exposure, aware that anything was possible in the dark. Many of these skills have been overlooked by contemporary darkroom workers.

Through *The Darkroom Cookbook* you will learn methods to alter and improve published formulas. Through the use of chemicals and additives you can fine-tune over-the-counter or published formulas to increase or decrease contrast and enhance tonality. If you take the title of this book literally, you can think of yourself as either a cook or a chef. A cook follows a formula; a chef creates formulas by adding or subtracting ingredients according to taste.

Some of the greatest practitioners have been cooks. Edward Weston learned the simple formulas he used throughout his long and prolific career in photography school. Paul Caponigro still mixes and matches formulas to suit his taste. Edward could be considered a cook, Paul a chef.

Cook or chef? It is not important which, only that you are able to obtain the results you desire. To what end? To give to your work a life and expression that is not always possible and, at the very least, is seriously curtailed by dependency on packaged formulas.

But even packaged formulas can be used by a chef to great advantage. Mixing soft-working, warm-toned Ilford Warmtone® with varying amounts of cold-toned Ilford Coldtone® paper developer will open entire new worlds in print color and tonal scale. The manufacturers do not suggest this in their literature, but then the manufacturers are not artists. They're probably not even photographers.

The formulas and techniques in this book, while not exhaustive, have been chosen to aid the photographer attempting to express a personal vision. It begins with the choice of film developer to emphasize speed, graininess, or acutance. Some photographers may be surprised to learn there are so many. I assure you this only scratches the surface. Why are so many developing formulas necessary? After all, if you get to know one or two formulas what else do you need, right? In the early stages of learning the craft this is a good idea. But notice the headings for each set of developers: high-definition, low-contrast, fine-grain, high-energy, tropical. There is a developing formula to create almost any effect you can imagine; sharp, clean edges or superfine grain; low-contrast, long tonal scales; or high-contrast and short tonal scales. There are developers that will allow you to process film in the Brazilian rain forest, at temperatures near 100ºF, and some that permit you to develop in Antarctica at below 0º! Complete knowledge of one or two developers is important, but knowing what else is available and how to make use of it to create the image you want is vital.

Paper developers also abound in *The Darkroom Cookbook*. While printing techniques such as dodging and burning affect the emotional impact of a print, the choice of developer can enhance, or detract, from the image's main message. Each developer formula varies slightly in its rendition of blacks. It is a good idea to select one warm-tone paper and one cold-tone paper and, over a period of time, test each of the other print developers. Keep a book of the resulting prints, which can be referred to when a given tonality is desired.

When you decide which developer/paper combinations are applicable to your style, try several, or all, of the toning formulas. Keep a book of these also. These reference sources will greatly enhance your ability to communicate through your images.

Under Miscellaneous Formulas you will find a number of useful items. Kodak S-6 stain remover, for example, which will help remove both oxidation and developer stains from film. I hope you will never need to use it, but I have included it just in case!

Under Printing-Out Paper Formulas you will find a formula for sensitizing paper. There are many others, but this one is a start. If it should ever come to pass that silver papers are no

longer available, this may be one way to continue hand-making prints. Or you may find that coating your own paper may be worth experimenting with for the special results that can be obtained.

Intensification and reduction techniques are of special value to photographers. Even Ansel Adams required the technique of local negative intensification to save his most famous photograph *Moonrise, Hernandez, New Mexico* c. 1941. The negative was exposed for the moon's luminance, at 250 c/ft^2. As a result the foreground was badly underexposed and difficult to print. Ansel intensified the foreground of the 8 $\times$ 10 inch negative while carefully holding the buildings, sky, and moon out of the solution. A simple procedure. But without the necessary darkroom skills the image might not have survived.

Seattle Street Photography, 2016. © 2015 Mark and Timothy Booth. All rights reserved. Courtesy of the artists. Bergger BPF 200 film developed in Thornton two-bath developer. Photo made with Leica M rangefinder camera.

Acknowledgments

There are two husband-and-wife photography teams who influenced and encouraged me to become a photographer. They are Frank and Daughtee Rogers, and Cornelia and Rodger Davidson.

Frank and Daughtee gave me a solid grounding in basic photography and darkroom technique, unselfishly sharing their knowledge. They taught me to respect the craft and made me aware that it was more than a livelihood I was learning; it was a tradition. Daughtee was a master printer and retoucher. Frank did most of the photography. It was also Frank from whom I first heard it said, "There are no secrets, only photographers who think there are."

