

SLACUM:

Traditional Fine Gun Finish

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Compiled from Various Sources

by

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TABLE OF CONTENTS

Preface	4
Introduction	5
Materials:	8
Resins	10
Colorants	11
Driers	13
Fillers	13
Waxes, Non-drying Oils, Polishes, &c.	14
Secret Ingredients	15
Mixtures & Methods:	18
Part 1: Traditional Finishes of DGJ	19
From Ernie, aka “Damascus.”	20
From Peter Harris, aka “Salopian.”	22
From Diggory Hadoke, aka “Dig” or “Small Bore.”	24
From Ken, aka “Ken61”, A Shellac Finish	26
From Tony Treadwell, aka “Ballistix999,” <i>in memoriam</i>	27
Part 2: Other Published Traditional Finishes	28
James Virgil Howe. <i>The Modern Gunsmith</i> . 1941	29
A. Donald Newell, <i>Gunstock Finishing and Care</i> . 1949	35
Desmond Mills. <i>Amateur Gunsmithing</i> . 1986	43
David L. Westbrook. <i>Professional Stockmaking</i> . 1993	44
David Westbrook: “The Perfectionist’s Finish”	44
Bruce Farman: A Tung Oil Finish	46
Nik Kypridemos. <i>Linseed Oil Finish</i> . 2016.	48
James MacDonald. From James Purdey and Sons Gunmaking Video Series. 2020	50

PREFACE

The following pages are an attempt at synthesizing and summarizing the current information available to those interested in *slacum*, the traditional British stock finishes for fine guns and rifles.

In that vein, nothing here is new. And it is offered with sincere respect and gratitude for those who have gained expertise through years of putting hand and oil to stock.

But this is also not a simple collection: It is neither a rote gathering of old ‘recipes’ out of historic books, nor a ‘cut and paste’ of current discussions on finishes. These are my ‘notes,’ so to speak, of the more complete discussions that can be found elsewhere, an effort at constructing concise, step-wise, bullet-point sets of instructions for finishing a fine double gun.

To all those who share in the journey: do your best and have fun. I’ll do the same.

~ Jim (aka *woodreaux*)

June 2020

INTRODUCTION

British gunmakers refer to the varnish used for finishing fine guns and rifles as ‘slacum,’ and it is slacum that produces the distinctly refined luster for which the stocks of London best guns are celebrated.

The first difficulty one encounters when hoping to finish a gun with slacum is the jealousy with which the makers of fine British guns have guarded their trade secrets, and chief among these secrets may be the precise composition of slacum. Even the most diligent of searches unearths little more than the most basic definition, leaving the searcher more frustrated and confused than when he began in many cases.

In fact, many descriptions of a slacum recipe start with phrases along the lines of “My father was the friend of this old gunsmith who apprenticed under a fellow who learned how to make slacum from one of the old-timers from Holland and Holland. Here’s the recipe. Just don’t tell anyone where you got it.” From official sources, the description goes something like this: “At Boss, we use a slacum, which we make according to an ancient recipe. It consists of oil, pigments, and some waxes and driers. That’s all we can tell you.”

The result is that if one wants to finish a gunstock with slacum, he must rely on a fair amount of hearsay and extrapolation. But not all hearsay is erroneous, and much can be learned from extrapolation.

After all, slacum is, in the end, simply a varnish created for functional works of woodcraft at the zenith of pre-industrialized (i.e. pre-plastic) fine wood finishing. So

one can undoubtedly infer much from the work of other wood finishers and in particular in the work of luthiers, *mutatis mutandis*.

Indeed, much of the best information available today about fine finishing of objects intended for hand-use comes from makers of musical instruments, who take the mystical art of wood finishing to an even deeper witch-craft and alchemy than that of the gunmaker. Whereas gunmakers are only concerned with the appearance, feel and protection a finish confers, luthiers add to this list the occult element of sound.

All that said, the current iteration of this guide to slacum does not include much about the finishing of musical instruments. But it does have quite a bit of information passed along by the ‘oral tradition’, which in modern times is known as the internet forum.

In particular, the *Double Gun Journal* online forum¹ has been a great source for learning about finishing of double barrel shotguns, and some of the members have worked in the trade for years. Their generosity in sharing from their experience is greatly appreciated, and the first half of this text is a summary and digestion of the information about slacum that was shared on the *DGJ* forum.

Much of the information here also comes from books and magazine articles, including some of the most-cited gunsmithing books from the early 20th century. The finishes that are included are not all exclusively British, since much can be learned from those non-British gunsmiths, such as James Virgil Howe, who describe their own methods of finishing fine guns in a way that mimics the “dull London oil

¹ <https://www.doublegunshop.com/forums/>

finish.” However, all of the finishes included here are either of British origin or in the British style.

Not included here are any of the plastic finishes that dominate the market today, nor, with one or two exceptions, are any of the finishes that can be bought pre-made over the counter such as those made by Napiers or Trade Secrets.

And this leads us to the second difficulty for those interested in making and using slacum: the scarcity of traditional components. This is true not only of the more esoteric ingredients such as ‘rose pink’ and ‘butter of antimony’ but also of the basest of materials, such as turpentine and boiled linseed oil, as the stuff one finds on the shelves of stores today bears only the faintest resemblance to the genuine article as used in times past. As Steve Voigt has said, today’s BLO resembles the BLO of yesteryear about as much as wonderbread resembles stone ground wheat bread.²

For some, all of this adds up to too much hassle to be worthwhile. And for those, there are plenty of off-the-shelf finishes with traditional sounding names - and some with presumably traditional ingredients - that can give satisfactory enough results. However, for those with the craftsman’s inclination toward what David Pye famously called the ‘workmanship of risk’,³ the creation and application of slacum offers the rich reward of a unique, personal finishing touch, resulting in a gun that is both beautiful to behold and a joy to handle in the field.

² From Mortise and Tenon Magazine, August 2020. A great article for those interested in traditional wood finishes.

³ Pye, David. *The Nature and Art of Workmanship*. United Kingdom, Herbert Press, 1995.

MATERIALS:

All traditional gun finishes consist of drying oil⁺ and additives that change the character or workability of the oil. These additives include resins[‡], driers, thinners, colorants, and fillers. In some cases, a particular ingredient may serve multiple purposes.

By the strictest definition, slacum, the traditional British gun finishing oil, is either a varnish (oil and resin 'cooked' together) or a varnish/oil mix (oil and resin mixed but not 'cooked'). The particular oil, resin, and additives used are what make each slacum unique.^⁶

This section contains a list and descriptions of some of the most commonly used components of a traditional slacum. It is intended to be a comprehensive list only of the ingredients used in the finishes included in this document.

⁺ Alternatively, one might say, a solvent. In some American finishes, particularly, the medium for the finish might have been alcohol as a base for shellac. There are several spirit-based finishes included here, but my primary interest is in traditional British double gun finishes, which were almost exclusively oil based as far as can be determined.

[‡] Including Lac, Gum, or true Resin

^⁶ The addition of resins make the finishing oil a varnish or what Bob Flexner calls an oil/varnish mix, depending on whether they are 'cooked'. See Flexner's book, *Understanding Wood Finishing*. Or more concisely, this article from *Popular Woodworking*: <https://www.popularwoodworking.com/finishing/oil-and-varnish-a-refresher/>

DRYING OILS⁷ ~ *Drying oils are natural, unsaturated fatty vegetable oils that undergo crosslinking polymerization and form a tough, flexible film when exposed to air. Drying oils are a key component of oil paint and many varnishes.*

Linseed Oil

Flaxseed Oil; *Linum usitatissimum*;

Raw, cold-pressed and refined linseed oils do not dry well.

They are used largely for creating red oil or as a component of French polish.

