CODE No. 27-32

On Her Majesty's Service

The Second Booke

John Bate

1635

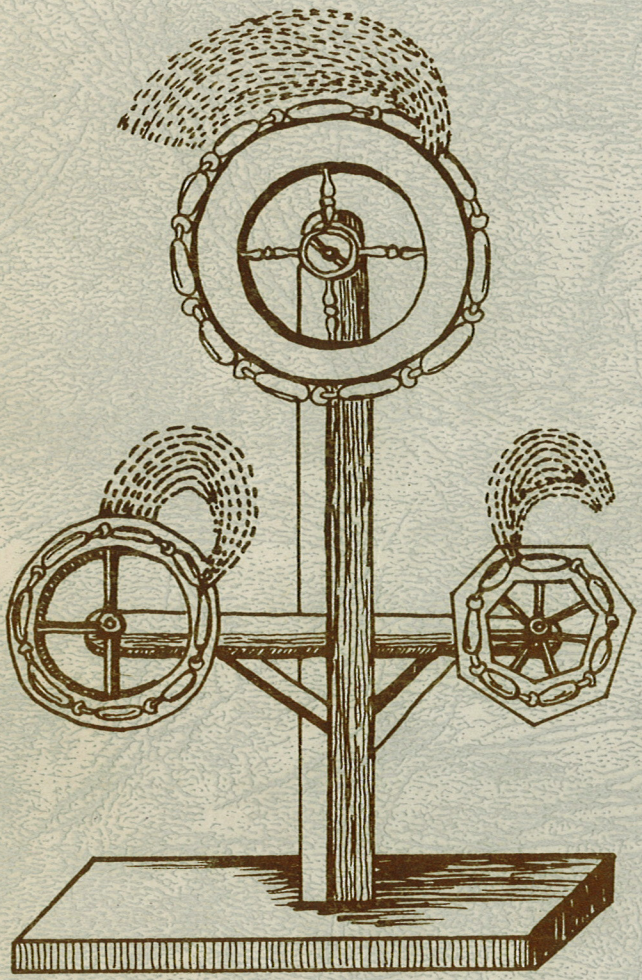
(1966 Facsimile Reproduction)

SATE, J

The second booke teaching most plainly, and withall most exactly, the composing of all manner of fireworks for tryumph and recreation. Ralph Mab, 1635 [Seattle [Wash]: Sharen Book Store, 1966]. [46p]

Facsim. of the 1635 printing by Thomas Harper, London.

THE SECOND BOOKE

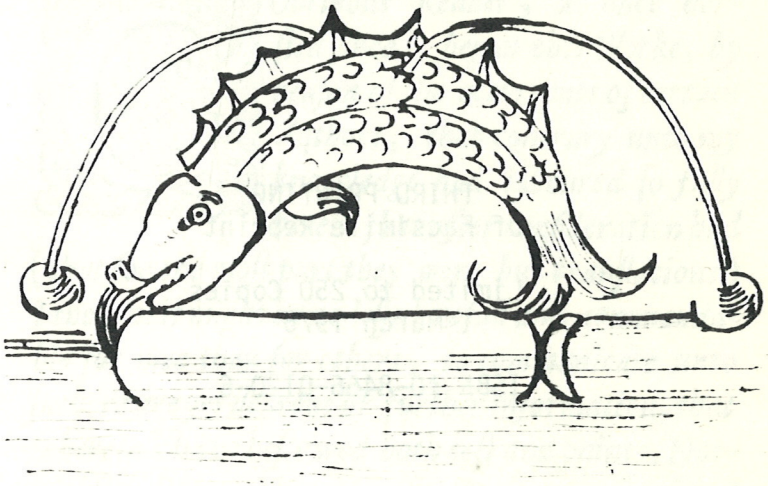


JOHN BATE

THE SECOND BOOKE

Teaching most plainly, and withall most exactly, the composing of all manner of Fire-works for Tryumph and Recreation.

By IOHN BATE.



LONDON,
Printed by *Thomas Harper* for *Ralph Mab.*
1635.

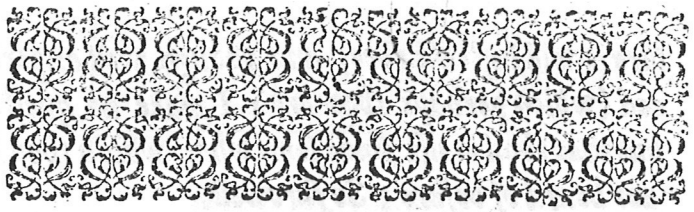
Facsimile Reproduction 1966

The Shorey Book Store
815 Third Avenue
Seattle, Washington 98104

THIRD PRINTING
Of Facsimile Reprint

Limited to 250 Copies
March 1975

ISBN #0-8466-0120-6



To the Reader.

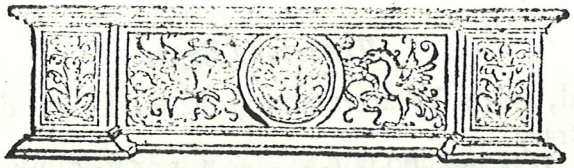
Courteous Reader, I once desisted since I began this Worke, by reason of the occurrents of certain Authors, that contrary unto my knowledge had laboured so fully herein; but after consideration had (that for the most part they were but translations) I thought it might be no lesse lawfull and commendable for mee than for others, to communicate unto such as are yet desirous of further information, that wherein I have bestowed both cost and paines. Notwithstanding, I have so used the matter, as that I might not derogate from the estimation had of others to increase mine owne. Reade it throughly, judge indifferently, and if thou likest it, practise considerately. If thou art ignorant herein, I am

 sure

sure it will instruct thee, and though well experienced (which perhaps thou art) I make no question, but that thou maist finde somewhat which thou hast not heard of before; So farewell.

Your Well-willer

J. B.



Of Fire-workes.

Have ever found (in conference with divers desirous of instruction in any Art or Science whatsoever) that those things whose causes have been obvious unto apprehension, have more affected the learner. Wherfore I thought good, before I came to the matter it selfe, to set downe some few Præcognita or Principles (as I may so call them) whereby such as are ingenuous, upon occasion, may informe themselves, if they stand in doubt of the cause of any thing that is hereafter taught.

Certaine Præcognita or Principles, wherein are contayned the causes and reasons of that which is taught in this Book.

1 THe foure Elements, Fire, Ayre, Earth, and Water, are the *prima principia* (I meane the materialls) whereof every sublunary body is composed, and into the which it is at last dissolved.

2 Every thing finding a dissolution of those *naturæ catenæ*, that is, meanes whereby their *principia* are connected and joyned together, their lighter parts ascend upward,

ward, and these that are more grosse and heavy, doe the contrary.

3 It is impossible for one and the selfe-same body to possesse at one time two places; It followeth therefore, that a dense body rarified, and made thin, eyther by actuall or potentiall fire, requireth a greater quantity of room to be conteyned in, than it did before. Hence it is, that if you lay your hand upon a glasse, having a straight mouth reverst into a dish of water, it rarifieth the ayre contayned therein, and makes it breake out thorow the water in bubbles. Also, that gun-powder inclosed in the barrell of a gun, being rarified by fire, applyed unto the touch-hole, it seeketh a greater quantity of roome, and therfore forceth the bullet out of the barrell. This is called violent motion.

4 According unto the strength and quantity of a dense body rarified, and according unto the forme and length of its inclosure, it forceth its compresser further or nearer at hand.

Thus much shall suffice to have spoken concerning the *Præcognita*: Now I will passe *ad majora, & ad magis necessaria*: to wit, those necessary Instruments, and severall sorts of Ingredients, that ought to be had in readinesse.

As for the instruments they are these; Morters and Pestles, Serces, also severall sorts of Formers, Paper, Parchment, Canvas, Whipcord, strong binding thread, Glew, Rosin, Pitch, with divers vessels meet to containe and mingle your compositions in. The ingredients likewise are chiefly these, Saltpeter, Rochpeter, Sulpher, Charcoale, good Gunpowder, Filings of steele, oyle of Peter, and spirit of Wine.

Instructions

Instructions for chusing your ingredients.

SAltpeter is very good, if that being layd upon a board, and fire put to, it rise with a flamed ventosous exhalation raysing no scum, nor leaving no pearle, but onely a blacke specke burnt into the boord.

The best brimstone, is quick brimstone, or live sulphur. and that sort is best that breaketh whitest; if this cannot be gotten, take of the whitest yellow brimstone.

The best Coales for use are the sallow, willow, hazell and beech; onely see they be well burnt. Every of these ingredients must be powdred finely and searsed.

All kindes of gunpowder are made of these ingredients impasted, or incorporated with vineger, or aquavitæ, and afterward grayned by art. The Saltpeter is the Soule, the Sulphur the Life, and the Coales the Body of it. The best sort of powder may be distinguished from others, by these signes:

1 If it be bright and incline to a blewish colour.

2 If in the handling it prove not moyst but avoydeth quickly.

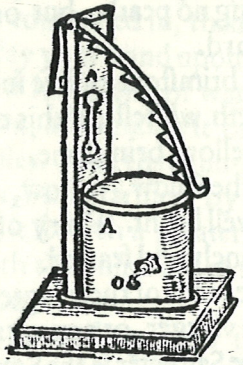
3 If being fired, it flash quickly, and leave no dregs nor setlings behinde it.

A device to try the strength of divers sorts of Gunpowder.

IF so be you have at any time divers sorts of Gunpowder, and it is your desire to know which of them is the strongest, then you must prepare a Box, as A, B, being foure inches high, and about two inches wide, having a

lid

lid joynted unto it. The box ought to be made of yron, brasse, or copper, and to bee fastned unto a good thick plank, and to have a touch hole at the bottom, as O, and at that end of the box where the hinge of the lid is, there must stand up from the box a peece of yron or brasse, in length answerable unto the lid of the box: this peece of yron must have a hole quite thorow it, towards the top, and a spring, as A, G, must bee screwed or riveted, so that the one end may cover the sayd hole. On the top of all this iron, or brasse that standeth up from the box, there must bee joynted a peece of iron (made as you see in the figure) the hinder part of which is bent downward, and entreth the hole that the spring covereth; the other part resteth upon the lid of the box. Open this box lid, and put in a quantity of powder, and then shut the lid down, and put fire to the touch hole at the bottom, and the powder in the box beeing fired, will blow the box lid up the notches more or lesse, according as the strength of the powder is: so by fyring the same quantity of divers kindes of powders at severall times, you may know which is the strongest. Now perhaps it will bee expected that I should speak of the making of Saltpeter, Gunpowder, Coales, with the refining of Sulphur: but because they are so commonly to bee had, and to bee bought at better rates than I know they can bee made by any that intend it for their private use, I have forborne it: There are divers I am sure that would willingly bee in action:



action: I have thought fitting therefore to set downe the collection of naturall Saltpeter, which is a kinde of white excrescence growing upon stone walles, and (as I have seene great store) in the arches of stone bridges. First therefore gather this white excrescence, and adde unto it Quick lime, and Ashes, mingle them, and put them into a halfe tub that hath a hole to draw the liquor out at; then put into this halfe-tub warm water, and let it stand untill all the peter be dissolved; let it then draine out at the hole by little and little, and if the liquor be not cleere, double a brown paper, and put it within a tunnell, and straine the liquor through it. Then boyle it and scum it untill it be ready to congeale, neither too hard, nor yet too tender: then take it from the fire, and put it into shallow vessels, either of earth or brasse; set them in a cold place two or three dayes, and it will shoot into ysicles, and this is called Rochpeter. Thus much for the ingredients. Now I am come unto the Formers, the number whereof I cannot certainly determine, because it dependeth upon the variety of each particular persons invention. Now that I may formally proceed, I will first make some distinction of each kinde in generall; and then I will speake of every particular contained in each generall. Fire-works are of three sorts.

1 Such as operate in the ayre, as Rockets, Serpents, Raining fire, Stars, Petards, Dragons, Fire-drakes, Fiends, Gyronels, Firewheeles, or Balloons.

2 Such as operate upon the earth, as Crackers, Trunks, Lanterns, Lights, Tumbling bals, Saucissons, Towers, Castles, Pyramids, Clubs, Lances, Targets.

3 Such as burn in or on the water, as Rockets, Dolphins, Ships, Tumbling bals, Mermaides.

Part of either of the three kindes are simple, and part are compounded; part also are fixed, and part moueable. First, I will treat of the diuers compositions, and then of the Formers, Coffins, and manner of composing euery of them.

Of the diuers compositions of Fire-works.

FIrst, of the compositions of fire-workes, for the ayre; and therein first I will speake of the compositions for rockets, because that all moueable fireworkes have their motion from the force of them accordingly applyed.

Compositions for Rockets of all sizes, according unto the prescription of the noted Professors, as Mr. Malthus, *Mr.* Norton, *and the French Authour,* Des Recreationes Mathematiques

TAke this from me, whosoeuer thou art that desirest to be instructed. Neuer relie absolutely upon a composition, nor make many Rockets, or other sorts of fire-workes of a composition, untill such time as thou hast made triall once or twice of the same, lest that thou misse of thy aime, but after triall you may proceed and performe your intentions with credit. By the compositions you may make a guesse, and as they proue you may allay or quicken them accordingly.

