

WASC 759

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Extract History of
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NASC 759



HISTORY OF THE
ROYAL ~
~ SOCIETY

BY THOMAS SPRAT

*edited with critical
apparatus ~ ~ ~ ~
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ST. LOUIS: WASHINGTON UNIVERSITY STUDIES
LONDON: ROUTLEDGE & KEGAN PAUL LTD

1959

orig. pub. 1657

original publication 1667.

THE
HISTORY
Of Making
GUNPOWDER.

“THE materials of Gun-Powder are, *Salt-Peter*,
“ *Brimstone*, and *Coal*; the *Peter* and *Brim-*
“ *stone* must be both refined if you mean to make
“ good *Powder*; and the *Coal* must be *Withy* and *Al-*
“ *der* equal parts; for *Withy* alone is counted too
“ soft, and some do commend *Hazle* alone to be as
“ good as the other two.

“ The whole Secret of the Art consists in the pro-
“ portion of the Materials, the exact mixture of them,
“ that in every the least part of *Powder* may be found
“ all the Materials in their just proportion; then the
“ Corning or making of it into Grains; and lastly the
“ Drying and Dusting of it.

“ The Proportion is very differently set down by
“ several Authors; *Baptista Porta* tells us the ordina-
“ ry *Powder* is made of Four parts of *Peter*, one of
“ *Sulphur*; and one of *Withy* Coal: But the best *Powder*
“ of 6, or 8. of *Peters*; and one a piece of the other,
“ which agrees pretty well with *Bonfadini* a late *Ita-*
“ *lian* Writer, in his Book of the Art of *Shooting flying*,
“ where to make the best *Gun-Powder* he prescribes
“ Seven parts of *Peter*, one of *Brimstone*, and of *Ha-*
“ *zle* Coal an ounce less in every pound: *Cardan*
“ says; *Constat ex tribus Halixitri partibus, duabus*
“ *Saligni*

“*Saligni Carbonis atque una Sulphuris, Convenitque*
 “*magnis Machinis: Sed Mediocribus Halinitri partes*
 “*decem, Saligni carbonis tres, Sulphuris duas, par-*
 “*vis verò Halinitri partes decem; Carbonis ligni nucis*
 “*Avellonæ sine nodis, tum Sulphuris partem unam sin-* 5
 “*gularem: Langius appoints three of Peter, two of*
 “*Withy Coal, and one of Brimstone: The English*
 “Author of Fire-Works sayes, that the proportions
 “in England to make good, indifferent, and ordinary
 “Powder is, 5.4. and 3. parts of *Peter*, to two of Coal 10
 “and one of *Brimstone*. Our *English* Work-men are
 “generally so curious of their secret, that I could not
 “obtain the proportion of them without a promise of
 “Secrecy: But when all is done their secret is not so
 “much the way to make the best Powder, as the 15
 “best way to get most money by it; by subtracting
 “from the *Peter*, and making up weight with the
 “Coal; when indeed there is so great a Latitude,
 “that provided the Materials be perfectly mixt, you
 “make good Powder with any of the proportions a- 20
 “bove mention’d; but the more *Peter* you allow it,
 “it will still be the better, till you come to observe
 “Eight parts.

“The next thing after the proportion, is the mix-
 “ture, about which most of the workmens time and 25
 “pains is bestowed: For first in a Horse-mill with
 “two stones (like that with which they grind their
 “Materials at the *Glass-house*) moving upon a Mar-
 “ble bottom, which is edged with boards set sloap-
 “ing, that what slips from under the stones may slide 30
 “back again.

“They grind the Brimstone and Coal each of them
 “apart by themselves as fine as possibly they can;
 “then they sift each of them apart by themselves:

“The

“The Brimstone is sifted thorow Tiffany in a Bolt-
 “ing-mill, such as the Bakers use for wheat-flower:
 “The Coal is sifted thorow Lockram, in a bag made
 “like a shirt sleeve; for the convenience of the
 “Work-man it is done in a close Bin, with only two
 “holes for him to put his arms in and shake the bag
 “about. Whatsoever of each material is not small
 “enough to sift thorow, is brought again to the Mill
 “to be new ground.

“As for the *Peter*, that must in the Copper be dissol-
 “ved in as much water as will just take it up, and then
 “the water must be boyled away till the *Peter* comes
 “to the thickness of hasty-pudding. The reason of
 “this operation is, because when the *Peter* is thus
 “soft, the other materials will the easilier incorporate
 “with it, and in the next place it will not wear the
 “wooden pestles so much when it comes to the Mill,
 “as when it is hard and dry.

“When the Materials are in this readiness, they
 “are weighed (only the *Peter* is weighed before it is
 “put to dissolve in the Copper) and by proportion
 “are carried to the mingling Trough, which is made
 “of boards, like a great Chest without a cover, being
 “about eight foot long, four broad, and three foot
 “high. The Coal is laid in first, the Brimstone next,
 “and the *Peter* at top of all; Then two men with
 “shovels stir and mingle them together for an hour,
 “and then ’tis ready for the Mill.