Boiled Linseed Oil (BLO) is made by heating linseed oil and most BLO contains driers, including petrochemicals.

Polymerized linseed oil is made by heating without the addition of driers. Both have reduced drying times compared to raw linseed oil.

Tung Oil

China Tree Seed Oil, aka Chinawood oil; *Vernicia fordii*;

Fast drying oil with good water-resistance.

Can be heated under pressure to polymerize for faster dry times. May be used as an alternative to or in mixture with linseed oil.

Walnut Oil

Walnut Seed Oil; *Juglans regia*

Can also be heat treated to create faster drying oil.

May be used as a substitute or addition to other drying oils.

⁷ There are many other drying oils, including sunflower oil, safflower oil, hemp oil, etc..

RESINS ~ *Resins are solid or semi-solid organic substances commonly produced by plants for protective or reparative purposes. Resins are added to finishes to alter the form (sheen, luster, etc.) and function (water resistance, hardness, etc.) of the drying oil or spirit base.*

<u>Rosin</u>	Pine resin. aka Colophony. Remnant after distillation of turpentine.
<u>Copal</u>	Copal tree resin (<i>Protium copal</i>) or other partially polymerized resins of the <i>Agathis spp.</i> e.g. <u>manila</u> , <u>kauri</u> , etc.
<u>Venice Turpentine</u>	Larch tree resin (<i>Larix sp.</i>); aka Venetian Turps Used as plasticizing resin for both spirit and oil varnishes
<u>Benzoin</u>	Balsamic resin of the <i>Styrax spp.</i> Used in spirit varnishes and glaze for french polishing
<u>Mastic</u>	Mastic tree gum resin (<i>Pistacia lentiscus</i>); aka tears of Chios. Soluble in alcohol and turpentine. Artists lacquer.
<u>Sandarac</u>	Sictus tree resin (<i>Tetraclinis articulata</i>). Ancient art & coating resin, especially Renaissance Italy.
<u>Elemi</u>	Oleoresin of <i>Canarium luzonicum</i> ; used as a plasticizer
<u>Canada Balsam</u>	Oleoresin of <i>Abies balsamea</i> ; used as a plasticizer
<u>Amber</u>	Fossilized coniferous resin; hardest known fossil resin
<u>Gum Arabic</u>	Acacia Tree Gum powder; acts as a wood sealant
<u>Dammar Gum</u>	Resin of the tree family <i>Dipterocarpaceae</i> ; Dammar varnish.
<u>Shellac</u>	Resin created from the scale of the Lac Bug (<i>Kerria lacca</i>) Shellac is made from <u>seedlac</u> by melting and removing the foreign material. Used for spirit varnish and French Polish, shellac also has many and varied applications, including everything from fountain pen sealing to fireworks fuel.

COLORANTS ~ *The pigments listed here have two things in common: they are all of natural origin; and they have all been used for centuries-- or millennia in many cases. Madder root, for example, was used as a red pigment in Egyptian mummy portraits.*

REDS:

Alkanet

From the root of *Alkanna tinctoria*
aka dyer's alkanet, dyers bugloss, orchanet, عرق. Soluble in alcohol and turpentine. Traditionally, gun finishers used chopped roots steeped in linseed oil for months. Root ground into powder greatly speeds up this process.

Madder

From the root of *Rubia tinctorum*
aka Madder Root, dyer's madder, rose madder, Alizarin red. The alizarin pigment is extracted by fermentation; Used in spirit varnish or converted to aluminum lake to color oil varnish. Synthetic alizarin is available. It can also be used to stain wood various colors with the use of mordants.

Dragon's Blood

From the resin of the *Dracaena draco* tree found on the island of Socotra ('true dragon's blood) or *Calamaus sp.* rattan palm found in Indonesia (locally called *djernang*). Legendary pigment once believed to come from the blood of elephants and dragons who died in mortal combat. Partially soluble in alcohol.

Rose Pink Brazilwood / pernambuco-based lake⁸ pigment
Traditionally, from the extract of the Brazilian *Paubrasilia echinata*;⁹ Now made from the Asian *Caesalpinia Sappan*.
Brazilwood also produces reds, browns and purples.

YELLOWS / BROWNS / BLACKS:

Van Dyke Brown Asphaltum and iron oxide; aka Cologne earth¹⁰

Burnt Umber Iron and manganese oxides; Created from the earth pigment, umber, by roasting to create a dark brown.

Asphaltum Brown/black pigment from Utah; aka bitumen or Gilsonite

Logwood Ground Campeche tree wood, *Haematoxylum campechianum*
Can make dark red to black with iron mordant.

Fustic From the heartwood of the *Chlorophora tinctoria* tree.
Yellow to golden to greenish yellow. Water-soluble.

Annato From the seeds of *Bixa orellana*, also known as Achiote;
yields golds and oranges with alum, chrome or tin mordants

Antimony Acts as a mordant and darkener; aka Butter of Antimony;

⁸ A lake pigment is one produced by precipitating a dye with an organic inert binder. A pink refers to a subset of lake pigments or a pseudo-lake pigment, with the dye deposited on alum or chalk instead of aluminum hydroxide. (Harley)

⁹ *Paubrasilia echinata* is prized from violin bow wood and is an endangered species.

¹⁰ Originally, the pigment came from the earth around the city of Cologne.

Antimony trichloride.

THINNERS & SOLVENTS ~

Turpentine¹¹ Distillate of sap from slash pine trees (*Pinus elliottii*).
aka spirit of turpentine, oil of turpentine, terebenthine,
pure gum spirits, spirits or oil of Turpentine, &c.

Ethanol aka surgical spirits, spirits of wine, distilled spirits

Mineral Spirits (*includes several varieties of petroleum based solvents*)

Mineral or White spirits Standard paint thinner

Odorless Mineral Spirits Weaker and less toxic

Naphtha Standard lighter fluid

Stoddard Solvent Used in dry cleaning

DRIERS ~

Japan Drier Generic name. Most are NAPTHA & cobalt based.

Terebene Turpentine and sulphuric acid.

FILLERS ~¹²

Talc Magnesium silicate

Whiting Calcium carbonate

Rottenstone Weathered siliceous limestone; aka Tripoli

Pumice Igneous rock. May dull edge tools, e.g. checkering cutters

Plaster of Paris. Quick-setting gypsum plaster

Glair¹³ Egg albumen derivative. aka 'size'

¹¹ Turpentine can mean the distilled resin of any number of trees. In general use, though, it refers to slash pine spirits.

¹² These are variously included in the formula or rubbed directly onto the stock. Some fillers, such as rottenstone, also act as polishing or burnishing compounds in the application of lacquer.

¹³ Most commonly used for oil painting or applying gold leaf. Traditionally used as a pore filler by luthiers.

WAXES, NON-DRYING OILS, POLISHES, &c.¹⁴

<u>Beeswax</u>	Produced by the honey bee, <i>Apis spp.</i>
<u>Carnauba Wax</u>	Produced by leaves of carnauba palm, <i>Copernicia prunifera</i> . aka Brazil or palm wax. Known as the “Queen of Waxes,” carnauba creates a harder, glossier, but more brittle finish than beeswax. It is often used in combination with beeswax to create a hard but tough wax.
Olive Oil	Pressed from whole olives (<i>Olea europaea</i>) aka Sweet Oil
Essential Oils ¹⁵	<u>Lemon</u> , <u>Lavender</u> , <u>etc.</u>
<u>Spirits camphor</u>	Camphor essential oil in alcohol

ACIDS & BASES-

Acetic acid	Acid content of vinegar
Nitric acid	highly corrosive mineral acid
Cream of Tartar	Tartaric acid
Common soda	Sodium carbonate. Alkali compound.