Cornelia and Rodger taught me basic color technique. Their specialty was color transparency, specifically Ektachrome E-3, which they processed by hand every evening in their West Los Angeles home for commercial, architectural, scientific, and fine art photographers.

It is safe to say that without Frank, Daughtee, Cornelia, and Rodger's patient guidance and teaching I would not have survived the first difficult years of my photographic career.

Pertaining directly to *The Darkroom Cookbook*, the hero I want to acknowledge is Samy Kamienowicz, owner of Samy's Camera in Los Angeles. In the early 1980s, Samy made a present to me of three *Morgan & Lester Photo-Lab-Indexes* from the 1930s and '40s. This generous gift sparked my interest in older formulas and darkroom techniques and made it possible, at a later date, for me to share them with other photographers. Without Samy, there would be no *Darkroom Cookbook*.

Ira Katz, of Tri-Ess Sciences in Burbank, California, freely shared his vast knowledge and experience of chemistry. Ira's knowledge was not limited to photo chemistry, and his insights and suggestions for storage, mixing, and safety are an indispensable part of this work. Sadly, Ira passed away on April 9, 2005.

A number of workers in silver have contributed to this Fourth Edition. Among them are Christina Z. Anderson, Bruce Barnbaum, Martha Casanave, Marie Curtis, Rod Dresser, Jay Dusard, Jill Enfield, Patrick Gainer, Richard Garrod, Henry Gilpin, Gordon Hutchings, Sandy King, Les McLean, Amanda Means, Saïd Nuseibeh, Alexandra Opie, France Scully Osterman, Mark Osterman, Ron Reeder, Tim Rudman, Ryuijie, Kimberly Schneider, John Sexton, and John Wimberley to share some of their personal darkroom methods to which they have each graciously assented. In addition Tim Rudman edited Chapter 10 on toning; David Wood of .dr5 Lab edited the section on reversal processing in Chapter 13; and the Ostermans contributed important content to Chapter 14 on printing-out paper.

Special thanks is due to Mark Booth of Washington, Patrick Gainer of West Virginia, Ian Grant of the U.K. and Turkey, Larry Hussar of Michigan, and Paul Lewis of Canada for their many suggestions and technical editing of the manuscript. I would also like to thank Donna

Conrad for her invaluable final edit of the manuscript. A sincere thank you is due to my production editor, Mhairi Bennett, and the publisher, Routledge. Without their belief in film as a viable medium of expression and faith in *The Darkroom Cookbook* as a conduit for sharing ideas between photographers the Fourth Edition would never have been written much less published.

For the previous, Third Edition, I was introduced to Reece Vogel, a friend of Brett Weston, by David Wood. Reece introduced me to Michael Andrews, Richard C. Miller and his daughters, Janice and Margaret. Between them they are in possession of an extensive archive of letters, notes, and Richard's personal photographs of the Westons. Among them are Richard's handwritten notes with both Edward and Brett's formulas for Amidol. Even though they were in the process of creating their own portfolio of this work for reproduction they generously granted permission to reproduce the notes with the formulae and a photograph of Brett. This is a gift from Richard and his daughters to all photographers for all time.

For this revision special thanks go to Eric Joseph of Freestyle Photographic Sales in Hollywood, California, www.freestylephoto.biz, and Mirko Boeddecker of Fotoimpex in Germany, www.fotoimpex.de. Both Freestyle and Fotoimpex have done more than anyone to keep film materials available. Like the Photographers' Formulary, both Freestyle and Fotoimpex will ship both dry and wet chemicals.

I would also like to remind you that Photographers' Formulary, www.photoformulary.com, packages many of the formulas found in the *Cookbook*. I urge you to support companies such as Freestyle Fotoimpex, and Photographers' Formulary, even if they can't compete in price with some of the larger camera outlets.

Contributing Photographers

Christina Z. Anderson
Chapter 14—The Bleach-Etch process, aka Mordançage.
Chapter 15—How to Make a Digital Negative.
Christina Z. Anderson's work focuses on the cultural, spiritual, and physical landscape expressed in 19th century techniques, primarily gum and casein bichromate. Her work has shown nationally and internationally in 100 shows and 40 publications. She has authored several books, two of which—*The Experimental Photography Workbook* and *Gum Printing and Other Amazing Contact Printing Processes*—have sold worldwide in 40 countries, and is co-author of *Handcrafted: The Art and Practice of the Handmade Print* (2014, Wang, Jianming, King, Chinese text only), now in its second publication. A new book on gum printing is under contract with Focal Press. Anderson is Associate Professor of Photography at Montana State University, Bozeman. To see her work, visit christinaZanderson.com.