“The Powder-mills are seldom made to move
 “with any thing but water: The great water-wheel
 “is made like that of an ordinary water-wheel, ei-
 “ther over-shot or under-shot, according to the
 “quantity of water they have: to the axis of this
 “wheel, a little way within the Mill, is fastned a
 “letter

STAMP

“ lesser wheel called the Spar-wheel, with strong
 “ Cogs, which in their motion round take hold of
 “ the round staves of another wheel of about the
 “ same diameter, set a little way above it, and fastned
 “ to the end of a beam of 15 or 16 foot long, laid
 “ parallel to the Horizon, with an iron gudgeon at
 “ the other end of it, to facilitate its motion round :
 “ This beam is called the round beam ; out of it
 “ come a certain number of arms of about nine inch-
 “ es long, and three inches broad, which in their go-
 “ ing round meet with other lesser armes (called
 “ Tapes) coming out of the Pestles (for so they call
 “ certain small quarters of Timber placed perpendi-
 “ cular to the Horizon, about nine foot long and four
 “ inches broad ; they are set in a slight frame to keep
 “ them steady) ; by these small arms the Pestles are
 “ lifted up about two foot and a half, and then let
 “ fall into a strong wooden Trough set under them,
 “ wherein the powder is put to be pounded.

“ Every Mill hath two Troughs, and about sixteen
 “ Pestles : every Pestle hath fastned to the lower end
 “ of it a round piece of *Lignum Vita*, of about five
 “ inches long and three and a half diameter ; and in-
 “ to the bottom of the Trough, just where the Pestle
 “ is to fall, is let in another piece of *Lignum Vita*, of
 “ the fashion and bigness of an ordinary Bowl,
 “ split according to its longest diameter : The Pestles
 “ are not lifted up all together, but alternately, to
 “ make the Powder turn the better in the working ;
 “ and for the same reason round Troughs are counted
 “ better than square.

“ To make excellent Powder it ought to be
 “ wrought thus thirty hours ; but of late they will
 “ not afford it above eighteen or twenty hours : once
 “ in

“ in eight hours they use to moisten the Powder with
 “ a little fair water ; others who are more curious,
 “ put water something thickned with quick-lime ; o-
 “ thers use White-wine Vinegar ; others *Aqua-vita* :
 “ But if it be not moistned with something once in
 “ eight hours, the Powder will grow dry, and in half
 “ an hour after it will take fire. As soon as the Pow-
 “ der grows dry, you may find it, though at a di-
 “ stance, by the noise of the Mill ; for then the Pestles
 “ will rebound from the bottom of the Trough and
 “ make a double stroak. The only danger to the
 “ Mill is not from the Trough ; for many times the
 “ iron Gudgeons grow hot for want of greasing, and
 “ then the dust that flies about will be apt to fire, and
 “ so the Mill blows up.

“ From the Mill the Powder is brought to the
 “ Corning-house, of a middle temper between moist
 “ and dry. The way of corning it is with two hair
 “ Sieves joyn'd together, the upper Sieve inclosing
 “ some part of the hoop of the lower Sieve : The
 “ upper Sieve hath holes of the size you will have
 “ the Powder grained at ; the holes of the lower
 “ Sieve are much lesser : The upper Sieve they call
 “ their corning Sieve, the lower their wet Dust-
 “ er : They lay the Powder upon the upper Sieve
 “ some two inches thick ; upon that a piece of heavy
 “ wood made like a Trencher, of about eight inches
 “ diameter and two and a half in thickness, called a
 “ Runner, which when the Sieve is moved, by its
 “ weight and motion forces the Powder thorow the
 “ upper Sieve, and that corns it. Then the lower
 “ Sieve receives the Powder, and lets the dust go
 “ thorow into a Bin, over which the Sieve is shaken,
 “ called the Dusting-Bin.

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portion

STOVE

"When the Powder is thus corned, it is d about
 "an inch and half thick on the drying Sieves,
 "which are made of coarse Canvase fastned to slight
 "frames of Deal about an ell long and some twenty
 "inches broad; and thus it is carried into Stoves to
 "dry.

"The Stove is commonly a little Room about
 "eighteen or twenty foot square, with ranges of small
 "Firr poles about two foot one above another, to lay
 "the drying Sieves upon, but only on that side the
 "fire is made. Besides a glafs window to give light,
 "there must be a small lower hole at the top of the
 "Room, to let out the steam, else the Powder will not
 "only be the longer a drying, but often by the return
 "of the steam on the Sieves, the top of the Powder
 "will be so crufted that the lower part will not dry.
 "The Rome is heated by an Iron of about a yard high
 "and half a yard broad, cast in the form of an Arch
 "equal to a Semy-quadrant, and placed in the back
 "of a Chimney, the fore part whereof is like a Fur-
 "nace; and to avoid danger, opens into another lit-
 "tle Room apart called the Stoke-hole.

"The Powder is brought into the Stove before it
 "be heated, and is not taken out again till the Stove
 "be cold; and about eight hours is required to the
 "drying of it. In hot Countries the Sun is the best
 "Stove, and a great deal of danger and charges that
 "way avoided.

"After the Powder is dried, it is brought again to
 "the Corning-house, where it is again sifted over
 "the dusting Bin in other double Sieves, but without
 "any Runners. These Sieves have both of them
 "smaller holes than the former: The upper Sieve is
 "called the Separater, and serves to divide the great
 "corns

"corns from the lesser; the great corns are put by
 "themselves, and serve for Cannon Powder: The
 "lower Sieve is called the dry Duster, and retains
 "the small corns (which serve for Musquet and Pistol)
 "and lets fall the dust into the bin, which is to be
 "mingled with fresh Materials, and again wrought
 "over in the Mill.

"So that good Powder differs from bad (besides
 "the well working and mingling of the Materials)
 "in having more Peter and less Coal; and lastly, in
 "the well dusting of it.

"The last work is to put the Powder into Barrels;
 "every Barrel is to contain five score weight of Pow-
 "der, and then 'tis ready for sale.

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