¹⁴ This list does not include products such as Renaissance Wax or other pre-made, commercially available paste waxes. Donald Newell suggests that waxes were applied for protection and as pore filling agents (*Gunstock*, 367).

¹⁵ Some sources state that essential oils cause waxes to harden

MISCELLANEOUS-

Potash	Water-soluble, potassium containing salts created by soaking ash in water. Used in a wide variety of industries, including paint-making.
White lead	Basic lead carbonate; used as a colorant, water sealant, lubricant; aka Berlin white, Cremnitz white, Dutch white lead, flake white, Flemish white, Krems white, London white, Pigment White 1, Roman white, silver white, slate white and Vienna white
Potassium permanganate	Oxidizing agent
Ammonium chloride	Also used as flux in metalworking

Secret Ingredients ~

See above

Raw Materials Suppliers:

Wood Finishing Enterprises

International Violin

Kremer Pigments

Old Holland Pigments

Langridge

Retailers of Finishes:

Brownells

Midway USA

Le Tonkinois

Tried and True

Highland Woodworking

Lee Valley

Woodcraft

MIXTURES & METHODS:

This section is separated into two parts.

Part One consists of traditional gun finishing formulae and methods shared online by members of the Double Gun Shop Forum.

Part Two consists of finishes published in books, magazines, or online that maintain traditional products and processes.

In both cases, reference will be made to the source text in order to give credit to the original authors and to provide ready access to those readers desiring more in-depth information.

Where available, links are provided to full-text online archives, including the original posts at the *DGf Forums*.

PART I: TRADITIONAL FINISHES OF DGJ

FROM ERNIE, AKA “DAMASCUS.”

Ernie's Slacum ~¹⁶

1 Ounce Copal suspension*
1 Ounce Raw Linseed Oil
1 Ounce Andy's Red Oil**
1/2 Ounce Pure Gum Turpentine
10 ml Terebine or Japan Drier (5ml/ounce of oil)¹⁷

Ernie's Olive Oil Wax ~

1 Ounce Grated Beeswax
1 Ounce Olive Oil
“A Pea of” Carnauba Wax (approximately 1/4 teaspoon)
“A few drops” of Lemon Oil (for fragrance)

Ernie's Turpentine Wax ~

Beeswax, Carnauba, Turpentine

* Copal Suspension ~

1 Ounce Crushed Copal Manila
2 Ounces Ethanol

— Mix and set in warm location. Shake Q1-2 days until a golden suspension is created. Decant and discard the alcohol.. Let remaining alcohol evaporate from the residual ‘syrup.’

** Andy's Red ~¹⁸

1 part Raw Linseed Oil
1 part Walnut Oil (food grade)
Alkanet Root

— Immerse alkanet root in oil and let it stand for up to a year.

¹⁶ The otherwise anonymous Ernie refers to this simply as “finishing oil,” but I chose to call it by his name, to give credit for the immense amount of time he has spent sharing his knowledge here and elsewhere.

¹⁷ I assume this means per ounce of linseed, not including the ounce of copal; Elsewhere, Ernie has stated that the ratio of drier is likely much lower than this using currently available driers.

¹⁸ Named for a stock maker who taught it to Ernie

ERNIE'S PROCESS:

Prep Wood~

1. Paper coarse to fine glass paper (aka Flint Paper)
2. Steam dents with 3:1 Ethanol and Water and a clothes iron
3. Raise grain (3:1 ethanol:water) and paper to finest grain available
4. Raise the grain and Burnish with Leather (non-colored side)
5. Allow the stock to dry completely. Must be completely dry.

Coloring ~

1. Apply Andy's Red liberally and allow it to soak in.
2. Rub off excess and repeat until desired color is achieved
3. Set aside until dry (about one week in the British climate)

Filling~

1. Apply 1 coat of Ernie's Slacum and leave overnight or until dry
2. Sprinkle with Talc (calcium carbonate)
3. Apply a drop of slacum; rub in a circular motion, creating a slurry
4. Clean hands on a towel and continue to rub in.
5. Repeat cleaning hands and rubbing until excess is removed and fine sheen develops.
6. Leave overnight
7. Repeat 1-6, focusing efforts on unfilled areas, until all pores are filled and the stock is 'smooth as glass'.

Finishing ~

1. Apply a very thin layer of Slacum
2. Leave until dry
3. Repeat until desired finish is achieved (typically 6-8 applications)
4. Once cured, apply Ernie's Wax and polish with a soft cloth

FROM PETER HARRIS, AKA “SALOPIAN.”

Salopian’s Manton Finishing Oil ~

1 Quart Cold Drawn Linseed Oil
1/2 Pint Vinegar
2 ounce Alkanet Root
1/2 ounce Gum Arabic Medium (dissolved in water)
1/2 ounce Rose Pink

— Mix, Heat (“Boil”) and let stand for 2 days.

Salopian’s Purdey London Finishing Oil ~

1/2 Pint Raw Linseed Oil
1/4 Pint Spirits of Wine (Ethanol)
2 Ounces Dental Plaster of Paris (Filler)
1/2 Ounce Butter of Antimony (Darkener)
2 teaspoons Vinegar (Acidifier)
1 teaspoon Venice Turpentine (Resin)

Salopian’s Red Oil¹⁹ ~

70grms Beaten / crushed Alkanet Root
100 ml Turpentine
100 ml Boiled Linseed Oil

— Soak Alakanet in turpentine for a month in a sealed jar. Add BLO, reseal, soak for another month.

¹⁹ Peter / Salapion also notes that Thomas Sheraton, the furniture maker, used a ‘red oil’ to color mahogany made with “oil of spruce” instead of turpentine.

Salopian's Process:

Prepare the wood ~

1. Strip or otherwise "go back to the bare wood"
2. "Restore the shapes and angles"
3. Raise dents and fill gouges.

Color ~²⁰

1. Apply Red Oil
2. Continue to apply until 'colour is right'
3. Apply two coats of *Finishing Oil* sparingly and rub in
4. Remove excess with wire wool and buff with a cloth
5. Leave for two days

Fill~

1. Apply a grain filler and allow it to dry
2. Rub with fine wire wool

Finish~

1. Apply finishing oil with your palm extremely sparingly²¹
2. Rub the oil into the wood until "hot in your hand."
3. After half an hour, buff with a cotton cloth until no residual.
4. Repeat daily for 4-5 weeks or until satisfied. ²²

²⁰ "You could also use a potassium permanganate solution of water which will soak much deeper into the wood (and of course raise the grain. Again, this will impart a nice colour which you do have some control over, but remember the addition of successive oil coats will darken the wood progressively so do beware."

²¹ "Use half as much as the minimum you think necessary."

²² "Don't be afraid to cut the finish back with a little oil on a pad of fine wire wool when necessary - even half way through the process. This will ensure that the finish is smooth and it flattens out any indents where the grain may show. You want the finish to be smooth, flat and even."

FROM DIGGORY HADOKE, AKA “DIG” OR “SMALL BORE.”

PUBLISHED IN SHOOTING SPORTER, 13 DECEMBER 2017.

Dig’s Stock Oil ~²³

16 Ounces	Boiled Linseed Oil
2 Ounces	Spirits of Turpentine or Terebine Drier
1 tablespoon	Carnauba Wax
2 teaspoons	Venice Turpentine

— Simmer for 10 minutes, then allow to cool in the pan. “Once cool, pour into two bottles. Keep one bottle open and one closed. The open one will become thicker in time, while the sealed one remains liquid. Use either, as and when required.”

Dig’s Red Oil ~

100 grams (3.5 oz) Alkanet Root, chopped and dried
Hardware store BLO²⁴

— Put the alkanet root in a jar. Fill with BLO until the root is submerged. Shake daily for 6 months or longer. Decant the oil into a new bottle.