Bruce Barnbaum
Chapter 8—An Efficient Way to Get to the Final Print.
Bruce Barnbaum was drawn to photography through his love of the landscape, and as time passed his interests expanded into architectural subjects, to abstracts, and anything that he considered visually interesting. Although he photographs and prints both black and white and color, he is most well known for his black and white work, as it is his area of prime interest. He has been teaching workshops since 1972, founding the Owens Valley Photography Workshops in 1975 and the Photographic Arts Workshops in 1991.

Three books of his fine art photography have been published: *Visual Symphony* in 1986, followed by *Tone Poems—Book 1*, 2002 and *Tone Poems—Book 2*, 2005 (the latter two produced with a CD of classical piano music in collaboration with pianist Judith Cohen), as well as his noted photography textbook, *The Art of Photography: An Approach to Personal Expression* and his latest book *The Essence of Photography*, all books published by Rocky Nook. More of Bruce's work can be seen at www.barnbaum.com.

Rod Dresser 1933–2011
Chapter 8—Exposure and Developing Technique for Photographic Printmaking.
Rod Dresser is a graduate of the United States Naval Academy. He served on destroyers and submarines while in the Navy. After retirement he changed a photographic hobby into a career. Rod was an assistant to Ansel Adams and after Adams' death Rod took over the position as business manager for the Ansel Adams Publishing Rights Trust.

Rod later spent five years in San Francisco doing commercial photography. His clients included Apple, Union Bank, University of California, Harvard University, and others. He

returned to the Monterey Peninsula and focused his energy on fine art. Rod's work is in major museums and collections throughout the world. His images are in black and white in the West Coast tradition and tend toward minimalism. More of Rod's work can be seen at www.roddresser.com.

Jay Dusard
Chapter 11—Print Bleaching.
After teaching photography for seven years at Prescott College, Arizona, Jay Dusard was awarded a 1981 Guggenheim Fellowship to do view camera portraits of working cowboys, buckaroos, and vaqueros from Canada to Mexico. His solo publications include *The North American Cowboy: A Portrait* (1983), *Open Country* (1994), and *The California Vaquero* (2005 portfolio).

Considered for many years one of the most influential photographers in the West, Jay is uniquely a master of both the landscape and portrait genres. One of the finest black and white darkroom printers, he is now concentrating on the presentation of his rarely seen abstractions. Jay lives with his wife, Kathie, near Douglas, Arizona, where, between trips to photograph and teach workshops, he punches cows and plays jazz cornet. More of Jay's work can be seen at www.tinysatellitepress.com.

Patrick Gainer 1927–2015
Chapter 3—Ascorbic Acid: Developing Agent or Anti-Oxidant?; Three Long-Lasting Single-Solution Sulfite-Free Developers.
Sixty years ago Patrick Gainer see-sawed his first roll of Verichrome Pan in a tray of MQ. The darkroom was a large closet in his home in Webster Groves, Missouri. At about the same time he began taking oboe lessons. His photographic hobby waxed and waned through moves to New York City, Parkersburg, West Virginia, a short stint in the Army Corps of Engineers, and back to his birthplace in Morgantown, West Virginia, to study engineering. It was put to good use during his employment as an Aeronautical Research Engineer by NACA-NASA at Langley Research Center.

Patrick was also first oboist with the Norfolk Symphony Orchestra. His photographs of conductors, musicians, and guest artists appeared in many program booklets. He is retired and living in Tanner, West Virginia.

Richard Garrod
Chapter 1—How safe is your Safelight?
Richard Garrod majored in photography at Pasadena City College and studied at private workshops with Ansel Adams, Brett Weston, and Minor White. In 1953 Richard met Edward Weston and in 1956 visited Brett Weston in his home in Garrapata Canyon. In 1955 he was a student in Ansel Adams' first postwar workshop at Yosemite. In 1961, *Art in America* magazine selected Garrod as one of the top-forty "New Talent USA" members and one of the seven featured photographers. In the introduction to the book *Garrod and Gilpin Photographs*, Ansel Adams referred to Garrod's work as displaying ". . . a great solidity and constant awareness of beauty."