A Composition for Rockets of one Ounce.

TAke of gun-powder, saltpeter and charcoale, of each one ounce and a halfe, mingle them together, and it is done. Note here, as I told you before, that all your ingredients ought to be first powdred by themselues, and afterwards mixed very well together.

A Composition for Rockets of two and three ounces.

TAke of gunpowder foure ounces and a halfe, saltpeter one ounce, mixe them together.

A Composition for Rockets of foure ounces.

TAke of gunpowder foure pounds, saltpeter one pound, charcoale foure ounces, mingle them together.

A Composition for Rockets of foure ounces.

TAke of gunpowder foure pounds, saltpeter one pound charcoale foure ounces, brimstone halfe an ounce, mingle them together.

A Composition for all middle sized Rockets.

TAke of gunpowder one pound, two ounces of charcoales; mingle them.

Another receipt for Starres, whereof you may make fiends and divers apparitions according unto your fancie.

Take gum dragant, put it into an yron pan, & roſt it in the Embers; then powder it, and diſſolve it afterwards in *aqua vitæ*, and it will become a jellie, then ſtraine it; diſſolue alſo camphire in other *aqua vitæ*. Mixe both theſe diſſolutions together, and ſprinkle therein this following powder.

Take ſaltpeter one pound, brimſtone halfe a pound, gunpowder three pound, charcoale halfe a pound; when you have mingled and ſtirred them well together, mixe them well with the aforeſaid jelly, and then make it into little balles, or into what faſhion elſe you pleaſe, then cool them in gunpowder duſt, and keep them for uſe.

Compoſitions for receipts of fire-workes, that operate upon the earth.

FOr Rockets there needeth onely gunpowder finely beaten and ſearced.

Likewiſe for all the other ſorts, ſearced gunpowder will ſerue, which may be abated, or alayed with charcoal duſt at your pleaſure.

Compoſitions for fire-workes that *burne upon or in the Water.*

A Receipt for Rockets that burne upon the water.

TAke of ſaltpeter one pound, brimſtone halfe a pound, gunpowder halfe a pound, charcoales two ounces. This compoſition will make the Rockets appeare with a great fiery taile. If you deſire to have it burne cleare, then take of ſaltpeter one pound, three ounces of gunpowder, brimſtone halfe a pound.

A Receipt of a compoſition that will burne, and feed upon the water.

TAke maſticke halfe a pound, white Frankincenſe, gum, ſandrake, quickelime, brimſtone, bitumen, camphire, and gunpowder, of each one pound and a halfe, roſin one pound, ſaltpeter foure pounds and a halfe, mixe them all together.

A Receipt of a Compoſition that will burne under water.

Take brimſtone one pound, gunpowder nine ounces, refined ſaltpeter one pound and a halfe, camphire beaten with ſulphur and Quickſilver; mixe them well together with oyle of peter, or linſeed oyle boyled, untill it will ſcald a feather. Fill a canvas ball with this compoſition, arme it, and ballaſt it with lead at the bottome, make the vent at the top, fire it well and caſt it into the water, and it will fume and boyle up ſlowly.

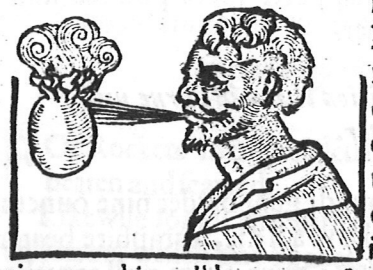
A Receipt of a Composition that will kindle with the water.

Take of oyle of Tile one pound, Linseed oyle three pounds, oyle of yelks of egges one pound, new quicke lime eight pounds, brimstone two pounds, camphire foure ounces, bitumen two ounces; mingle all together.

Another.

Take of Rochpeter one pound, flower of brimstone three ounces, coales of rotten wood sixe ounces, camphire one ounce and a halfe, oyle of Egges, and oyle of Tile enough to make the mixture into a paste.

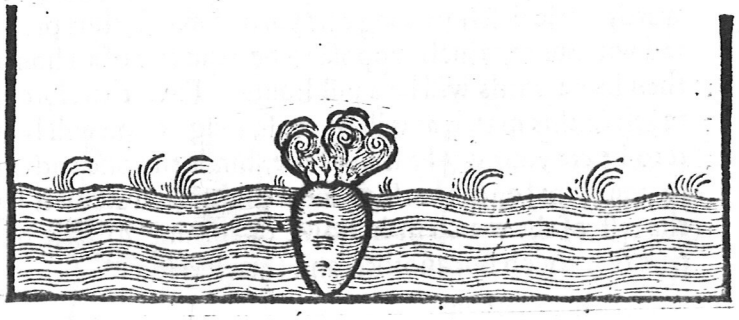
Or take callamita one pound, salt-niter and asphaltum, of each foure ounces, quicke brimstone three ounces, liquid varnish sixe ounces; make them all into a paste. Put eyther of these compositions into a pot wherein is quicke lime, so that the lime come round about the past; then lute it fast, binde it close with wires, and set it in a limekil a whole baking time, and it will become a stone that any moisture will kindle.



If you make a hole in the top of an Egge, and let out all the meat and fill the shell with the following powder, and stop the hole with wax, and cast it into a running water, it will break out into a fire.

Take

Take of salt-niter, brimstone, and quick lyme, of each a like quantity, mixe them.



How to make stouple, or prepare cotten-week to prime your fire-workes with.

TAke cotten-week, such as the Chandlers use for candles, double it six or seven times double, and wet it throughly in saltpeter water, or *aqua vitæ*, wherein some camphire hath beene dissolved, or, for want of either in faire water; cut it into divers peeces, rowle it in mealed gunpowder, or powder and sulphur; then dry them in the Sun, and reserve them in a box where they may lye straight, to prime Starres, Rockets, or any other fire-works.

How to know the true time, that any quantity of fired Gun-match shall doe an exploye at a time desired.

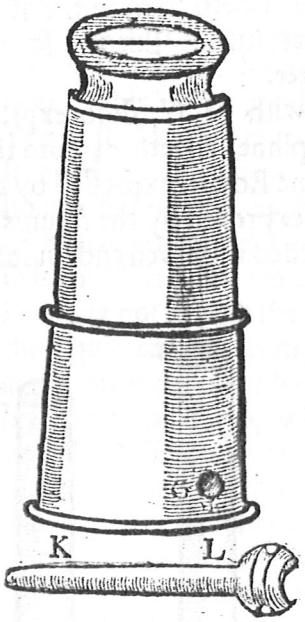
Take common gun-match, rub, or beat the same a little against a post to soften it; then either dip the same in

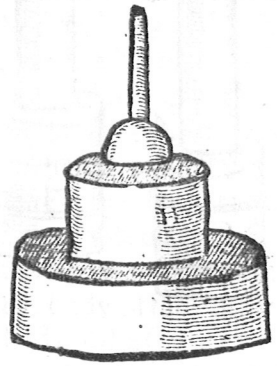
in saltpeter water, and dry it againe in the Sunne, or else rub it in a little powder and brimstone beaten very small, and made liquid with a little *aqua vitæ*, and dryed afterwards; trie first how long one yard of match thus prepared will burne, which suppose to be a quarter of an houre, then foure yards will be a just houre. Take therefore as much of this match as will burne so long as you will have it to be ere your worke should fire, binde the one end unto your worke, lay loose powder under, and about it lay the rest of the match in hollow, or turning so that one part of it touch not another, and then fire it.

A Water called Aqua Ardens.

TAke old red wine, put it into a glassed vessell, and put into it of orpment one pound, quicke sulphur halfe a pound, quicke lime a quarter of a pound; mingle them very well, and afterwards distill them in a rose water still: a cloth being wet in this water will burne like a candle, and will not be quenched with water.

The Formers are instruments wherewith the Coffins for the fire-works are made and formed, whereof in order; and first for Rockets that operate in the ayre. The Formers for Rockets consist of two parts, represented by the two next figures following, the uppermost whereof representeth the body of the Former, which must be made of Maple, Wallnut tree, or of other close and well seasoned wood, or else of brasse, seven inches, wanting halfe a quarter in length, turned equally, and exactly hollow quite through the Diameter of whose hollownesse, represented by the line at the top marked at each end with a, e, must be one inch and a quarter; the breech of the former

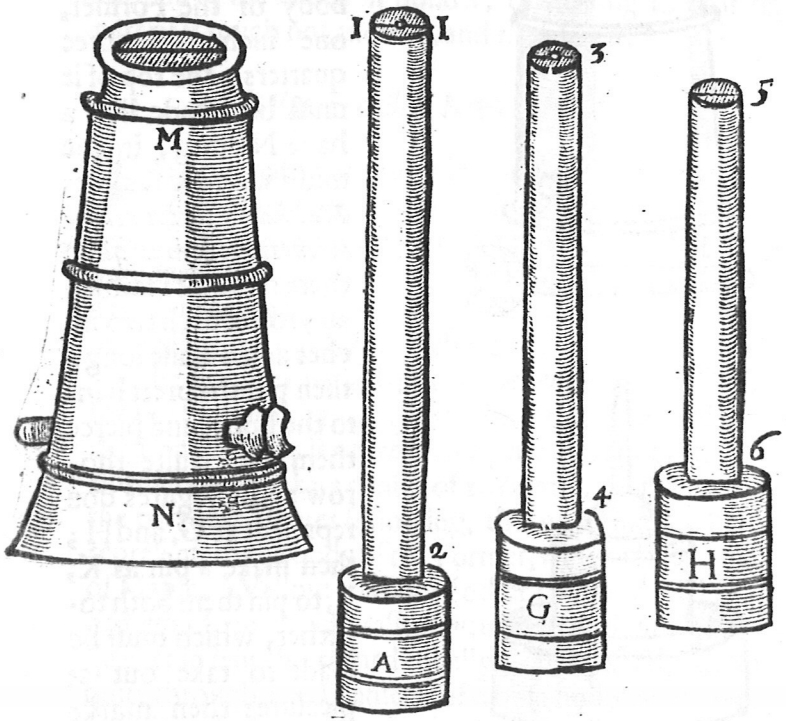




is represented by the lowest figure, the upper part whereof, must be made to enter the body of the Former; the height of the whole breech, beside the broach is 3. inches and a halfe; it entreth the body of the Former, one inch and three quarters; the top of it must bee made like a halfe Nutmeg, in the midst whereof (as Mr. *Malthus* and *des recreationes Mathematiques*) there must bee fastned an yron broach two inches and a halfe long: then put the breech into the body, and pierce them both quite thorow as the Figures doe represent at G, and H; then make a pin as K, L, to pin them both together, which must be made to take out at pleasure: then marke both the body and breech neare the sayd hole with this * or any

other mark, that you may thereby know how to fit them afterwards. But *Mr. Norton* willeth to bore the Rockers with a Bodkin after they are made: But the former in my opinion, I hold the better.

The next figure marked with M, N, doth expresse both the parts of the former pinned together; unto this Former there must be made one Rowler expressed by the figure A; also two Rammers expressed by the figures G H; they must all of them be turned very even and smooth;



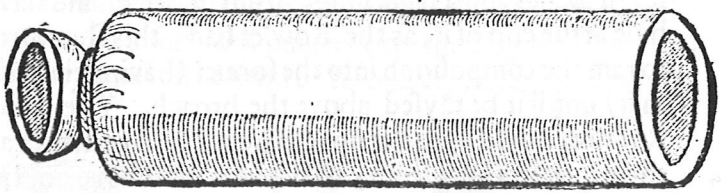
let the diameter of the thicknesse of the Rowler expressed by the line on the top marked I I, be three quarters of an inch,

inch, let it be eight inches long from I, to 2, and have a hole bored in the very midst of the end, so wide and so deepe, that all the broach of the former may enter the same: this is to rowle the coffin of paper upon. The first Rammer noted with the figure G, must bee seven inches and a halfe long, from 3. to 4. and have a hole at the end of it, as the Rowler had; this Rammer is to ram the composition into the former (having the coffin in it) untill it be rayſed above the broach. The second Rammer noted with the figure H, must be five inches and three quarters long from 5. to 6. and it must have no hole at the top as the other had; it serveth to ram the composition into the coffin, when it is once rayſed above the broach. The diameter of the thicknesse of these two Rammers must be a thought lesse than the diameter of the Rowler, to the end they may not hurt the coffin, being driuen in. Now to make the coffins you must take paper, parchment, or strong canvasse, rowle it hard upon the Rowler, so often untill it will go stiffe into the body of the Former: then thrust it Rowler and all thorow the sayd hollow body of the Former; put then the broach of the Formers breech into the hole of the Rowler, and with a peece of strong packthred choake the coffin within halfe an inch of the Rowlers end (which you may do best, and with most ease, if you first dip the end of the coffin into faire water, so that it may be wet quite thorow) after you have choked the coffin, you must thrust the breech of the Former, the coffin also with the Rowler in it, up into the body of the Former: then pin the breech fast to the body of the former with the pin, and on the Rowler give one stroake or two with a mallet lightly, then unpin the breech, and with the Rowler thrust the coffin out of

 the

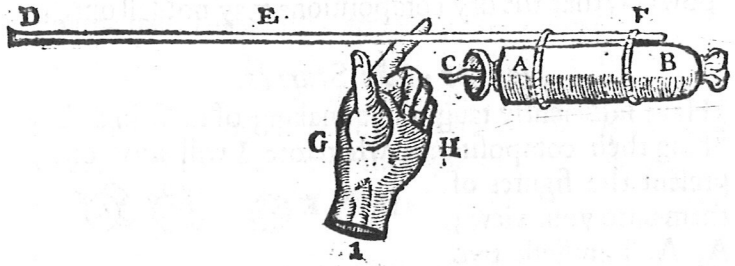
the bottom of the former, lay it by untill the end be thorow dry.