²³ This is very similar to James Howe’s Formula #5 from *The Modern Gunsmith*, vol 1, but substitutes carnauba for beeswax. Howe describes this as a polish for after the finish.

²⁴ Elsewhere, Dig has noted that he uses “alkanet root steeped in raw linseed oil for several months...”

Dig's Process:²⁵

Prep ~

1. Clean out checkering with ethanol²⁶ and a wire brass brush
2. Scrub off old finish with ethanol and steel wool²⁷
3. Raise Dents, Sand to smooth (including raising the grain, etc)
4. Leave to dry 'properly'

Color ~

1. Apply red oil liberally with a lint-free cloth (cleaning patches, e.g.)
2. Allow it to soak in for a couple of hours, rub off excess and reapply
3. Repeat every few hours until desired color is achieved²⁸
4. Dry for 'a couple' of days, buffing occasionally with a cotton cloth

Finish ~

1. Apply slacum sparingly by cloth or hand
2. Rub in well and leave to 'semi-dry'
3. Once tacky (typically after ~2 hours), "Rub off" with a slightly oiled cloth, "buffing vigorously."
4. Leave overnight and repeat until complete.²⁹ (*Up to 6 weeks*)
5. (Optional) Burnish with rottenstone in later coats³⁰

Cure ~

1. Set the gun aside for as long as reasonably possible to increase durability of the finish (2 months or more is optimal).
2. Buff Daily for at least the first 2 weeks.

²⁵ Synthesized from a *Shooting Sporter* interview and an *older article* that was previously on his website. A description of Dig's process is also found on his website, *The Vintage Gun Journal*.

²⁶ Daubed on with wire wool

²⁷ A Stanley utility knife blade can be used for stubborn areas.

²⁸ This can take a few days

²⁹ "Do not let an applied-oil coat dry hard; if you do, you will have to cut it back, with wire wool or wet and dry sandpaper, to remove any thick build-up." "You will know when the grain is filled because the surface will be smooth, without any dips where the grain is open."

³⁰ In the Shooting Sporter article, he does not mention rottenstone.

FROM KEN, AKA “KEN61”, A Shellac Finish³¹

Color~

1. Stain with alkanet steeped in either alcohol or stain base, applying at least two coats over two days.
2. Leave to Dry for a day
3. Continue with Andy’s Oil (from Damascus)
 - a. Apply a few drops and rub in.
 - b. Repeat every hour for one day.
 - c. Repeat every day for a week
 - d. Leave to dry for a few days or until dry

French Polish~³²

1. Amber shellac applied with a 2 lb cut in ethanol for “initial coats”.
2. Dilute to a 1lb cut for subsequent coats
3. 100 passes for total application
4. “Polish” with Andy’s Oil as the lubricant between coats

Burnish and Wax~

1. Rub with Rottenstone after finish complete to achieve final satin look
2. Paste wax of choice for 3-5 coats

³¹ Ken notes that early American stock finishers, Parker e.g., may have favored shellac.

³² Zinnser amber shellac “straight from the can”. Reportedly the same formula as since the turn of the 20th c.

FROM TONY TREADWELL, AKA “BALLISTIX999,” IN MEMORIAM
PUBLISHED IN AN ENGLISH GUN-MAKING HERITAGE: VINTAGE
ENGLISH SHOTGUNS AND THEIR RESTORATION ³³

Prep and Seal~

1. Strip the stock of old finish
2. Raise dents
3. Sand 320 to 600 with wet to dry paper
4. Seal the grain³⁴
5. Sand again with 320 and 600

Color~

1. Apply Alkanet oil from kit
2. Be sure to include checkering³⁵

Finish~

1. Apply with circular motion
2. Set for 2-3 hours
3. Wipe off excess with a cloth and “burnish” with the palm of the hand
4. Dry overnight
5. Repeat daily for a few weeks until desired finish is achieved

³³ Tony wrote that he typically used a tru-oil, French polish, Napier’s, etc. In his book, he details his use of the trade secrets kit. Although the details do not really reflect a unique formula or process, his efforts are recorded here in appreciation for his writing and in memory of his passion for vintage British guns and their restoration..

³⁴ Using Napier’s kit in this instance

³⁵ He freshens the checkering on all restorations

PART 2: OTHER PUBLISHED TRADITIONAL FINISHES³⁶

PRESENTED IN CHRONOLOGICAL ORDER OF PUBLICATION

³⁶ Contemporary publications from British authors with in-depth finishing processes are scarce.

JAMES VIRGIL HOWE. THE MODERN GUNSMITH: A GUIDE FOR THE AMATEUR AND PROFESSIONAL GUNSMITH IN THE DESIGN AND CONSTRUCTION OF FIREARMS, WITH PRACTICAL SUGGESTIONS FOR ALL WHO LIKE GUNS. FUNK AND WAGNALLS, 1941

Originally published in 1934, this 2-volume text describes all aspects of gunmaking, from shop setup to mechanical repairs to stock making. Howe's stock finishes, as described in Chapter 12 of Volume I, are primarily traditional linseed oil finishes, with emphasis on the "dull London oil finish." Both Volume I and Volume II are available online in full text format.

J. HOWE'S "RAW N' HOT"³⁷

FORMULA NO. I

1 pint	Raw linseed oil
1/2 pint	Turpentine

1. Heat raw linseed oil and turpentine mixture to the boiling point
2. Apply with a swab *immediately after removing from the heat source.*
3. After an hour, wipe off excess.
4. Leave for 24 hours
5. Repeat steps 1-4 until the wood will not absorb any more oil
6. Continue 1-3, but rub in oil after wiping excess away with each coat, and wait 3 days between coats

"The repeated heating of the same oil causes it to become very dark and heavy, and toward the last finishing application it is very thick, producing the results we want."

³⁷ Howe didn't use this term, of course.

J. HOWE'S "DULL LONDON OIL FINISH" ³⁸

"These are the basic formulas used on walnuts of the highest grades. On the lighter low-grade blanks of European walnut, hot raw linseed oil and turpentine may be used. On the black or American walnut of the better grade, the three last formulas [No 2-4] may be used to obtain the 'dull London oil finish.'" (p. 170)

FORMULA No. 2

32 oz.	Boiled Linseed Oil
4 oz	Pure Turpentine
½ oz	Alkanet root

— Boil the alkanet root in the turpentine; Let cool and add the linseed oil; Heat to a simmer, then let cool.

FORMULA No. 3 ³⁹ (*"for medium dark woods where figure must be retained...."*)

32oz.	boiled linseed oil
1 oz	Spar varnish
3 oz.	Turpentine
200 grains	Beeswax
3 tsp.	Venice turpentine ⁴⁰
2 oz.	Burnt umber ⁴¹

— Mix all and bring to a simmer (with small beads on the surface); Simmer for 10 minutes; Cool and Bottle.

³⁸ "The finishes which you will obtain from using these formulas are of a lasting durable type, and when great care is taken you will find that the luster improves with age, and that water does not injure it greatly." p.170

³⁹ This formula is used after the raw linseed oil treatments and rubbed down with rotten stone, thus preparing the stock for this formula. Allow 2 days between coats.

⁴⁰ Howe says that venice turpentine prevents cracking for formulas with shellac or varnish

⁴¹ "Burnt umber is added to give a dull appearance to the finish, and at the same time to fill the small pores of the wood."

FORMULA No. 4 (*“...for very dark Circassian, French, or Italian walnuts.”*)

32 Ounces	Boiled linseed oil
3 Ounces	Shellac ⁴²
3 Ounces	Turpentine
1 Ounce	Burnt Umber
200 grains	Beeswax
1/2 grains	Alkanet
1 teaspoon	Venice Turpentine

— Heat turps and alkanet to extract the color. Do not boil. Strain through filtering paper. Add remaining ingredients and then slowly bring to boil and continue to boil for 20 minutes.