Garrod has taught photography workshops for more than thirty years, including Ansel Adams' Workshops at Yosemite. His photographs have been printed in photography

publications, including books, magazines, catalogs, corporate annual reports, cards, calendars, posters, and appointment books. They have also appeared in more than fifty solo and group exhibitions, and are held in many private and institutional collections.

Henry Gilpin 1922–2011
Chapter 8—Changing Print Contrast.
Henry Gilpin's photographic life began in Yosemite in 1959 when he held in his hands the work of Paul Strand, Walker Evans, Edward and Brett Weston, Ansel Adams, and other early masters. Since that first workshop he has seen photography expand in many intriguing directions, including electronically generated images. But for Henry, his first love is the full tonal range, unmanipulated, silver image to which he remains faithful.

Henry makes photographs merely for the enjoyment of it and considers himself as the audience. His work keeps him seeking the light, the design, and the order that is important to him.

Henry instructed students in using the Zone System at Monterey Peninsula College from 1963 to 2000, for the Ansel Adams Yosemite Workshops, and many others.

Gordon Hutchings
Chapter 6—Simple Pyro.
Gordon Hutchings began taking pictures when he was eight years old with a plastic camera acquired with a cereal box top and twenty-five cents. In high school, he was given a 5×7 revolving back "Cycle Graphic" with an uncoated Berlin Dagor in a most uncertain compound shutter. He set up a primitive darkroom in the cellar and was soon making contact prints. This kindled a life long love of black and white photography.

In the late 1970s, Gordon was dissatisfied with the diminishing supply and quality of classic paper and film and felt a better developer might help. After much experimentation, he created a new pyro developer he called PMK. About 1980 he had a one-man show and photographers who saw it immediately began to clamor for a workshop with his new developer. Gordon taught many workshops during the 1980s and decided there might be enough interest to write a book on the subject. *The Book of Pyro* was published in 1992 and was immediately successful. The book is in its fifth printing and has sold over 20,000 copies.

Since that first workshop in 1980, Gordon has expanded the subject matter and has taught nearly 100 workshops in a variety of subjects. He has taught many on his own and for others including the Photographer's Formulary Workshops in Montana, the Ansel Adams Workshops in Yosemite Valley, the California State University in Santa Cruz and Sacramento, and has taught large format photography at the Maine Photographic Workshops for the last ten years. Gordon has written for various photography magazines, predominately *View Camera* magazine. He has had numerous shows around the country and his work has been published here and in Europe. Gordon can be reached at gehutch@surewest.net.

Sandy King
Chapter 6—Pyrocat-HD.
Sandy King is an educator and fine art photographer who is especially interested in the handmade photograph. He is an expert in several different historical printing processes, including

carbon transfer, Vandyke and platinum/palladium. He also experiments with developer formulations, especially pyro staining developers. His writings on this subject can be found at http://www.pyrocat-hd.com.

Sandy's work has been exhibited widely in the U.S. and in China, Canada, Mexico, and Turkey, and published in *Photovision, Silvershotz*, and *View Camera* magazines, among others. He has conducted many group and one-on-one workshops on carbon printing and written extensively on alternative printmaking, including carbon transfer, kallitype, and Vandyke, as well as the history of Spanish Pictorialism. His latest book on alternative print making, *Handcrafted: The Art and Practice of the Handmade Print*, co-edited with Christina Z. Anderson, Zhong Jianming, and Sam Wang, published in 2014 in Hangzhou, China, is now in its second edition.

Sandy's work, and some of his writings, can be seen on his web site, http://www.sandykingphotography.com/artist-info/biography.

Les McLean

Chapter 8—Pre- and Post Flashing to Control Contrast.

Well known for his fine art black and white printing skills, Les has traveled throughout the United Kingdom for twenty years and for the past ten years in the United States and Canada, leading workshops in traditional black and white printing as well as in many other areas relating to the craft and art of photography. For fifteen years in colleges throughout the United Kingdom, Les has taught master-classes in black and white darkroom practice and more recently in digital imaging and print making.

Les has regularly written for many of the popular U.K. photographic magazines since 1988 and currently writes for *Black and White Photography* in the United Kingdom. In 2002, his first book was published, *Creative Black and White Photography*. His black and white prints are held in museums and private collections throughout the world. More of Les's work can be seen at www.lesmcleanphotography.com.

Saïd Nuseibeh

Chapter 8—Rescuing Thin Shadows.