Thus you may at leisure times make divers coffins ready to use upon any occasion. The following figure expresseth an empty coffin.



Take one of these coffins, put it into the Former, and take the composition for middle sized Rockets (mentioned before) and put thereof spoonfull after spoonfull, untill you have filled the coffin unto the top of the Former; after the putting of every second spoonfull into the coffin, with a mallet give two or three blowes upon the head of the rammer, that the composition may bee well rammed into the coffin: every third or fourth driving M. *Norton* wisheth (if the rockets are to be fired in three or foure dayes) to dip the rammer in gum dragant, and camphir dissolved in spirit of wine, or good *aqua vitæ*: but if it will be a moneth before they will bee fired, then dip the rammer in oyle of peter. If you would have the rocket to give a report or blow, then within one diameter of the top, drive a bottom of leather, or fixe or eight double of paper, pierce and prime eyther of them thorow in three or foure places, and fill the rest of the coffin with whole gunpowder; afterwards drive another bottom of leather, and

and then with strong packthred choak the coffin close unto it: then take the rocket out of the Former, and prime it at the broach hole with a peece of prepared stouple, and binde unto it a straight rod 6. or 7. times the length of the rocket, and so heavie, that being put on your finger, it may ballast the rocket within two or three diameters of the same: marke the following figure, which represents a Rocket ready made and finished; A B, the rocket, C the stouple that primeth it, D E F, the rod bound unto the Rocket with two strings, G, H, I, the hand that poyseth it.



How to make Serpents.

THe coffins for serpents are made of paper rowled nine or ten times upon a Rowler not much thicker than a goose quill, and about foure inches long: The coffins must bee choaked almost in the midst; but so that there may bee a little hole, through which one may see: the longest part of the coffins for Serpents must be filled with the composition specified before: if you would have it wamble in the ayre, then choak it not after the composition, but if you would have it wamble, then halfe-choak it, as is demonstrated by the following figure, the shorter

ter end of the coffin must bee filled with whole gunpowder, and choaked quite up, as appeareth at B, in the figure M, N, O, which is the figure of a Serpent ready made.

How to make raining fire.

TAke divers goose quils, and cut off the hollow ends of them, and fill them with the composition before mentioned, stopping them afterwards with a little wetgun-powder, that the dry compositions may not fall out.

How to make Starres.

IHave sufficiently taught the making of these in describing their compositions, wherefore I will now onely present the figures of them unto your view; A, A, signifieth two

that are bound up in paper or cloth, and pierced, and primed with stouple: the other two, E, E, signifie those that are made up without paper, and need no priming more than the powder of sulphur dust that they are rowled in.

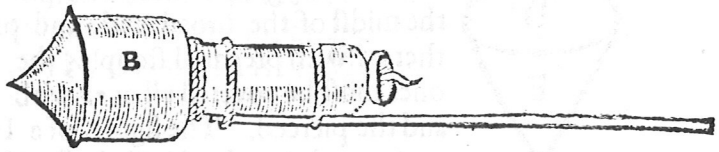
How to make Petards.

YOu must make the coffins for them eyther of white yron, or else of paper, or parchment rowled upon a Former for the purpose, and afterwards fitted with a cover, which must be glewed on: these coffins must be filled with

with whole gunpowder, and pierced in the midst of the broad end, and primed thereat with prepared stouple; the paper ones must be covered all over with glew, and the pierced. The figure of a Petard ready made, and primed, is signified by the Figure E.

How to make compounded Rockets.

FIrst you must make the Rocket I taught you before; you must not choake the end of it, but eyther double downe halfe the coffin, and with the rammer and a maller, give it one or two good blowes; then with a bodkin pierce the paper unto the composition, or else drive a bottome of leather fitted unto the bore of the Rocket, and pierce it thorow in two or three places; then pare or cut off the coffin equall thereunto; to this end of the Rocket you must binde a coffin wider a great deale than the rocket is; strew into it a little gunpowder dust, that it may cover the bottome of this coffin, and put therein with their mouthes downeward eyther golden rayne, or Serpents, or both; also starres or petards: you must put some gunpowder dust among these; when you have filled the coffin with these or such like, cover the top of it with a peece of paper, and paste upon that a picked crowned paper, balast it with a rod, and it is finished; the Figure followeth.

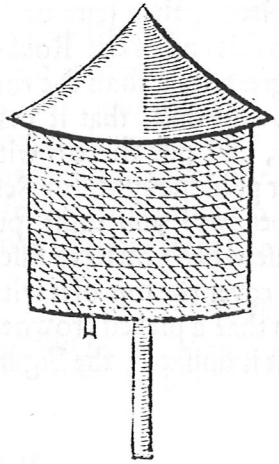


How to make Fiends, or fearefull apparitions.

THese must be made of the compositions for Starres wrought upon cotten weeke dipped in *aqua vitæ*, wherein camphire hath beene dissolved, and after what fashions your fancy doth most affect.

How to make fire Boxes.

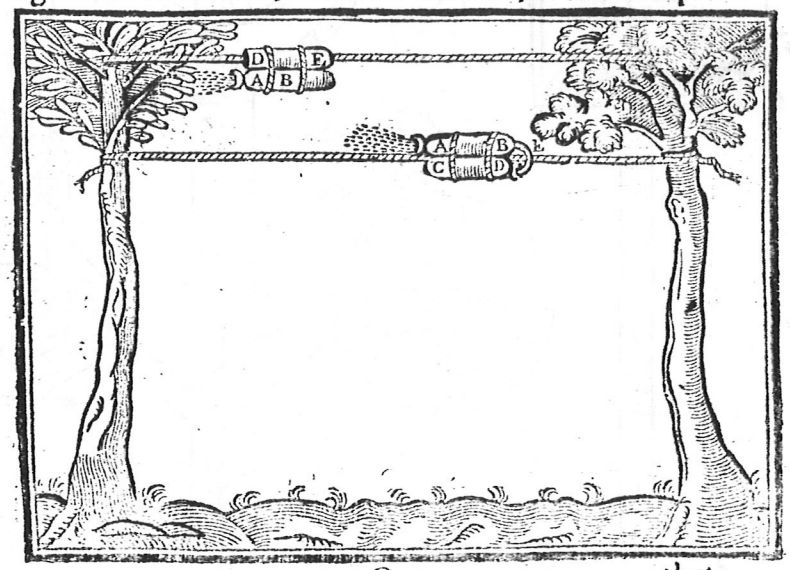
YOu must make the coffins for fire Boxes of pasteboard, rowled upon a Former, of what bignesse you list; then binde them about with packthread, and glew over the cords; also glew bottoms unto them, which must be pierced with a bodkin to prime them at. In these boxes you may put golden raine, stars, serpents, petrars, fiends, divels. The tops of these fire boxes must bee covered with paper as the compound Rockets. Note that you must strew gunpowder dust a pretty thicknesse on the bottom of the fire boxes, and prime the hole at the bottom with prepared stouple.



How

How to make Swevels.

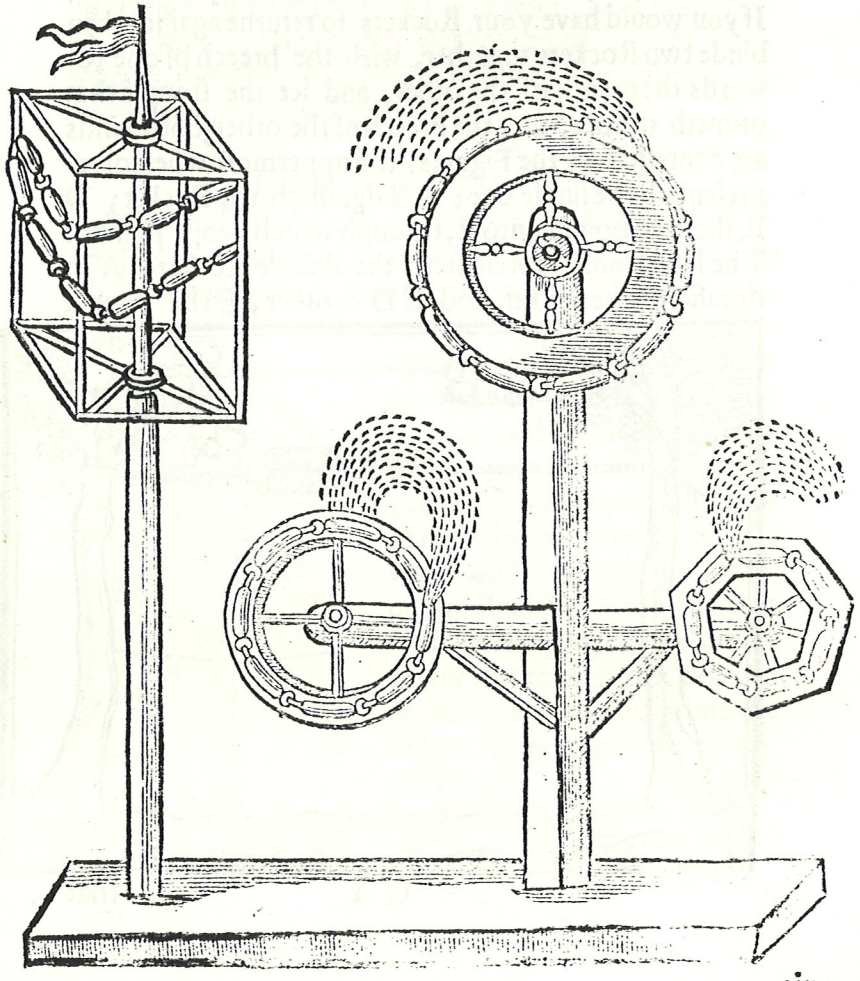
SWevels are nothing else but Rockets, having in stead of a rod (to ballast them) a little cane bound fast unto them, where thorow the rope passeth. Note that you must be carefull to have your line strong, even and smooth and it must be rub'd over with sope that it may not burne. If you would have your Rockets to returne againe, then binde two Rockets together, with the breech of one towards the mouth of the other, and let the stouple that primeth the one, enter the breech of the other; both kinds are expressed by the Figures, the uppermost whereof representeth the single one; A B signifieth the Rocket; D E, the cane bound unto it, through which a rope passeth. The lowermost representeth the double Rocket; A B, signifieth one rocket, and C D another, E the stouple



that primeth the one, and entreth the breech of the other; the cane that the rope passeth thorow is supposed to bee behinde the two rockets.

How to make Gironels, or fire Wheeles.

The making of fire wheeles consisteth onely in the pla-

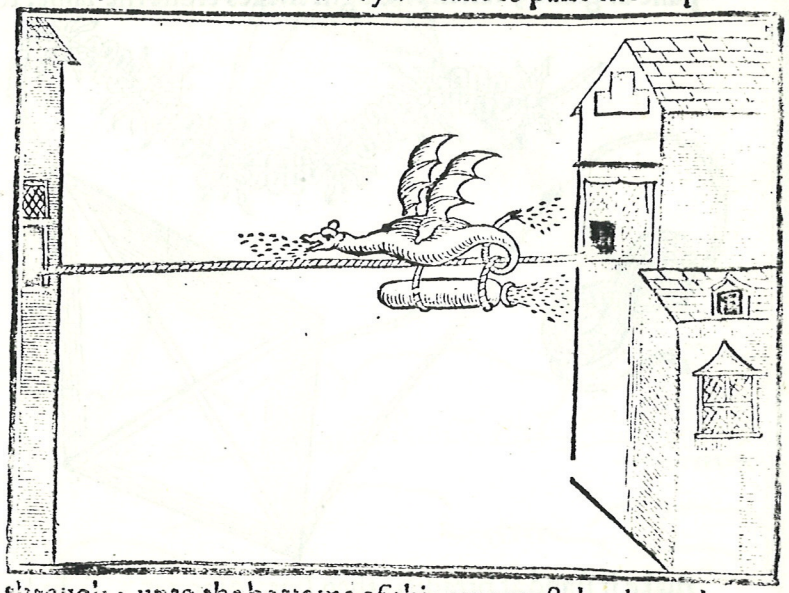


cing

cing of Rockets, with the mouth of one towards the tayl of another, round about certaine moveable wheels; wherefore I thinke it sufficient only to describe the diversity of their fashions.