APPLICATION PROCESS (FORMULAE 2-4):

1. Build an oxidizing layer with multiple applications of raw linseed oil. ⁴³
2. Apply “dull oil finish” QI-2 days in very thin coats until desired shade of color is reached. (Over 6-8 weeks). For Formula No. 4, allow additional time between coats.
3. Let stand until thoroughly dry.
4. Attach felt to a rubbing block, soak in sweet (olive) oil and then in sifted rottenstone.
5. Burnish to a dull finish.
6. Wipe to remove all sweet oil and rottenstone.
7. Let stand for 3 days before polish.

⁴² “You will probably wonder why varnish and shellac have been added to the boiled linseed oil and other ingredients: Very often formulas call for shellac, one of the substances used in a finishing oil, tho it does not produce as durable a finish as the spar varnish. Shellac may be used as a filler after the raw linseed in a number of instances on very fine wood. One coat is applied and the surface rubbed down with No. 3/0 steel wool; then sanded with No. 5/0 and No. 7/0 sandpaper, and then with rottenstone. The shellac has completely filled the pores of the wood, and when the finishing oil is applied, it begins to build up on the surface and does not darken the wood any further.”

⁴³ He does not clarify how or for how many coats to apply the raw oil. This seems to be in reference to Formula #1

J. HOWE'S STOCK POLISHES:⁴⁴

FORMULA No. 5⁴⁵

4 Ounces	Boiled linseed oil
8 Ounces	Turpentine
8 Ounces	Beeswax
1 Ounces	Venice turpentine

— Melt together over a slow fire.

FORMULA No. 6

1 pint	Boiled linseed oil
200 grains	Gum arabic (dissolved in alcohol)
1 ounce	Alkanet root
200 grains	Rose pink
150	Vinegar

— Mix and simmer for 30 minutes; Do not boil.

FORMULA No. 7 (*For shellacked or varnished stocks*)

20 Ounces	Raw linseed oil
2 Ounces	Alcohol
8 Ounces	Dilute Acetic Acid
1 Ounce	Solution of Ammonium Chloride
1/2 Ounce	Spirits Camphor
1 Ounce	Antimony Chloride

— Add ingredients to Linseed Oil in this order: Antimony Chloride; Camphor; Acetic Acid; Ammonium Chloride.⁴⁶ Shake the solution after each.

⁴⁴ Application for all below: Rub small quantity on the stock; Leave for 10 Hours; Rub / Buff with a clean linen cloth.

⁴⁵ "A finish in which wax is used is not intended for durability, but for beauty; nor is it to be recommended for an under coating for the last three formulas, as it will not wear well."

⁴⁶ Does not mention adding the alcohol

J. HOWE'S FRENCH POLISH ⁴⁷

“French polishing consists of the repeated rubbing of shellac into the stock, using a ‘rubber’ or pad that is slightly coated with raw linseed oil, which makes the rubbing easier.”

“French polish is very desirable on shotguns or factory-made arms of the better type, and answers very well; 90 per cent of the gun owners are far better satisfied with it even though the oil finish is superior.”

PREP:

1. Use Formula No. 2 to get the “correct color or character of the wood.”
2. Fill Pores with filler of choice, and stain if necessary / desired.

FRENCH POLISH:

3. Apply a small amount of shellac and a few drops of oil to the rubber.
4. Rub lightly in circular motions, in a line across the stock.⁴⁸
5. Apply daily until a ‘well-built surface’ with a soft luster appears.⁴⁹

“SPIRIT OFF”: ⁵⁰

6. Dampen a pad with alcohol.
7. Pass *lightly, quickly and carefully* over the surface.

“After doing this- if the work has been done properly- the polish will appear bright and beautiful.”

⁴⁷ The ‘rubber’ used is made of clean woolen cloth [or raw cotton or cheesecloth], rolled up into a bunch. Over this is drawn a piece of clean soft muslin, the edges drawn up and over the sides of the rubber and tied, thus forming a handle to hold while using. For irregular surfaces, such as those around the comb, pistol grip, and cheek piece, make a smaller rubber in the manner described. They must be perfectly smooth on the rubbing surfaces, and free from wrinkles or creases.

⁴⁸ Do not allow the rubber to become dry and do not stop rubbing abruptly. Rather, “...slide the rubber off the work...”. Apply shellac and oil to the rubber between passes or when needed, and rub the pad in the palm to equalize the shellac. If the muslin covering becomes shiny, put on a new covering.

⁴⁹ “In case you should be unfortunate enough to have rubber marks appear on the surface of the stock, remove them by rubbing with the wet rubber, but beginning at a point where you left off and working in the reverse direction.”

⁵⁰ “This operation removes the oil left on the polish, which if not removed would mar the surface by dimming it.”

J. HOWE'S VIOLIN-VARNISH FINISH -

“Fossil gum amber is the right kind of varnish to produce the violin finish so many admire. Of course it is not altogether recommended for gun stocks; yet many prefer it, so it is well for the gunsmith to have such information as this on hand. The varnish is finely colored in various tones or tints, as follows: golden yellow, golden amber, golden orange, light golden, red, dark ruby red, deep blood red, reddish amber, golden brown, and very dark reddish brown.”

1. Sand and Burnish the stock as usual to prepare the wood
2. Rub a coat of **white or very pale varnish** into the pores.
3. Leave for a week.
4. Apply a second coat of varnish
5. Polish with Rottenstone or Pumice in Sweet Oil (Olive Oil).
6. Wipe off very thoroughly.
7. Apply 2-5 coats of **colored varnish** over the course of about 3 weeks.⁵¹

⁵¹ “The varnish dries very slowly, but produces a tough and durable finish. The glossary of chemicals and substances, Volume II, contains a number of coloring materials to use in the varnish to produce whichever effect you may have chosen.” p.172

A. DONALD NEWELL, GUNSTOCK FINISHING AND CARE: A COMPLETE GUIDE TO THE FINISHING AND REFINISHING OF GUNWOOD. STACKPOLE BOOKS, 1949

*An exhaustive, 500 page text on all aspects of gun finishing in the mid 20th century. Chapter 14 is devoted to *Antique and Early Gunstock Finishes* (pp. 366-386). Additional appendices include helpful tests of drying oils as well as general information that would be helpful to the traditional gun restorer.*

Because of the format of Newell's presentation, the formulae and processes are integrated in a way that is more difficult to separate into sections. However, several formulas and methods are presented as options for each step of the process.

Newell's finishes are likely to be of most interest to those seeking traditional finishes for American shotguns and rifles.

NEWELL'S COLORS: ⁵²

RED STAIN #1~ (4 oz Alkanet Root, 1/2 Pint Linseed Oil)

1. Heat the oil and allow to steep
2. Wipe or rub hot oil over the stock.⁵³
3. Continue until desired color is achieved.

RED-BROWN STAIN #2 (4 oz Dragon's Blood, 1 oz Common Soda, 2 Pints EtOH)

1. Paint the stock with nitric acid (approximately of spec. Gravity 1.42)
2. Once dry, apply stain.
3. Once dry, brush off excess.

MAHOGANY STAIN #3 (2 Qt Water, 4 oz Madder, 2 oz Fustic)

1. Add Madder and Fustic to boiling water and steep.⁵⁴
2. Brush stain onto the stock while hot and allow it to penetrate.
3. Remove excess while damp and allow to dry.
4. Repeat until desired color is achieved.
5. Buff off all loose matter on the surface.