Saïd Nuseibeh is a photographer specializing in architecture, specifically of the Arab and Muslim worlds, who for fifteen years printed Ruth Bernhard's exquisite negatives (1990–2005). Just as Bernhard helped liberate the female form from the titillating gaze, so Nuseibeh works to provide new non-violent modes of access to Islamic culture. He was included in a *PDN* (*Photo District News*) article on Master Printers in February 2004. Nuseibeh has been the recipient of a Watson Fellowship and a Fulbright award. You can see his work at Scott Nichols Gallery, San Francisco, and Darat al-Funun in Amman, Jordan, or visit www.studiosaid.com.

Alexandra Opie

Chapter 14—Printing Out Processes.

Alexandra Opie works in experimental and historic photographic processes. Her current work engages in particular with history and materiality in photography. She received a BA from Southern Oregon University in 1997 and an MFA from the School of the Museum of Fine Arts, Boston in 2001. Her artwork has been shown in museums and galleries nationally. She teaches photography at Willamette University in Salem, Oregon.

Scully & Osterman
Chapter 14—On Gold Toning; Collodio-Chloride Printing Out Paper.
Mark Osterman is Process Historian for the Center for Legacy of Photography at George Eastman House International Museum of Photography. France Scully Osterman is guest scholar at the George Eastman House and manages Scully & Osterman Studio at their Rochester home.

The Ostermans are known internationally as respected artists, historians, and teachers of historic photographic processes. They are both represented by Howard Greenberg Gallery, in New York City and the Tilt Gallery in Phoenix, Arizona. To see more of the Osterman's work and find out about the wet-plate collodion process visit www.collodion.org.

Tim Rudman
Chapter 10—Toning: Workflow, Pitfalls, Choices, and Preferences.
Tim Rudman has an international reputation as a photographer, printer, and expert on darkroom techniques, and his four critically acclaimed books on printing, toning, and lith printing are widely regarded as essential reading in their fields. His name has become inseparably linked with toning and with the lith printing process, which, through his books, has become accessible to all and now enjoys widespread popularity as a creative printing process.

Tim has conducted darkroom workshops in the UK, Ireland, Spain, Canada, America, and Australia. He is widely published and exhibited and his prints are held in public and private collections around the world. His newest book, *Iceland, An Uneasy Calm*, following an exhibition of the same name, was released in September 2015. More of Tim's work can be seen at www.timrudman.com.

Ryuijie
Chapter 10—Split Toning with Polytoner.
Born in Otaru, Japan, Ryuijie showed an inclination to the arts at an early age. He learned underwater photography while stationed in Guam pursuing his long-time interest in scuba diving. An exhibit of Jerry Uelsmann's photographs inspired him to pursue fine art black and white photography. For twenty-eight years, Ryuijie has steadfastly pursued his own photographic vision and has acquired a reputation for his exquisite platinum/palladium prints in addition to his traditional black and white work. More of Ryuijie's work can be seen at www.ryuijie.com.