How to make flying Dragons.

THe flying Dragon is somewhat troublesome to compose; it must be made eyther of dry and light wood, or Crooked-lane plates, or of thin whalebones covered with Muscovie glasse, and painted over. In the body thereof, there must bee a voyde cane to passe the rope



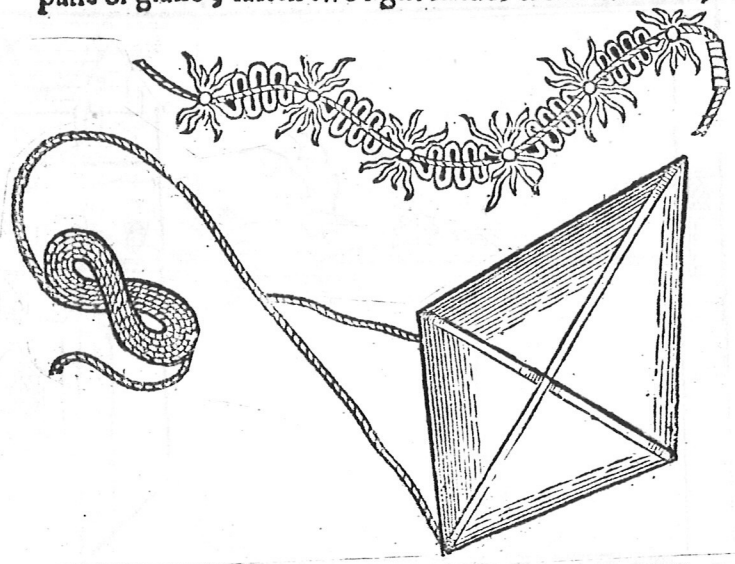
through; unto the bottome of this cane must bee bound one or two large rockets, according as the bignesse and weight of the Dragon shall require; the body must bee filled with divers petrars, that may consume it, and a

 sparkling

ſparkling receipt muſt be ſo diſpoſed upon it, that beeing fired, it may burne both at the mouth and at the tayle thereof; then hang the wings on in ſuch wiſe, that they may ſhake as the Dragon runnes along the line; you may diſpoſe divers ſmall ſerpents in the wings; marke the Figure.

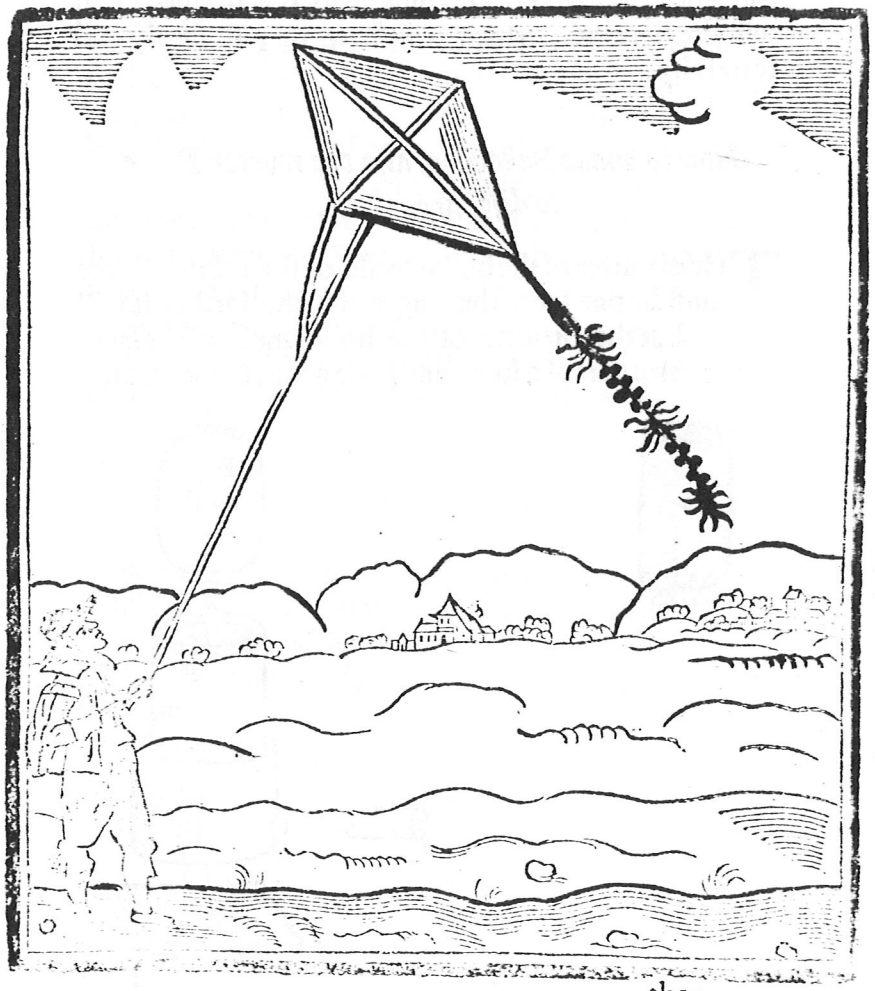
How to make fire Drakes.

YOu muſt take a peece of linnen cloth of a yard or more in length; it muſt bee cut after the forme of a pane of glaſſe; faſten two light ſtickes croſſe the ſame, to



make it ſtand at breadth; then ſmeare it over with linſeed oyle, and liquid varniſh tempered together, or elſe wet it with oyle of peter, and unto the longeſt corner faſten a match prepared with ſaltpeter water (as I have taught before) upon which you may faſten divers crackers, or Sauciſ-

Sauciſſons; betwixt every of which, binde a knot of paper ſhavings, which will make it flye the better; within a quarter of a yard of the cloth, let there bee bound a peece of prepared ſtoupell, the one end whereof, let touch the cloth, and the other enter into the end of a Sauciſſon:

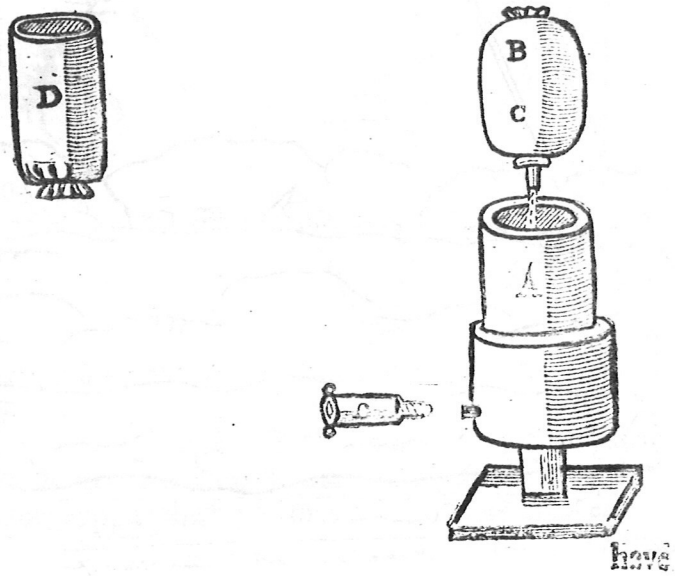


then

then tie a ſmall rope of length ſufficient to rayſe it unto what heighth you ſhall deſire, and to guide it withall: then fire the match, and rayſe it againſt the winde in an open field; and as the match burneth, it will fire the crackers, and ſauciſſons, which will give divers blowes in the ayre; and when the fire is once come unto the ſtoupell, that will fire the cloth, which will ſhew very ſtrangely and fearefully.

How to make Balloones, alſo the morter Peece to diſcharge them.

THe diameter of the hollowneſſe of the morter Peece muſt be one foot, the longer it is the further it will carry. Let the diameter of the hollowneſſe of the ſacke be the third part of a foot, and halfe a foot deepe: it muſt



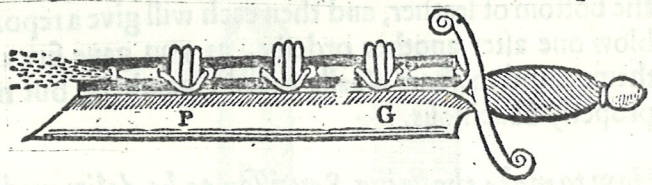
have

have a ſquare foot, and a portfire to ſtrew in the bottome of the ſacke on the ſide of it; this portfire is to bee made like a cane about three inches long, and have a bottome ſodered unto the inſide of the skrew, which bottom muſt be pierced with a ſmall touch hole. This morter peece may bee made of iron, red copper, or for a need with paſtbord, armed with cord, and glewed over, but the ſacke, and foot of it muſt bee made of wood, and the paſtbord morter muſt be nayled faſt upon it. A Balloone muſt be made of canvaſſe rowled eight or nine times upon a Former, it muſt be made ſo, that it will eaſily go into the morter peece; into this Balloone you may put Rockets, Serpents, Starres, Fiends, Petards, and one or two Sauciſſons to breake the Balloone; then choak it up with cord, and prime it with a little cane rammed full of a ſlow compoſition; fill the ſtock of the morter peece full of whole gunpowder, then skrew on the portfire O, then put the Balloone down to the bottom of the morter with the cane that primeth it, downward into the ſtock; then with tallow or greaſe ſtop the chinks betweene the Balloone and the morter, and it is ready to bee diſcharged, which you may doe by putting fire to the portfire, and while that burneth, retreat out of harmes way.

A, the figure of the morterpeece with its portfire. O, B, C, a Balloone ready made. D, an empty coffin for a Balloone.

How to make a fire Sword.

YOu must make a Sword of wood, having a deep channel in the backe of it, wherein place first a Rocket for the ground; then two or three Serpents upright; (with their mouthes inward) let the stouple that primeth the Rocket, come under the mouth of the Serpents, so that being kindled, it may set them on fire, and enter the breech of the next rocket, so fill the channell quite full



with rockets and serpents, binde the rockets fast into the channell, but the serpents must be placed so, that being once fired, they may flye out of the channell, and it is made: marke the Figure G, P.

The description and making of three sorts of Fire-lances.

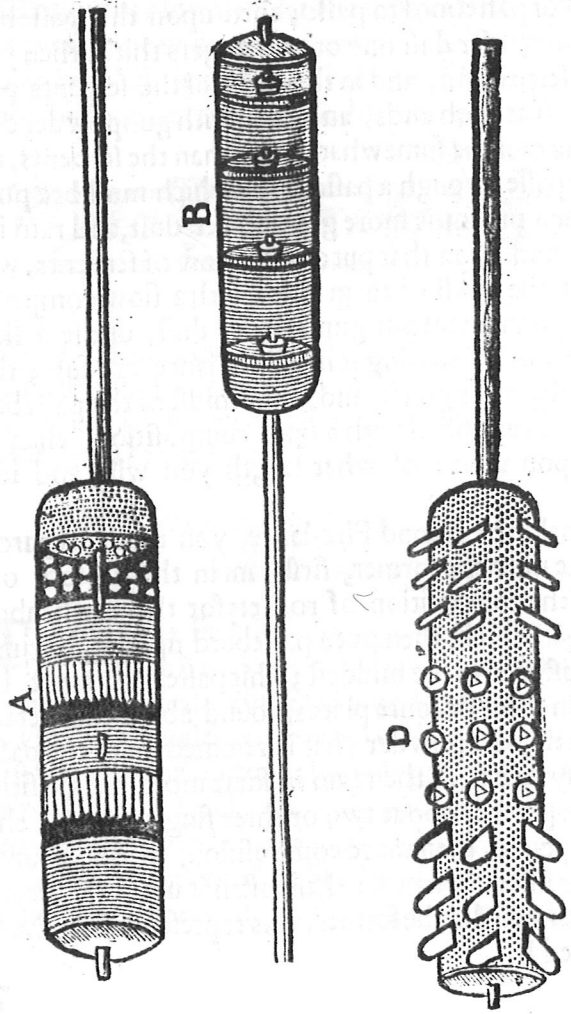
TO make the first Fire-lance, whose Figure is noted A, you must make a hollow trunk of what length or bignesse you please, eyther of wood, paper, or pastebord rowled on a rowler; and armed with some cord and glew first put into the bottom of whole gunpowder about one or two fingers thick, then ram upon it a pastebord pierced with a little hole in the middle, having a quill fastned in it, which quill must be filled with a slow composition, or else with gunpowder dust: this quill must stand up in the

the Lance two or three inches; then fill the coffin up to the top of the said quill with starres, and strew among the starres some gunpowder dust, then put pastebord over them, having a hole for the quill fastned in the former bottom of pastebord to passe; then upon this pastebord ram gunpowder dust one or two fingers thick, then put a row of serpents in, and in the midst of the serpents put a cane open at both ends, and filled with gunpowder dust; this cane must be somewhat longer than the serpents, and it must passe through a pastebord, which must bee put over: then put some more gunpowder dust, and ram it in upon it, and upon that put another row of serpents, with a cane in the midst of them filled with a slow composition, and upon them put gunpowder dust, or else a slow composition; ramming it in till the lance bee full; then put a pastebord upon it, and in the midst of the pastebord put a little cane filled with a slow composition, then fasten it upon a staffe of what length you will, and it is made.