CHERRY RED STAIN #4 (2 oz Annato, 1 1/2 Qt Water, 1/2 oz Potash)

1. Dissolve dye in boiling water
2. Add Potash (KCl) and mix
3. Brush onto stock and allow to dry

⁵² Newell suggests that early woods did not require (and therefore did not receive) coloring because a superior grade of wood was readily available in the earlier gunmaking days.

⁵³ Oil will soak in. Can cut with Turpentine if penetration is inadequate.

⁵⁴ "Allow the color to become as deep as it will"

DARK WALNUT STAIN #5 (1/2 lb. Asphaltum, 2 Qt Turpentine)

1. Dissolve Asphaltum in turpentine
2. Brush onto stock. One coat is typically enough
3. Add any of the red stains above to overcome yellow-brown tinge of asphaltum

BLACK STAIN #6 (1/2 Lb Logwood, 3 Pints Water, 1/2 oz Cream of Tartar)

1. Steep logwood in boiling water until dark red. Then Add cream of tartar
2. Apply hot solution to the wood and allow it to dry.
3. Repeat and set the stock aside.
4. Boil 1 Lb Logwood in 1 Gallon Water; Add 1 Pint Vinegar.
5. Apply hot to the stained wood
6. Once dry, rub off all loose matter.

BROWN STAIN #7 (2 grams Potassium Permanganate, 2 pints Water)⁵⁵

1. Dissolve the Permanganate in hot water.
2. Brush on while hot.

BROWN STAIN #8 (1 1/2 oz Nitric Acid [s.g. 1.42], 1 1/2 oz iron filings)

1. Heat acid mixture until Iron dissolves in Acid.
2. Run on with a rag. (Protect hands)
3. Dry and repeat as needed.

⁵⁵ Not suitable for coloring maple

NEWELL'S FILLERS:⁵⁶

ANTIQUE WOOD FILLER #9 (5 parts Whiting, 1 ½ parts Pigments)

1. Apply a coat of linseed oil and rub in well
2. Sprinkle the stock with filler mixture
3. Rub into the pores and allow to dry.

ANTIQUE WOOD FILLER #10 (5 parts Whiting, 2 parts Linseed, 1 ½ parts Umber)

1. Mix Umber and Whiting
2. Stir in Linseed Oil slowly
3. Rub in, remove excess, and allow to dry.

ANTIQUE WOOD FILLER #11 (5 white lead, 1 ½ linseed, 2 Umber, 1/2 Turpentine)

1. Grind the white lead in linseed oil
2. Work in the Umber
3. Rub in, remove excess, and allow to dry

⁵⁶ Newell describes and then decries each of the formulae for filling. He would fill using a modern filler (c. 1949)

NEWELL'S FINISHES:⁵⁷

OIL BASED FINISHES -

ANTIQUÉ FINISH FORMULA #12 (2:1 RAW LINSEED OIL: TURPENTINE)

1. A few drops in the palm of the hand rubbed briskly over the entire surface
2. Set aside for at least 2 weeks between coats
3. 20-30 coats, 2-3 weeks apart⁵⁸

ANTIQUÉ FINISH FORMULA #13 (2:1 BLO: TURPENTINE)

1. Same as above, except 20 coats, 1 week apart.

ANTIQUÉ FINISH FORMULA #14 (2:1 WALNUT OIL: TURPENTINE)

1. Same as #12.⁵⁹

⁵⁷ Mr Newell includes no formulas that contain Tung oil, but in his tests, he found that Tung or Oiticica Oils block moisture about twice as well as Raw Linseed Oil.

⁵⁸ "The average man will never apply enough coats and will never allow sufficient drying time between coats..."

⁵⁹ "Will give no finer finish or no faster drying time."

WAX BASED FINISHES⁶⁰ -

ANTIQUE FINISH FORMULA #15 (5 Beeswax, 3 Raw Linseed, 3 Turps, Umber to color)

1. Melt the beeswax; add linseed oil and turpentine. Stir in Umber until desired color is achieved. Allow to cool.
2. Rub in polish with a polishing pad
3. After at least 5 hours, repeat.
4. Repeat until pores are filled and surface is shiny

ANTIQUE FINISH FORMULA #16 (5 Beeswax, 4 Turpentine, 1 Burnt Umber)

1. Apply in same manner as #1 above.
2. Polish with felt or cloth

ANTIQUE FINISH FORMULA # 17 (1:1 Beeswax, Shellac Solution)⁶¹

1. Melt the beeswax and add shellac solution, stirring vigorously
2. Stir until cool, creating a mixture that is thin and soft⁶²
3. Rag on to stock until filled and smooth.
4. Polish with felt or cloth

ANTIQUE FINISH FORMULA #18 (Beeswax)⁶³

1. Impregnate a wadded rag pad with melted beeswax.
2. Rub the stock vigorously, applying several coats
3. Polish with a hard felt pad

⁶⁰ Newell describes waxes and oil/wax blends as finishes, and suggests that they were probably used more often than drying oil finishes. I wonder if this is a particularly American perspective.

⁶¹ Newell Lists 5 parts and 5 parts. Not sure why.

⁶² If not soft enough to rag on, reheat and add turpentine.

⁶³ Use only on tight grain, non-porous stock, such as maple or birch. Will not fill or protect very well.

SPIRIT VARNISH FINISHES (*All based on 1 Gallon of Ethanol unless stated*)⁶⁴

SPIRIT VARNISH FORMULA #19: 1/2 lb Mastic, 2 lb Sandarac, 4 oz Elemi⁶⁵

— Dissolve resins in EtOH and filter through fine cloth. Bottle in glass.

SPIRIT VARNISH FORMULA #20: 1/2 lb mastic, 1 lb Sandarac, 2 oz Turps

— Dissolve sandarac and mastic in alcohol; Stir turpentine in slowly.

SPIRIT VARNISH FORMULA #21: 1 lb Sandarac

— Dissolve resins in EtOH and filter through fine cloth. Bottle in glass.

SPIRIT VARNISH FORMULA #22: 1 3/4 lb Shellac flakes, 4 oz Sandarac, 4 oz Mastic

— Dissolve shellac first, then resins.

SPIRIT VARNISH FORMULA #23:⁶⁶ 24 : 12 : 4 Manila copal: Rosin: Venice Turps

— Dissolve Rosin and Manila in Alcohol (50 parts).

— Vigorously Stir in Venice Turps

SPIRIT VARNISH FORMULA #24:⁶⁷ 1:4 Shellac Flakes : Ethanol

— Mix shellac and alcohol and let stand until dissolved (1-2 days); strain

⁶⁴ Newell describes several "Spirit Varnishes", which means varnish created with alcohol as the solvent and medium. These are likely not appropriate for a British gun, but perhaps for an American antique gun. Mr. Newell notes that wet condition durability is poor.

⁶⁵ "This formula will give a hard, white varnish which will be excellent for rubbing purposes."

⁶⁶ Makes a hard, brittle varnish

⁶⁷ Newell says this straight shellac was the most commonly used for stock work. To apply, Follow steps 1-3 below except sand lightly between each coat

SPIRIT VARNISH APPLICATION PROCESS:

1. Brush on to stock, adding alcohol to thin if dries too fast, leaving brush marks.
2. Allow to dry (up to 18 hours if a heavy coat was applied)
3. Rub to finish or recoat Q18 hours as desired or until pores are filled. If formula #24 is used, sand lightly between coats.
4. Apply a heavy coat and let dry.
5. Buff with pumice and polish with rottenstone.
6. Polish with 2 : 1 ½ Beeswax : Turpentine paste

FRENCH POLISHES:

Spirit Varnish Formula #26:⁶⁸

14	Ounces	Sandarac
7	Ounces	Mastic Drops
14	Ounces	Shellac flakes
3 1/2	Quart	Ethanol

— Dissolve shellac, then add mastic and sandarac. Filter and bottle.