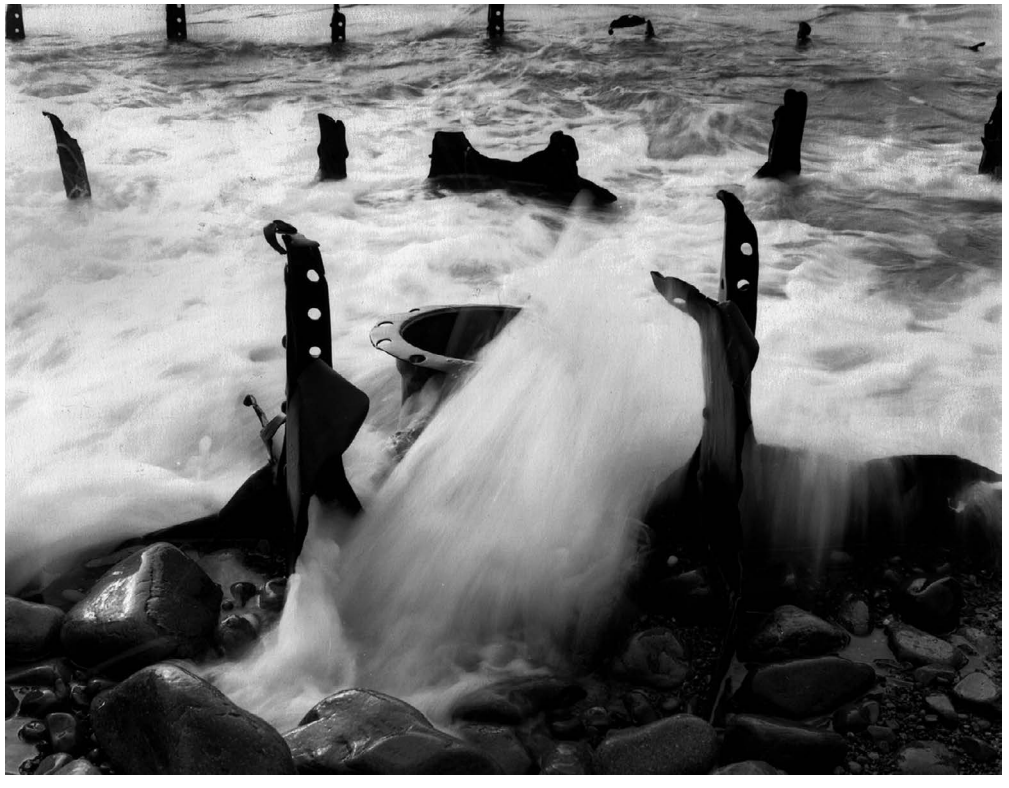
John Sexton
Chapter 8—Steaming Black and White Fiber-Base Prints.
John Sexton is known worldwide as a photographer, master print maker, workshop instructor, and lecturer. Author of four award-winning books, *Quiet Light*, *Listen to the Trees*, *Places of Power*, and most recently, *Recollections: Three Decades of Photographs*, Sexton is best known for his luminous black and white images of the natural environment. A former director of the Ansel Adams Workshops, he has conducted hundreds of photography workshops throughout the United States and abroad. Sexton served as photographic assistant and consultant to photographer Ansel Adams from 1979 to 1984. His finely-crafted large-format photographs have appeared in countless publications and are included in permanent collections

and exhibitions throughout the world. In 2005, Sexton was honored with a Lifetime Achievement Award from the North American Nature Photography Association.

John Wimberley
Chapter 6—John Wimberley on WD2H+.
John Wimberley has been photographing the landscape in black and white since 1969. Since then, he has garnered an international reputation as a master photographer and printer, has had more than sixty exhibitions, and is represented in over five hundred public and private collections. His *Descending Angel* is one of the best-selling fine-art photographs of the last thirty years.

After seven years of research, John Wimberley published his noted article on WD2D in the October 1977 issue of *Petersen's Photographic* magazine. WD2D was the first pyrogallol developer formulated for the modern, post-1950s generation of films, and it sparked a revival of interest in this classic developing agent that continues to the present. WD2D differed from the classic three solution pyrogallol formulae of the past by eliminating the problematical B solution of sodium sulfite, and by adding the developing agent metol to the pyrogallol at a ratio of 1:10 to increase film speed. More of John's work can be seen at www.johnwimberley photography.com.

David Wood
Chapter 13—Contributed valuable content and formulas for reversal processing.
David Wood has worked as a professional photographer for over seventeen years in New York City. He attended Citrus College in Azusa, California in 1980 and holds an AA degree in Photography. He is the inventor and sole proprietor of the unique dr5 CHROME transparency film process, www.dr5.com. David now enjoys a client base of over two thousand professional and advanced-amateur photographers hailing from six continents. Currently, David has rendered the dr5 CHROME process compatible with more than twenty-five of the world's most popular black and white film types. He personally handles hundreds of rolls a week at his Denver, Colorado lab to insure the superior results. David resides with his wife Kathi and his Jack Russell terrier Buddy in their modest one hundred-year-old brick home located above the dr5 lab. For information on reversal processing and other services provided by .dr5 Chrome Labs visit www.dr5.com.



Pynant, Nr Trefor, Nth Wales, 2016. © 2015 Ian Grant. All rights reserved. Courtesy of the artist. APX100 film developed in Rodinal 1:50.

Alphabetical Index of Formulas

MQ = Metol-Hydroquinone
PQ = Phenidone-Hydroquinone

List of Formulas

Many of the formulas found in the *Cookbook* can be purchased pre-packaged by the Photographers' Formulary (PF). You may wish to try a pre-packaged formula before purchasing bulk chemicals. Should you like the results you can later purchase the bulk chemicals to mix it yourself and save money. Any formula already packaged by PF is indicated with their initials next to the formula. Most formulas not packaged by PF can be special ordered. Their contact information can be found in Resources.

TONERS 303

Blue Toners 303

Brown Toners 307

Copper Toners 315

Dye Toners 316

Green Toners 318

Protective Toners 320