To make the second Fire-lance, you must prepare a trunk like unto the former, first ram in the bottom of it some of the composition of rockets for the earth about two fingers thick, then put a pastebord upon it, having a petard fastened in the middest; this pastebord must bee pierced in three or foure places, round about the petard, that thereby the powder that is rammed over the pastebord may take fire; then ram in some more composition upon the petard, about two or three fingers thick, then another petard, then more composition, so doing untill you have filled the trunk: then fasten it upon a staffe, and prime it as you did the former, it is represented by the Figure noted B.

To

To make the third Fire-lance you must have a trunke also, which must be rammed full of a slow composition, of two parts charcoale dust, and one part gunpowder dust well mixed, prime it as the former, then bore divers



holes

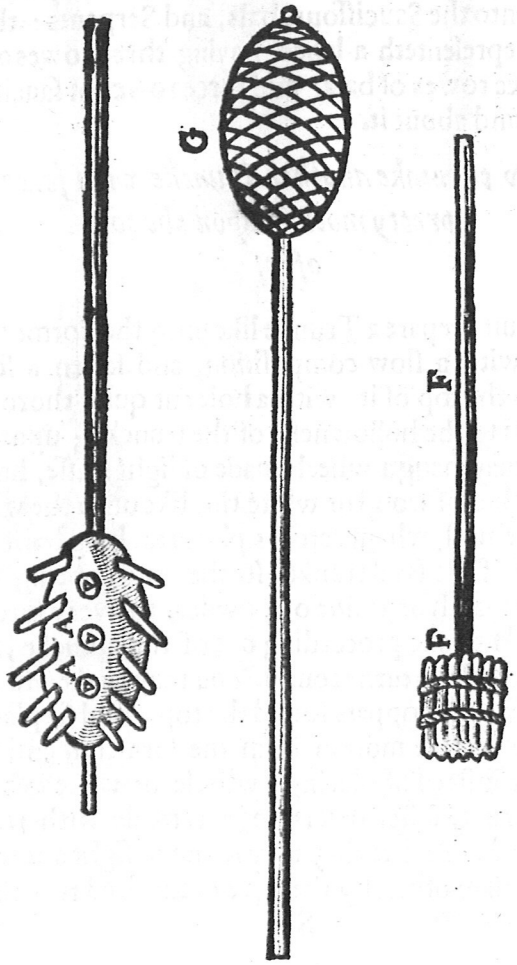
holes round about it, from the top to the bottom, into every of which holes glew a saucisson, or a serpent, or a little ball filled with gunpowder dust, and having a petard in the middle: eyther of these must bee well primed, and their primed ends must be towards the inside of the lance, so that as the lance burneth downward, it may orderly give fire unto the Saucissons, bals, and Serpents: the Figure D representeth a lance having three rowes of serpents, three rowes of bals, and three rowes of saucissons, fastned round about it.

How to make another Truncke with some pretty motion upon the top of it.

YOu must prepare a Trunke like unto the former, and fill it with a slow composition, and fasten a square bord upon the top of it, with a hole cut quite thorow it, answerable to the hollownesse of the truncke; upon this bord you may hang a wheele made of light stuffe, having divers catches of wood or white tin, like unto the wheele of a Water-mill, which catches place reaching halfe over the mouth of the sayd trunke, so the trunke being fired either by a match or traine of powder, the very force of the fire and smoake proceeding out of the truncke, will cause the wheele to turne round. You may make also another wheele with poppets round the top, and so place it that it may receive motion from the former mentioned wheele; or insteed of placing a wheele or wheeles upon the top you may fasten divers poppets made with joynts after such a device that they may seeme to fight and combate one with another, by the force of the fired truncke.

The Description and making of two sorts of Fire-clubs.

TO make the first, you must make an ovall ball of paste-bord, canvasse, or parchment glewed together, which



you

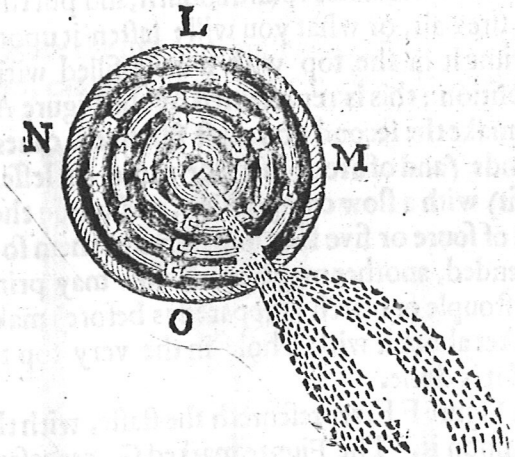
you must first fill with a slow composition, ram it in, and then bore divers holes round about it, and put therein serpents, fire bals, or what you will: fasten it upon a staffe, and prime it in the top with a cane filled with a slow composition: this is represented by the Figure A A.

To make the second you must fill divers canes open at both ends (and of a foot long, or more, or lesse, as you think fit) with a slow composition, and binde them upon a staffe of foure or five foot long; prime them so that one being ended, another may begin: you may prime them with a stouple or match (prepared as before) make an Osier basket about it with a hole in the very top to fire it by, and it is done.

The Figure F F, representeth the staffe, with the canes bound upon it. The Figure marked G, representeth the staffe having a basket wrought over it.

How to make a Fire Target.

MAke a Target of Osier twigs or else of light wood, and binde upon it divers canes filled with a very slow composition: the canes must bee open at both ends, and primed with stouple, that one may give fire unto another: in the midst of all you may set up a large Cane also, if you please, which you may fill with the same composition as you did the others: Marke the Figure L, M, N, O.



Of Fire-workes for the Water.

How to make Rockets for the Water.

THe diameter of hollowneſſe of the mould for Rockets that ſwim on the water, muſt be one inch, and eight inches long: let the breech enter into the body of the Rocket one inch, and it muſt have no broach at all in it. Let the diameter of the thickneſſe of the Rowler be three quarters of an inch, the rammer muſt be a thought leſſer: then ram it full of the compoſition of Rockets for the water; joyne to the upper end of it a Sauciſſon: then cover it all over with melted pitch, roſin, wax, or tallow, to the end that the water may not ſpoyle the coffins; and to make it float along the water, binde a rod about two foot long, as you did unto the rockets for the ayre: now if you would have the rocket to change his actions, (that is, to ſwim

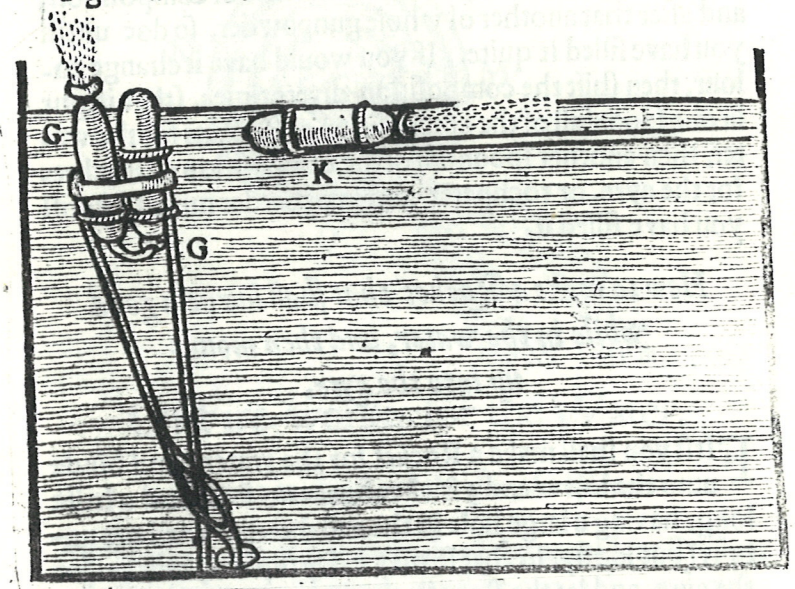
ſwim one while above the water, and one while under the water) then put into it in the filling, one ſpoonfull of compoſition, and ram that in; then one ſpoonefull of whole powder & ram that in; and then another of compoſition, and after that another of whole gunpowder, ſo doe untill you have filled it quite. If you would have it change colour, then ſhift the compoſition divers times, (that is, put in one ſpoonfull of the compoſition of Rockets for the water, then another ſpoonfull of the compoſition of Rockets for the ayre, or rochpeter and gunpowder mixed) untill you have filled it.

How to make a Rocket that ſhall burne a good while in the water, and then mount up into the ayre.

FIrſt you ſhall make a Rocket for the water, and binde unto the lower end a ſticke about two foot and a halfe long, having a large hole in the end thereof: then tye unto it (but looſly, ſo that it may eaſily ſlip out) a rocket for the ayre, and let the ſtouple that primeth for the rocket for the ayre, enter into the breech of the water rocket, then let the end of the rod of the rocket for the ayre enter into the hole of the rod of the rocket for the water; beſmeare then both the rockets with tallow, greaſe, or wax, or any oyle colour, that the water may not ſpoyle the coffins of the Rockets; then hang a ſtone at the bottome of the ſtick that hath the hole in it to make it ſink down into the water; then fire the water Rocket and caſt them into the water; the fired rocket will burne in the water, and being conſumed, will give fire unto the other rocket,

 which

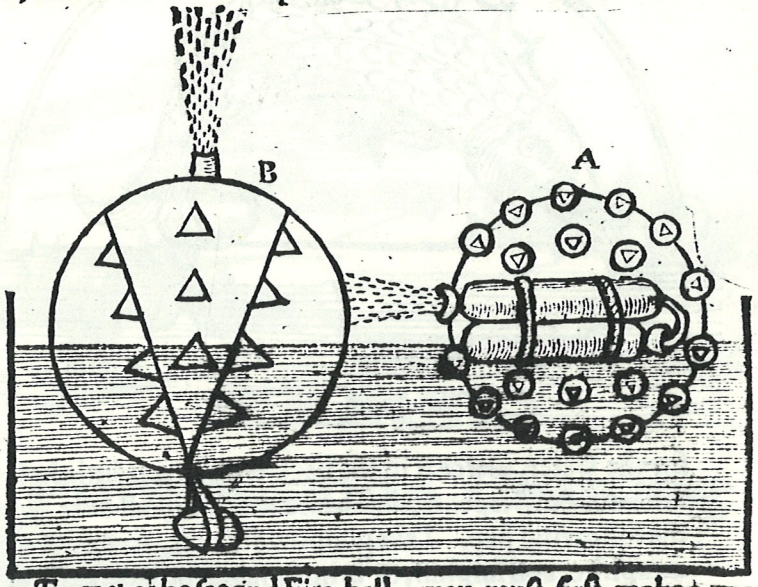
which being loosly tyed, will slip the bond, and mount up into the ayre. This is represented by the Figure G, G. The floating rocket mentioned before, is expressed by the Figure noted I, K.



The description and making of two sorts of Fire-bals for the water.

FOr to make the first, you must make a ball of Canvas, about the bignesse of a Foot-ball, or bigger if you please, and fasten in it a double Rocket for the water: if you will, also you may stuffe the rest of the Ball with the composition that will burne under the water, and cut holes in the sides, and therein fasten other bals, and perrards in them: then cover the ball over with Tallow, Pitch, or painting, except the place where the Rocket is primed, and

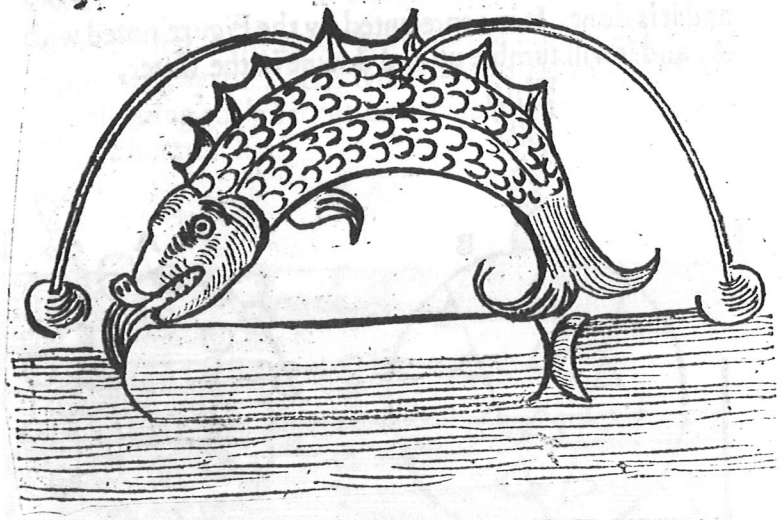
and it is done. It is represented by the Figure noted with A, and it will tumble up and downe in the water.