Spirit Varnish Formula #27:

Parts - 8: 1: 33 Shellac Flakes : Gum Benzoin : Ethanol

— Pour alcohol over resins. Dissolve, filter, bottle.

⁶⁸ For formulas 26 & 27, a French Polish application may be preferred. # 26 is “the first and original French Polish formula which was used successfully.

DESMOND MILLS. AMATEUR GUNSMITHING. BOYDELL, 1986

Mills presents both London oil finishing and French Polishing as alternatives. His instructions on the actual finishing steps are somewhat sparse, except for stock prep. And he does not provide exact formulae for preparing Red Oil or Slacum, except to say that Finishing Oil is made from Raw Linseed and Turpentine, and Red Oil is made by soaking or steeping Alkanet Root in Finishing Oil.

About the red oil, he says, "There is ... no single colour which will duplicate the generally accepted and traditional shade as well as mixtures using alkanet root dye. This colouring agent has been used for countless years in the gun trade and, whether by familiarity or genuine superiority (it matters not which), will give almost any density of high- or low-grade French walnut the colour which both the tradesman and the client expect."

A Sketch of Mills' Process:

1. **Preparation of the stock:** Remove old finish and dirt with wire wool and fine sand paper.⁶⁹ Raise dents with a hot knife and cloth/paper.⁷⁰ Paper, whisker, etc.
2. **Fill** with a trade filler as appropriate.
3. **Color** with Red Oil (*Raw Linseed Oil, Pure Turpentine, Alkanet*), applied daily
4. **Finish** with Slacum (*Raw Linseed Oil, Pure Turpentine*)
5. **Polish** with Rottenstone and a Leather Chamois [deerskin]
6. **Checker** as needed.

⁶⁹ Recommends against using a scraper

⁷⁰ "The only alternative to swelling the grain' at the dent is to remove surrounding wood to the level of the bottom of the dent. This may create a flat on the stock's contour or, worse still, alter its shape. The other least satisfactory choice is to use hot melted shellac as a filler which in almost all circumstances will colour differently to the wood and show as a dark patch on the stock."

DAVID L. WESTBROOK. PROFESSIONAL STOCKMAKING: THROUGH THE EYES OF A STOCKMAKER. WOLFE PUBLISHING, 1993

*The stock finishing methods of several professional stockmakers are presented in the final section of this book. Two authors present methods that are oil based. **Westbrook's** method uses Tru-Oil as a sealer and contains no alkanet or other coloring agent, but it is otherwise a traditional, hand-rubbed oil finish. **Farman's** method most closely resembles a traditional slacum oil, but using Tung Oil instead of linseed oil.*

DAVID WESTBROOK: “THE PERFECTIONIST’S FINISH”

1 cup	Boiled Linseed Oil
2 teaspoons	Turpentine
1/2 - 1 teaspoons	Japan Drier

Initial Coats:

1. **Paper to 400 grit**, whiskering between progressive grits
2. Remove all dust with compressed air, mineral spirits, and a soft brush.⁷¹
3. With a hotplate set on low, heat **finishing oil** until very warm.
4. Turn the hotplate to high and use it to heat the stock until warm to the touch.
5. Brush on the **warm finishing oil**, covering the stock. Continue until saturated.
6. After 30 minutes, apply more warm fluid to any areas that have soaked in.
7. After an hour, wipe off all excess. Repeat after another hour.
8. Place in a warm dry place for about a week. (2-3 weeks if damp or cold climate).

⁷¹ Remove grips caps and buttplates before beginning finish

Sealing and Filling:

9. Apply **Tru-Oil, thinned w/lacquer thinner**, to entire stock, including inletting.
10. Wipe off any non-absorbed excess, let dry for 2-3 days, and **repeat**.
11. Apply **2-3 coats of undiluted Tru-Oil** with at least 2 days between coats⁷²
12. After a week,⁷³ **paper with 500 grit** wet/dry back to the surface of the wood.
13. Examine and repeat steps 11-12 if some pores remain open (will look shiny).

Finishing:

14. **Rub in:** A few drops of BLO in the palm; rub until dry, then wipe with a paper towel. Set aside for at least a week. **Repeat at least twice.**
15. **Paper in:** Sand with **600 grit** with BLO as lubricant; Then Rub in by hand until dry; then leave to dry for a week.
16. Repeat Step 16-17 with **1000 grit**, then with **1200 grit**.
17. Continue with 1200 grit until no more oil will absorb and one drop covers the stock. Then leave to dry.

Polishing:

18. After 2-3 weeks, coat with furniture paste wax

⁷² Do not include inletting in these steps.

⁷³ Westbrook says after 5-6 days.

BRUCE FARMAN: A TUNG OIL FINISH

FARMAN'S RED STAIN:⁷⁴

6 Ounces Turpentine
4 Ounces Alkanet Root

— Heat the Turpentine to approximately 120°F and add the Root; Leave on the stove until reduced to 4 ounces liquid volume. Strain with pantyhose.

FARMAN'S RED OIL:

1 Part Red Stain
2 Parts Tung Oil
2 Parts Mineral Spirits

FARMAN'S FINISHING OIL:

2 Parts Tung Oil
1 Part Alkanet Turpentine Reduction
1/2 Part Japan Drier

⁷⁴ Used only as a base for the red and finishing oils.

FARMAN'S PROCESS: ⁷⁵

Preparation:

1. After rough sanding with 120, sand with 220
2. Raise the grain (wet with a rag, heat-gun) and repeat 220
3. Repeat with 280 and 320 grit paper.
4. Raise the grain again but do not sand.

Coloration:

1. Wipe stock down with acetone to remove all dust
2. Apply **Red Oil** liberally **twice daily for 3 days**.
3. Starting on day 4, brush on **Japan Drier twice daily until glossy**⁷⁶

Filling:

4. Wet sand the entire stock with 320 grit wet/dry paper.
5. With a cotton cleaning patch, mix **Finish Oil and 4F Rottenstone** into a thin paste on the surface of the stock, and rub the entire stock in a circular motion.
6. Let dry for 24 hours.
7. Repeat steps 1-3 with 400 grit wet/dry paper twice.
8. Wet sand with 600 wet/dry grit paper.
9. Repeat steps 1-5 until all pores are filled and the surface is smooth.

Finishing:

10. Wet sand the entire stock with 1000 grit wet/dry paper.
11. With a cotton cleaning patch, mix **Finish Oil and 4F Rottenstone** into a thin paste on the surface of the stock, and rub the entire stock in a circular motion.
12. After 30 minutes, wipe down thoroughly with a paper towel
13. Repeat steps 10-12 twice, at 24 and 48 hours.
14. Check the stock

Repeat steps 10-12 until desired appearance is achieved. Typically 2-3 times.

⁷⁵ This process is for a new stock

⁷⁶ Typically, 3-4 days. "The Japan drier soaks into the wood and dries the tung oil from the inside out to the surface..."

NIK KYPRIDEMOS. LINSEED OIL FINISH: THE SIMPLE, FAST WAY TO A HAND RUBBED OIL FINISH, 2016.

NIK'S PROCESS :

1. Strip the stock (this depends on the starting place. He also has a method for 'upgrading' a satin poly finish).
2. Sand from coarse to fine (about 800 grit)
3. Seal with Spar Varnish diluted 1:1 with thinner⁷⁷
4. Color with Alkanet in ethanol, red wine, etc depending on intent
5. Fill with glair or egg white (he does not use true glair*), sanding to increasing grits between coats.⁷⁸
6. Burnish with used paper, rottenstone, or extremely high grit paper
7. Apply BLO as typical (5-10 coats)
8. Polish with Jeweler's Rouge paste (rouge emulsified in linseed oil)
9. Wax with grated beeswax dissolved in turpentine and buff with a natural bristle brush.