To make the second Fire-ball, you must first make a ball of Canvas, Pastebord, or such like, and cut a wide hole in the top of it, and place it in a channell of Tinne pierced in divers places: fill the channell with the compositions of Rockets for the water; against every hole thereof, place a perrard: cover it with a cover, pitch it over, and prime it, then ballast it with leade, or a stone, that the vene may burne upwards, and it is done. It is represented by the Figure B.

How to make a Dolphin.

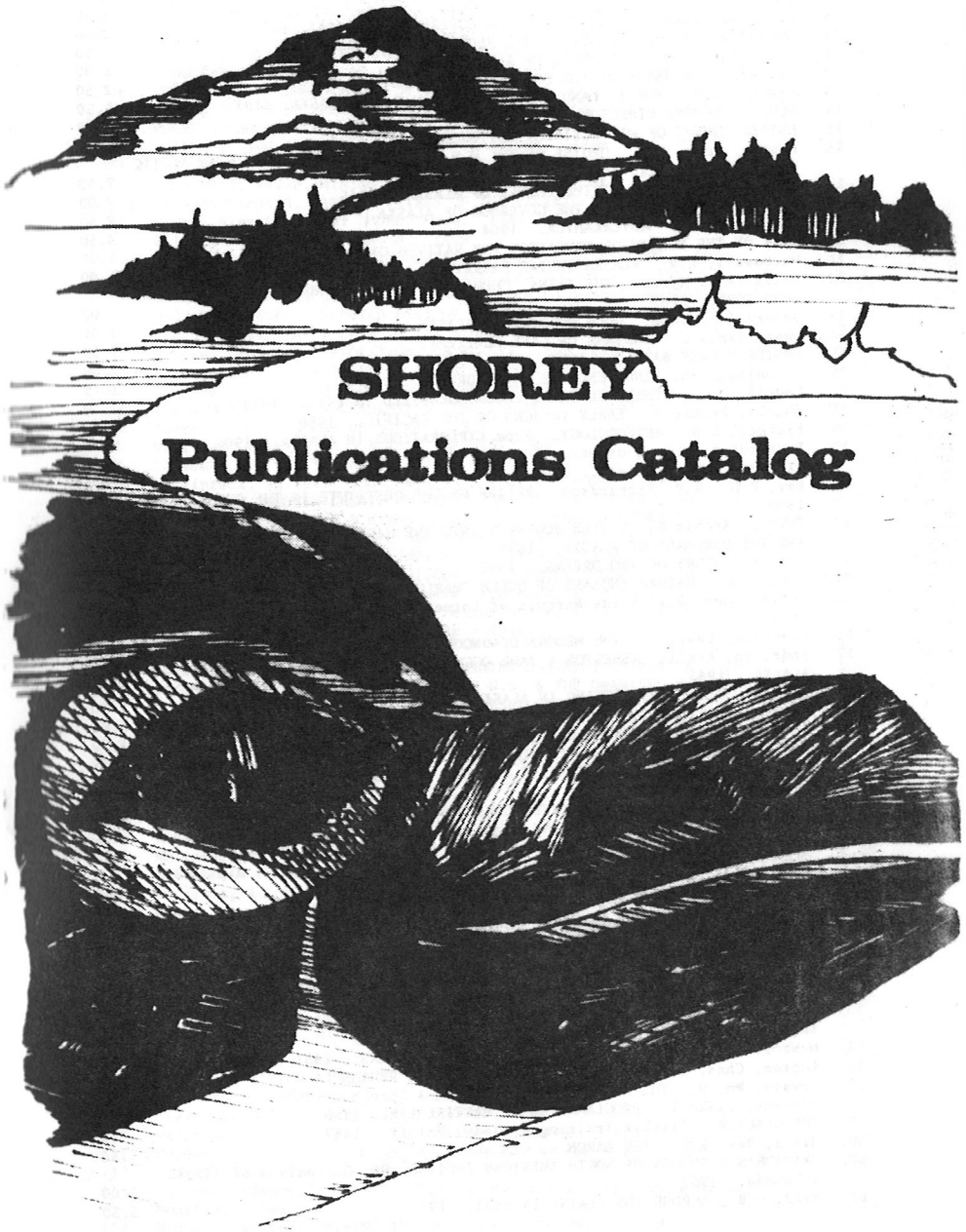
YOu must make the body of it of Pastebord glued together, fill the body with the composition of Rockets for



for the water, pierce it in the back with divers little holes, wherein put Serpents, besmeare the body all over with the following pap. Take gunpowder dust, foure ounces, camphire, and sulphur, or brimstone in powder, of each one ounce, make them into a soft pap with oyle of tiles, then binde unto it a large Rocket for the Water, which Rocket must be armed (as afore) that the water may not hurt it. then fasten it unto a peece of wood or cork cut like a sharp boat, or ballast it with a wyre, having at each end a piece of lead of weight sufficient, and it is done. Mark the Figure. After the same manner you may make Mermaides and other delightfull representations.

I might have beene infinite in the describing of such like with Ships, Towres, Castles, Pyramides. But considering that it would but increase the price of the booke, and not better your understanding: since all consist of the former workes, which are so plainly described, as that the most ignorant may easily conceive thereof, & (if any whit Ingenuous) thence contrive others, of what fashion they list.

FINIS.



SHOREY PUBLICATIONS IN PRINT

1. Glover, S.L. ORIGIN & OCCURENCE OF GEM STONES IN WASHINGTON. 1949 1.00
2. Mooney, Jas. GHOST DANCE RELIGION: SMOHALLA & HIS DOCTRINE. 1896 1.50
3. Mooney. GHOST DANCE RELIGION: SHAKERS OF PUGET SOUND. 1896 1.50
4. Farrand, Liv. TRADITIONS OF THE QUINAULT INDIANS. 1902 4.00
5. DICTIONARY OF THE CHINOOK JARGON. nd 2.00
6. ALASKA RAILROAD TIME TABLES. 1922 .50
7. Wells, E.H. UP AND DOWN THE YUKON. 1900 1.50
8. Williams, J.G. REPORT OF THE ATTORNEY GENERAL, Territory of Alaska, 1949-51 1.50
9. Gruening, Ernest. MESSAGE OF THE GOVERNOR OF ALASKA, 1946 2.00
10. Gruening. THIRD MESSAGE TO THE PEOPLE OF ALASKA, 1946 1.50
11. Kohlstedt, E.D. A GLIMPSE OF ALASKA. 1930 1.00
12. Gruening. MESSAGE OF THE GOVERNOR OF ALASKA, 1945 2.50
13. Leehey, M.D. PUBLIC LAND POLICY OF THE U.S. IN ALASKA. 1912 1.50
14. NOME TELEPHONE DIRECTORY. 1905 3.00
15. ESTABLISHMENT OF MT. MCKINLEY NATIONAL PARK. 1914 1.50
16. Hooper, Capt. C.L. CRUISE OF THE U.S. REVENUE STEAMER CORWIN IN ARCTIC OCEAN, November 1, 1880 7.50
17. Gruening. MESSAGE TO THE PEOPLE OF ALASKA. 1945 2.00
18. Gruening. MESSAGES OF THE GOVERNOR OF ALASKA. 1949 2.50
19. Davis, Geo. T. METLAKAHTLA. 1904 3.50
20. WORK OF THE BUREAU OF EDUCATION FOR NATIVES OF ALASKA. 1918 5.00
21. MacDowell, L.W. ALASKA INDIAN FASKETRY. 1.00
22. Eells, Rev. Myron. THE TWANA, CHEMAKUM & KLALLAM INDIANS OF WASHINGTON TERRITORY. 1887 4.00
23. Grinnell, Joseph. GOLD HUNTING IN ALASKA. 4.00
24. Swan, James G. INDIANS OF CAPE FLATTERY. 7.50
25. CUSTER'S LAST BATTLE. 1892 2.00
26. Gruening, Sen. INDEPENDENCE DAY ADDRESS. 1959 1.75
27. Cadell, H. M. THE KLONDIKE & YUKON GOLDFIELD IN 1913. 1914 2.50
28. Shiels, Archie W. EARLY VOYAGES OF THE PACIFIC. 1930 3.00
29. Fickett, E.D. METEOROLOGY. From EXPLORATIONS IN ALASKA. 1900 1.50
30. Richardson, W.P. & others. YUKON RIVER EXPLORING EXPEDITION. From EXPLORATIONS IN ALASKA. 1900 2.00
31. Ray, P.H., W.P. Richardson. RELIEF OF THE DESTITUTE IN THE GOLDFIELDS. 1900 1.75
32. Shiels, Archie W. LITTLE JOURNEYS INTO THE HISTORY OF RUSSIAN AMERICA AND THE PURCHASE OF ALASKA. 1949 7.50
33. Shiels. STORY OF TWO DREAMS. 1957 4.00
34. Swan, J.G. HAIDAH INDIANS OF QUEEN CHARLOTTE'S ISLAND, B.C. 1874 5.00
35. Butler, Gen. B.V. & the Marquis of Lorne. THE BEHRING SEA CONTROVERSY. 1892 1.50
36. Crawford, Lewis F. THE MEDORA-DEADWOOD STAGE LINE. 1925 1.50
37. Anderson, Eskil. ASBESTOS & JADE OCCURENCES IN KOBUK RIVER REGION, ALASKA. 1945 2.00
38. Stewart, B.D. PROSPECTING IN ALASKA. 1949 1.50
39. Geoghegan, Richard H. THE ALEUT LANGUAGE. 5.00
40. SEATTLE'S FIRST BUSINESS DIRECTORY. 1876 7.50
41. THE WASHBURN YELLOWSTONE EXPEDITION. 1871 1.25
42. Subreports from EXPLORATIONS IN ALASKA. 7 reports: The Tanana, Chickaloon Sushitna, etc. 1900 2.00
43. Glenn, Capt. E.F. TANANA RIVER EXPLORING EXPEDITION. 1900 2.50
44. Glenn. COOK'S INLET EXPLORING EXPEDITION. 1900 1.75
45. WILKESON'S NOTES ON PUGET SOUND (1870)? 2.50
46. (Perry) JOURNAL OF A VOYAGE TO THE ARCTIC REGIONS IN H.M.S. ALEXANDER 1818 (1819)? 6.00
47. BIENNIAL MESSAGE OF WM. M. BUNN, Governor of Idaho. 1884 2.00
48. MACKENZIE'S ROCK. Exploration of Sir Alexander Mackenzie. 1905 2.50
49. Williams, L.R. OUR PACIFIC COUNTY. (Wash) 5.00
50. AARON LADNER LINDSLEY. Founder of Alaska Missions. 1.00
51. Evans, Elwood. PUGET SOUND: Its Past, Present and Future. 1869 2.50
52. Campbell, Robt. TWO JOURNALS, 1808-1853 15.00
53. Bernhardi, Madame Charlotte. MEMOIR OF THE CELEBRATED ADM. JOHN DE KRUSENSTERN. 1856 5.00
54. McWhorter, Lucullus V. CRIME AGAINST THE YAKIMAS. 1931 4.50
55. Lupton, Chas. T. OIL AND GAS IN THE OLYMPIC PENINSULA. 1913 4.00
56. Seward, Wm. H. THE ADMISSION OF KANSAS. A Speech. 1860 1.50
57. Stevens, Isaac I. PROCLAMATION OF MARTIAL LAW. 1856 .50
58. THE GLACIER - Tlinkit Training Academy, Vol II. 1887 .75
59. Hills, Rev. E.P. REV AARON L. LINDSLEY. .50
60. SWANTON'S HANDBOOK OF NORTH AMERICAN INDIANS, Pt. C: Indians of Alaska & Canada. 1952 5.00
61. Ward, D.B. ACROSS THE PLAINS IN 1853. 1911 3.50
62. MacDowell, Lloyd W. ALASKA TOTEM POLES. 1.25
63. MacDowell. A TRIP TO WONDERFUL ALASKA. 2.00
64. MacDowell. ALASKA GLACIERS & ICE FIELDS. 1.25
65. Shaw, Geo. C. THE CHINOOK JARGON & HOW TO USE IT. 1909 4.00
66. PUGET SOUND COOPERATIVE COLONY. 1890s 2.00
67. THE HEROES OF BATTLE ROCK, or The Miners' Reward. 1904 1.50
68. Lampman, Ben Hur. CENTRALIA TRAGEDY AND TRIAL. 1920 4.00
69. SEAL FISHERY IN THE NORTH PACIFIC. (Correspondence with Russia) 1895 7.50
70. Coolican, J.D. (ed) PORT ANGELES. 1898 4.00
71. Jordan, D.S. TROUT & SALMON OF THE PACIFIC COAST. 1906 1.25
72. COOPERATIVE PLAN FOR SECURING HOMES AT PORT ANGELES, Wash. 1893 1.00
73. Hidden, Maria L.T. OREGON PIONEERY. 1910 1.00
74. Stevens, Hazard. FIRST ASCENT OF TAKHOMA. Ext., 1876 1.50
75. DEMOCRATIC & REPUBLICAN Ticket for Washington State & King County. 1889 .50
76. THIRD ANNUAL COMMENCEMENT OF SEATTLE HIGH SCHOOL. 1888 .35
77. ASSASSINATION OF PRESIDENT GARFIELD. Newspaper Extra. 1881? .50
78. PUGET SOUND CATECHISM. 1889 1.00
79. SEATTLE, KING COUNTY, WASHINGTON TERRITORY. 1884 1.50
80. THE GREAT SEATTLE FIRE of June 7, 1889. 2.50
81. USGS Bull. 442-D. MINING IN THE CHITINA DIST., etc. 1910 2.50
82. Swanton, John R. INDIAN TRIBES OF THE PACIFIC NORTHWEST. Ext., 1952 6.00
83. Sayre, Alex N. PUGET SOUND: Poem. 1883 1.50
84. Bell, W.S. OLD FORT BENTON. 1909 2.50
85. Meany, Edmund S. INDIAN GEOGRAPHIC NAMES OF WASHINGTON. 1908 1.00
86. Swanton, J. R. INDIAN TRIBES OF AMERICAN SOUTHWEST. 1952 6.00
87. Swanton. INDIANS OF MEXICO, CENTRAL AMERICA & WEST INDIES. 1952 2.50
88. USGS Bull. 836. SELECTED LIST OF USGS PUBS. ON ALASKA. 1930 1.00
89. Lewis, Wm S. EARLY DAYS IN THE BIG BEND COUNTRY. 1926 3.50
90. Stoney, Geo. M. EXPLORATIONS IN ALASKA. 1899, Ext. from US Naval In. 6.00
91. Lindsley, A.L. SKETCHES OF AN EXCURSION TO SOUTHERN ALASKA. 1881 5.00
92. Collins, H.B. ARCHEOLOGY OF THE BEHRING SEA REGION. Ext. 1933 1.50
93. Ray & Murdoch. A VOCABULARY OF THE ESKIMOS OF POINT BARROW. 1885 1.25
94. Andrews, C.L. STORY OF SITKA. 1922 5.00
95. Matthews, Washington. NAVAJO WEAVERS. 1884 2.50
96. Dawson, Geo. M. THE HAIDAS. 1882 1.00
97. McClintock, Walter. FOUR DAYS IN A MEDICINE LODGE. 1900 1.00
98. Barbeau, M. MODERN GROWTH OF THE TOTEM POLE ON THE NW COAST. 1939 1.00
99. SCRIPTURE SELECTIONS & HYMNS IN HIDATSA or GROS VENTURE LANGUAGE. 1906 1.50
100. Baker, Marcus. GEOGRAPHIC DICTIONARY OF ALASKA. 1906 3.00
101. Lee, Charles A. ALEUTIAN INDIAN & ENGLISH DICTIONARY. 1896 1.00
102. Shaw, Geo. C. VANCOUVER'S DISCOVERY OF PUGET SOUND IN 1792. 1933 1.00
103. Seward, Wm H. SPEECHES in Alaska, Vancouver & Oregon, 1869. 2.50
104. Rees, J.E. IDAHO: Chronology, Nomenclature, Biblio. 1918 5.00
105. Smith, W.C. THE EVERETT MASSACRE. 1916 8.00
106. PLACER MINING. 1897 4.50
107. Ross, Clyde P. THE VALDEZ CREEK MINING DISTRICT IN ALASKA. 1933 5.00
108. Stevens, Isaac. TREATY BETWEEN THE U.S. & THE DWAMISH, SUQUAMISH & ALLIED & SUBORDINATE TRIBES OF INDIANS IN WASHINGTON TERRITORY. 1855 2.00
109. Stevens. TREATY BETWEEN THE US & NISQUALLY & OTHER BANDS OF INDIANS. 1855 2.00
110. Stevens. TREATY BETWEEN THE US & YAKIMA NATION OF INDIANS. 1855 2.00
111. Stevens. TREATY BETWEEN THE US & THE MAKAH TRIBE OF INDIANS. 1855 2.00
112. Stevens. TREATY BETWEEN THE US & INDIANS OF WILLAMETTE VALLEY. 1855 2.00
113. Densmore, F. STUDY OF INDIAN MUSIC. 1941 1.50
114. Harriman, Job. THE CLASS WAR IN IDAHO. 3.00
115. Ranck, G. PICTURES FROM NORTHWEST HISTORY. 2.00
116. Whitaker, R. OVERLAND TO OREGON. 1906 4.00
117. Krieger, H. INDIAN VILLAGES OF SOUTHEAST ALASKA. 2.50
118. Gatschet, A. THE KLAMATH INDIANS OF SOUTHWEST OREGON. 1890 4.50
119. Crane, W. TOTEM TALES. 1952 4.00
120. Bate, J. THE SECOND BOOKE TEACHING MOST PLAINLY & COMPOSING OF ALL MANNER OF FIREWORKS FOR TRYUMPH & RECREATION. 1635 3.00
121. James, G. PRACTICAL BASKET MAKING. 1917 5.00
122. Whorf, B. MAYA HIEROGLYPHS. 1941 1.25
123. Dall, Wm. MASKS, LABRETS, & CERTAIN ABORIGINAL CUSTOMS. 1884 8.50
124. McCurdy, J. CAPE FLATTERY & ITS LIGHT. 1.00
125. Wilhelm, Homer. THE SAN JUAN ISLANDS. 1901 5.00
126. Gaerity, Jack. BREAD & ROSES FROM STONE. 4.00
127. Smith, W.C. WAS IT MURDER? (Centralia) 1922 3.50
128. HISTORY OF OWYHEE COUNTY. (Idaho) 8.50
129. Evans, Elwood. WASHINGTON TERRITORY. 1877 3.00
130. Delaney, Matilda Sagar. THE WHITMAN MASSACRE. 1920 3.00
131. Hubback, T.W. TEN THOUSAND MILES TO ALASKA FOR MOOSE & SHEEP. 1921 4.00
132. Wilson, Katherine. COPPER TINTS. 1923 3.00
133. Coleman, Edmund T. FIRST ASCENT OF MT. BAKER. Ext. from Harper's Monthly. 1869 2.50
134. Hodge, L.K. (ed) MINING IN THE PACIFIC NORTHWEST. 1897 30.00