NIK'S WAX:

"An Egg of"	Beeswax, grated
3-4 teaspoons	Turpentine
1 teaspoon	Linseed oil
5 drops	Lavender oil ("to increase hardening of the wax")

— Allow wax to soften into a paste in the turpentine and oil.

⁷⁷ I omitted this step when I used this method. Technically, it violates the 'traditional' criteria unless the resin used is something other than alkyd.

⁷⁸ Nik Kypridemos is the only person that I have seen describing the use of glair, aka 'size', for filling pores in gunstocks. It is extremely durable for art, gilding, etc., and is used for filling pores in fine musical instruments. However, I wonder about its durability in wet hunting conditions.

Instructions for Making and Applying Glair:

MAKING GLAIR:⁷⁹

1. Separate egg whites and discard yolks
 2. Whip until peaked (as in an eggnog or meringue)
 3. Cover and leave overnight
 4. Remove the foamy top to expose the glair
 5. Move the glair to a jar
- Keep in refrigerator
 - May develop a smell, but this does not negatively effect the function
 - Can be used as a filling agent or for gold leaf application in leather

***APPLYING GLAIR:**

1. Rub a thin coat evenly across the entire stock, avoiding the checkering
2. Allow to dry to a white film
3. Sand evenly
4. Wipe down with ethanol
5. Repeat with increasingly fine paper until all pores are filled.

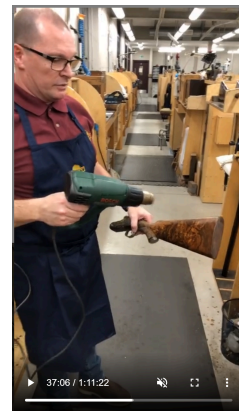
⁷⁹ This comes from various online sources, including the linked video as an example

JAMES MACDONALD. FROM JAMES PURDEY AND SONS GUNMAKING VIDEO SERIES ON INSTAGRAM: “FINISHING PART 2” HOSTED BY TOM NICHOLLS. DECEMBER 2020.

In the midst of the COVID-19 pandemic, James Purdey and Sons undertook a series of videos demonstrating “The Seven Stages Of Building A Bespoke Purdey”. These long-form videos are not highly edited, and they show the Purdey gunmaking processes in significant detail. The first six videos are on Youtube. In the ‘Finishing part 2’ video, which is available only on Instagram, Purdey finisher, James MacDonald, demonstrates stock finishing, starting around the 32-minute mark.

PREP:

1. Start with 180 grit **wet & dry paper** over a file at the back edge.
2. Fold the paper and keep at an angle of checkering. Paper with fingers, and move from the checkering back until the entire stock is papered.
3. Raise the grain with **oxalic acid** applied on a cloth followed by drying with a heat gun.
4. Repeat the process of papering and raising the grain, steps 1-3, with increasing grit paper until the desired grit is used.
5. Burnish the wood with chamois leather
 - a. Apply a ‘little bit’ of **red oil**.
 - b. Rub as hard as possible with the Chamois to burnish the wood.



A sheen will develop after burnishing.

COLOR:

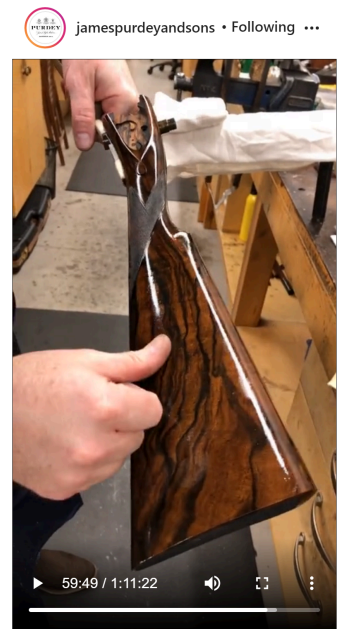
1. Apply **red oil** Liberally
2. Rub in all over including the checkering
3. Allow to soak for 4-5 hours.
4. To increase color add a second coat and leave overnight.



“After two coats of red oil, the stock really won’t go any darker, so two coats is probably the most you’re going to need.”

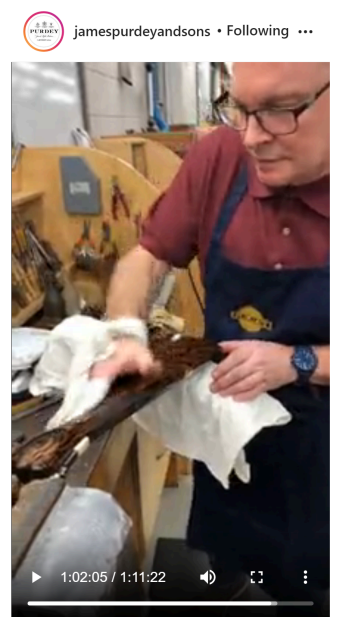
FINISH:

1. **Apply the Slacum** and allow to soak in.⁸⁰
2. **Set aside** for 1 ½ -2 hours until tacky.
To check for tackiness, the slacum should take a thumb print and ‘move slightly’ with rubbing.



3. **Rub off** any excess with a small amount of **Boiled Linseed Oil**⁸¹ on a **cotton cloth** until there is no residual on the surface.

Pay attention to any small spots with slacum residue and rub out until uniform and smooth.

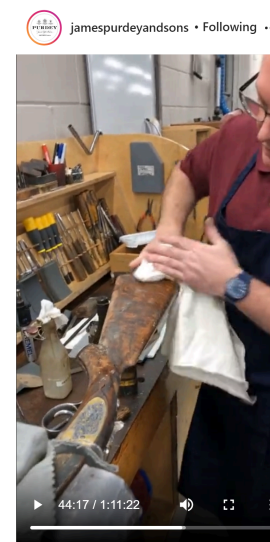


⁸⁰ For the first 3-4 coats, nearly all will soak in. Stock allowed to dry at shop ambient temp and humidity. Kept in the open, which facilitates checking it for tackiness while working on finishing the metal work, which occurs simultaneously in the Purdey shop. This includes making pins, polishing internals, and inking engraving.

⁸¹ This is not slacum but simple BLO, used as a lubricant and solvent to remove the surface residue of slacum.

4. Fill and Burnish:

- a. Scrape or otherwise apply **rottenstone** over the entire stock, avoiding the checkering.
- b. Rub in with bare fingers in a circular motion, working the rottenstone into the pores.
- c. Repeat with a cotton cloth to remove any excess slacum on the surface.
- d. Rub out with rottenstone and a small amount of BLO on the heel of the hand. The rottenstone will ‘find’ any slacum that has been missed in previous rubbing off.⁸²



5. Repeat Finishing Steps 1-4 **twice daily for 3-4 weeks.**⁸³



⁸² MacDonald says to do this ‘toward the final stages.’

⁸³ “Flatten Back” Q10 coats, papering lightly with fine paper. When finished, set the stock aside for a couple of weeks to allow it to cure.

6. Admire the fruit of your labor!



James: “Ninety percent of our oils are linseed oil based. The other 10% are... secret.”

Tom: “It has a drier and it has some wax, and that’s about as far as we’re prepared to go”

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FLAX.

records:

Weatherby Mark V Deluxe

- citrostrip
- Wash
- Whiting / Acetone to degrease
- Fit recoil pad
- Raise dents and Sand 220 to 400
- Red oil x 2-3
 - 1.1 Red raw linseed, red turps
 - leave for 1 week before finish
- Slacum x ??
 - Le tomkinois classic?
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