134a. Hodge. MINING IN WESTERN WASHINGTON. Ext. from #134 10.00
134b. Hodge. MINING IN CENTRAL & EASTERN WASHINGTON. Ext. from #134 10.00
134c. Hodge. MINING IN SOUTHERN BRITISH COLUMBIA. Ext. from #134 10.00
135. Stallard, Bruce. ARCHEOLOGY IN WASHINGTON. 1958 3.00
136. Lockley, Fred. ALASKA'S FIRST FREE MAIL DELIVERY IN 1900 1.25
137. Strange. James Strange's JOURNAL & NARRATIVE OF THE COMMERCIAL EXPEDITION FROM BOMBAY TO THE NORTHWEST COAST OF AMERICA. 1928 5.00
138. Hathaway, Ella C. BATTLE OF BIG HOLE. 2.00
139. Haller, Granville. SAN JUAN & SECESSION 1.50
140. THE KLONDIKE NEWS. Vol 1 #1, Dawson Newspaper. 1898 (Alaska's Rarest Newspaper) 10.00
141. JOURNAL OF MEDOREM CRAWFORD. 1897 2.00
142. OCOSTA! The Ocean Terminus of the Northern Pacific RR and the Coast City of Washington. 2.50
143. Sutherland, T.A. HOWARD'S CAMPAIGN AGAINST THE NEZ PERCE INDIANS, 1877. 1878 3.50
144. Matthews, Matthew. THE CATLIN COLLECTION OF INDIAN PAINTINGS. 1890 3.00
145. Lockley, Fred. TO OREGON BY OX TEAM IN '47. 1.25
146. Lockley, F. VIGILANTE DAYS IN VIRGINIA CITY. 1.50
147. Judson, Katherine. MYTHS & LEGENDS OF THE PACIFIC NORTHWEST. 1910 7.50
148. Whiting, Dr. F.B. GRIT, GRIEF & GOLD. 10.00
149. Amundsen, Capt. R. TO THE NORTH MAGNETIC POLE & THRU THE NW PASSAGE. 3.00
150. Butte Businessmen's Assn. BUTTE, MONTANA. 2.00
151. Immigration Aid Society of Washington Terr. NORTHWESTERN WASH. 1880 3.50
152. Denig, Edwin T. INDIAN TRIBES OF THE UPPER MISSOURI. 1930 10.00
153. Buckley, Rev. J.M. TWO WEEKS IN THE YOSEMITE & VICINITY. 1888 2.50
154. SPEECH OF THE HON. R.C. WINTHROP OF MASS. ON THE PRESIDENT'S MESSAGE (on admission of California) 1850 2.00
155. Marshall, M. A PRONOUNCING DICTIONARY OF CALIFORNIA NAMES IN ENGLISH & SPANISH 2.50
156. Mercer, A.S. BIG HORN COUNTY, WYOMING. 7.50
157. Moorehead, Warren K. PREHISTORIC RELICS. 7.50
158. Merrill, Geo. P. NOTES ON THE GEOLOGY & NATURAL HISTORY OF THE PENINSULA OF LOWER CALIFORNIA. 1895 2.00
159. Georgeson, C.C. REINDEER & CARIBOU. 1904 1.50
160. Hewett, Edgar L. GENERAL VIEW OF THE ARCHEOLOGY OF THE PUEBLO REGION. 1904 2.00
161. Bennett, Wm P. THE FIRST BABY IN CAMP. 3.50
162. Coffman, Noah B. OLD LEWIS COUNTY, Oregon Territory. 1926 3.50
163. Bebbe, Mrs. Iola. THE TRUE STORY OF SWIFTWATER BILL GATES. 1908 7.50
164. Costello. THE SIWASH - THEIR LIFE, LEGENDS & TALES. 1895 10.00
165. Murie, Olaus J. ALASKA -YUKON CARIBOU. 10.00
166. Meeker, Ezra. STORY OF THE LOST TRAIL TO OREGON, No 2. 1916 2.50
167. Hanna, Rev. J.A. DR. WHITMAN & HIS RIDE TO SAVE OREGON. 1903 1.25
168. Hadwen, S. & Palmer, Laurence. REINDEER IN ALASKA. 1922 5.00
169. Geer, T.T. THE ROMANCE OF ASTORIA. 1911 1.75
170. Williams, Lewis. CHINOOK BY THE SEA. 7.50
171. SAN FERNANDO VALLEY. 1938 2.00
172. PASADENA. 1938 2.00
173. Ingalls, Maj. J.W. HISTORY OF WASHOE COUNTY, NEVADA. 1913 5.00
174. Reid, J.T. & J.R. Hunter. HUMBOLDT COUNTY. 1913 4.50
175. Aston. ESMERALDA COUNTY. 1913 4.50
176. London, Jack. THE GOLD HUNTERS OF THE NORTH. Ext., 1903 1.25
177. Wartman-Arland, Flora E. THE STORY OF MONTESANO. 1933 4.00
178. London, J. THE ECONOMICS OF THE KLONDIKE. 1.50
179. Bishop, Robert Sr. LAND IN THE SKY TOTEM. 1.50
180. Webb, John & Ed Curtis. THE RIVER TRIP TO THE KLONDIKE & THE RUSH TO THE KLONDIKE OVER THE MOUNTAIN PASS. 1898 2.50
181. Librn. of Bellingham Public Libr. HISTORY OF BELLINGHAM. 1926 6.00
182. VOYAGE OF THE ALEXANDER MACKENZIE. 2.50
183. Chaplin, Ralph. CENTRALIA CONSPIRACY. 4.50
184. Haswell, Robt. ROBERT HASWELL'S JOURNALS. 1788-89 4.50
185. Minto, John. RHYME OF EARLY LIFE IN OREGON. (1915)? 4.00
186. Collins, Henry B., A.H. Clarke & E.H. Walker. THE ALEUTIAN ISLANDS: Their People & Natural History. 1945 7.50
187. Simpson, Brevet Brig. Gen. J.H. CORONADO'S MARCH IN SEARCH OF THE "SEVEN CITIES OF CIBOLA". 1871 2.50
188. Riddle, Geo. W. EARLY DAYS IN OREGON. 5.00
189. VILHJALMUR STEFANSON. 1925 2.50
190. Lockley, F. ACROSS THE PLAINS BY PRAIRIE SCHOONER. 1.50
191. MacArthur, Walter. LAST DAYS OF SAIL ON THE WEST COAST. 1929 7.50
192. Stuck, Hudson. THE ALASKAN MISSIONS OF THE EPISCOPAL CHURCH. 1920 10.00
193. Steffa, Don. TALES OF NOTED FRONTIER CHARACTERS, SOAPY SMITH. 1908 1.75
194. Meeker, E. WASHINGTON TERRITORY. 1870 3.00
195. Denny, Arthur A. PIONEER DAYS ON THE PUGET SOUND. 1888 5.00
196. Rowan, James. THE I.W.W. IN THE LUMBER INDUSTRY. 4.00
199. Dayre, J. Willis. THE EARLY WATERFRONT OF SEATTLE, 1937 2.50
200. Thwaites, Reben G. NEWLY DISCOVERED PERSONAL RECORDS OF LEWIS & CLARK. 1904 1.50
204. Pelly, T. M. DR. MINOR-A SKETCH OF HIS BACKGROUND & LIFE. 1933 7.50
205. Rothrock, J.T. SKETCH OF THE FLORA OF ALASKA. 1868 2.50
208. Jackson, Sheldon. THE NORTH STAR, Sitka, Alaska. 1887 35.00
209. Flandrau, Grace. FRONTIER DAYS ALONG THE UPPER MISSOURI. 3.00
210. Flandrau. THE LEWIS & CLARK EXPEDITION. 5.00
211. Flandrau. A GLANCE AT THE LEWIS & CLARK EXPEDITION. 3.00
212. Flandrau. THE STORY OF MARIAS PASS. nd 2.00
213. Flandrau. THE VERENDRYE OVERLAND QUEST OF THE PACIFIC. 3.50
216. Harper, Frank B. FORT UNION & ITS NEIGHBORS ON THE UPPER MISSOURI. 2.50
220. Burdick, Usher L. MARQUIS DE MORES AT WAR IN THE BADLANDS. 1929 2.50
227. General Strike Committee. THE SEATTLE GENERAL STRIKE. 1919 5.00
228. Eells, Rev. M. TEN YEARS OF MISSIONARY WORK AMONG THE INDIANS AT SKOKOMISH. 1881 12.50
229. THE PACIFIC NORTHWEST. 1883 3.00
230. Steele, Richard F. THE STORY OF LINCOLN COUNTY, WASHINGTON 1909 2.50
231. Sayre, J.W. THE ROMANCE OF SECOND AVENUE. 1.50
233. Van Dusen, W.W. BLAZING THE WAY. 1905 10.00
234. Drumheller, "Uncle Dan". "UNCLE DAN" DRUMHELLER TELLS THRILLS OF WESTERN TRAILS IN 1854. 1925 7.50
235. DEDICATION & OPENING OF THE NEW CASCADE TUNNEL. 1929 2.00
237. Rathburn. HISTORY OF THURSTON COUNTY, WASH. FROM 1845-1895. nd 7.50
239. Van Olinda, O.S. HISTORY OF VASHON-MAURY ISLAND. 1935 6.00
241. Hanford, C.H. SAN JUAN DISPUTE. 1900 2.00
242. Meeker, Ezra. UNCLE EZRA'S SHORT STORIES FOR CHILDREN. nd 5.00
244. Blankenship, Geo. E. LIGHTS & SHADES OF PIONEER LIFE ON PUGET SOUND. 5.00
246. Walgamott, C.S. REMINISCENCES OF EARLY DAYS. 1926 7.50
248. THE UTAH PIONEERS. 1880 3.00
249. Calhoun, W.C. HISTORY OF CRIPPLE CREEK. 1896 3.00
250. Wardner, J. JIM WARDNER, OF WARDNER, IDAHO. 1900 8.00
251. Brown, Col. W.C. THE SHEEPEATER CAMPAIGN, Idaho-1879. 1926 2.50
259. Hornaday, Wm. T. EXTERMINATION OF THE AMERICAN BISON. 1887? 10.00
262. Wilhelm, H. THE PORT ORCHARD INDEPENDENT-KITSAP COUNTY BUSINESS REVIEW. 1901 4.50
263. Wilhelm. PAN AMERICAN EXPOSITION SUP. TO MASON COUNTY JOURNAL-Shelton, Washington. 1901 5.00
264. Slauson, Morda C. ONE HUNDRED YEARS ON THE CEDAR. 10.00
265. Jones, S.C. & Casady, M.F. FROM CABIN TO CUPOLA. County Courthouses in Washington. 10.00
266. Estes, Geo. THE RAWHIDE RAILROAD. 1916 3.00
267. Andrews, Clarence L. WRANGELL & GOLD OF THE CASSIAR. 1937 3.50
268. Andrews. THE PIONEERS & NUGGETS OF VERSE. 1937 3.00
280. PORT TOWNSEND. 1890 5.00
281. Gilbert, Kenneth. ALASKAN POKER STORIES. 1958 2.50
282. Moore, James Bernard. SKAGWAY IN DAYS PRIMEVAL. 4.00
283. Chase, Cora. UNTO THE LEAST-A Biographic Sketch of Mother Ryther. 1972 6.00
284. Blankenship, Geo. E. EARLY HISTORY OF THURSTON COUNTY. 1914 20.00
285. Fish, Harriet U. PAST AT PRESENT In Issaquah, WN. 1967 12.50
286. Allen, Edward W. THE ROLLICKING PACIFIC: A Selection of Poems. 1972 3.00
287. Allen. DANCING TALES & OTHER FISHY JINGLES. 1951 4.00
289. Chin, Doug & Art. UPHILL-The Settlement & Diffusion of the Chinese in Seattle. 6.00
290. Wilkie, Rosemary. A BROAD BOLD LEDGE OF GOLD. 3.50
291. Riedesel, G.A. ARID ACRES-A History of the Kimana-Minidoka Homestead. 6.00
292. Harpham, Josephine E. DOORWAYS INTO HISTORY-Early Houses & Public Buildings of Oregon. 5.00
302. Cleland, Lucile H. TRAILS & TRIALS OF THE PIONEERS OF THE OLYMPIC PENINSULA, STATE OF WASHINGTON. 1959 10.00
307. Higman, Harry W. & Larrison, Earl J. PILCHUCK-The Life of a Mountain. 10.00
308. Cleveland High School. THE DUWAMISH DIARY. 1949 5.00
309. Veblen, Marthanna. GIANT STRIDES SINCE ANDREW CARNEGIE-Creative Architecture in King County Library System. 1974 6.00

SJU 1. Farlow, Dr. W.G. SOME EDIBLE & POISONOUS FUNGI. 1897 2.50
SJU 2. Gurdji, V. ORIENTAL RUG WEAVING. 1901 5.00
SJU 3. D'Avennes, E. Prisse & Dr. J.C. Ewart. EGYPTIAN & ARABIAN HORSES & ORIGIN OF HORSES & PONIES. 1904 2.50
SJU 4. Freshfield, Douglas W. ON MOUNTAINS & MANKIND. 1904 1.50
SJU 5. Davenport, Cyril. CAMEOS. 1904 1.50
SJU 6. Maire, Albert. MATERIALS USED TO WRITE UPON BEFORE THE INVENTION OF PRINTING. 1.50
SJU 7. Liberty, Arthur L. PEWSTER & THE REVIVAL OF ITS USE. 1904 1.50
SJU 8. Hammell, Wm. PINE NEEDLE BASKETRY IN SCHOOLS. 1.50

SJU 9.	Frey, Clark. HOME TANNING. 1936	1.50
SJU 10.	Browning, Frank. STEAM PLANT ERRORS.	2.00
SJU 11.	Oakes, W.W. REVIEW OF ANCIENT & MODERN VIOLIN MAKING. 1899	6.00
SJU 12.	Brockhous, Albert. NETSUKES. 1924	10.00
SJU 13.	Langton, Mary Beach. HOW TO KNOW ORIENTAL RUGS. 1904	12.50
SJU 14.	Browne, Bellmore H. GUNS & GUNNING. 1908	6.00
SJU 15.	Rockhill, Wm. Woodville. NOTES ON THE ETHNOLOGY OF TIBET. 1893	8.00
SJU 16.	Stejneger, Leonhard. THE POISONOUS SNAKES OF NORTH AMERICA. 1893	9.00
SJU 17.	Culin, Stewart. CHINESE GAMES WITH DICE & DOMINOES. 1893	3.00
SJU 18.	Burdick, Arthur J. THE PROSPECTOR'S MANUAL. 1905	7.50
SJU 19.	WOODS DUAL POWER. (1902)?	1.50
SJU 20.	Hayward, Charles B. DIRIGIBLE BALLOONS. 1921	5.00
SJU 21.	Osborn, Henry F. THE ELEPHANTS & MASTADONTS ARRIVE IN AMERICA.	1.50
SJU 22.	Todd, Mattie Phipps. HAND LOOM WEAVING. 1902	7.00
SJU 23.	Wilbur, C. Martin. HISTORY OF THE CROSSBOW. 1936	1.50
SJU 24.	Alexander, A.S. HORSE SECRETS. 1913	2.50
SJU 26.	Clute, Willard Nelson. THE FERN COLLECTOR'S GUIDE. 1901	3.00
SJU 27.	Meeker, E. HOP CULTURE IN THE U.S. 1883	10.00
SJU 28.	Dearborn, Ned. TRAPPING ON THE FARM.	2.00
SJU 29.	Holmstrom, J.G. SCIENTIFIC HORSE, MULE & OX SHOEING. 1902	4.00
SJU 30.	Fickes, Clyde P. & W.Ellis Groben. BUILDING WITH LOGS. 1945	2.50
SJU 33.	Pursell, John & N. Reese. KAYAK PADDLING STROKES. 1962	1.50
SJU 34.	Moody, Charles Stuart M.D. BACKWOODS SURGERY & MEDICINE. 1910	4.00
SJU 35.	Huntting, Marshall T. GOLD IN WASHINGTON. 1955	6.00
SJI 1.	Krause, F. SLING CONTRIVANCES. 1904	2.00
SJI 2.	Murdoch, John. A STUDY OF THE ESKIMO BOWS IN THE U.S. NATIONAL MUSEUM. 1884	1.50
SJI 3.	Mason, Otis T. THROWING STICKS IN THE NATIONAL MUSEUM. 1884	2.50
SJI 4.	CHIEF JOSEPH'S OWN STORY. 1879	2.50
SJI 5.	Mason, Otis. BASKET WORK OF THE ABORIGINES. 1884	5.00
SJI 6.	Llwyd, Rev. Dr. J.P.D. MESSAGE OF AN INDIAN RELIC: Seattle's Totem Pole.	2.00
SJI 7.	Mason. TRAPS OF THE AMERICAN INDIANS.	1.25
SJI 8.	Meeker, Louis L. OGALALA GAMES. 1901	1.50
SJI 9.	Collins, H.B. PREHISTORIC ART OF THE ALASKAN ESKIMO. 1929	3.50
SJI 10.	Eells, Rev. M. JUSTICE TO THE INDIAN.	1.00
SJI 11.	Willoughby, C. INDIANS OF THE QUINAIELT AGENCY, Washington Terr. 1886	1.50
SJI 12.	Leon & Holmes. STUDIES ON THE ARCHAEOLOGY OF MICHOACAN MEXICO 1886.	2.00
SJI 13.	Beckwith, Paul. NOTES ON THE CUSTOMS OF THE DAKOTAS. 1886	1.25
SJI 14.	Eells. THE STONE AGE. 1886	1.50
SJI 15.	Allen, Lt. Henry T. ATNATANAS NATIVES OF COPPER RIVER, ALASKA. 1886	1.00
SJI 16.	Yates, Dr. L.G. CHARM STONES. 1886	1.50
SJI 17.	Boas, Franz. THE CENTRAL ESKIMO. 1884	12.50
SJI 18.	Gibbs, Geo. TRIBES OF THE EXTREME NORTHWEST, ALASKA, THE ALEUTIANS, & ADJACENT TERRITORIES. 1877	15.00
SJI 19.	Gibbs. LANGUAGES OF THE TRIBES OF THE EXTREME NORTHWEST, ALASKA, THE ALEUTIANS & ADJACENT TERRITORIES. 1877	6.00
SJI 20.	Gibbs, Geo.; Dr. Wm. F. Tolmie, & Father G. Mengarini. TRIBES OF WESTERN WASHINGTON & NORTHWESTERN OREGON	20.00
SJI 21.	Gibbs & others. COMPARATIVE VOCABULARIES OF THE TRIBES OF WESTERN WASHINGTON & NORTHWESTERN OREGON. part of SJI #20.	5.00
SJI 22.	Gibbs. A DICTIONARY OF THE NISQUALLY INDIAN LANGUAGE.	10.00
SJI 23.	Boas, F. INTRODUCTION TO HNDBK OF AMERICAN INDIAN LANGUAGES. Ext 1911	5.00
SJI 24.	Swanton, J. R. THE TLINGIT INDIAN LANGUAGE. From Hndbk of American Indian Languages.	3.00
SJI 25.	Swanton. THE HAIDA INDIAN LANGUAGE.	5.00
SJI 26.	Boas. THE TSIMSHIAN INDIAN LANGUAGE.	8.00
SJI 27.	Boas. THE KWAKIUTL INDIAN LANGUAGE.	7.50
SJI 28.	Boas. THE CHINOOK INDIAN LANGUAGE.	5.00
SJI 29.	Boas & Swanton. THE SIOUAN, DAKOTA INDIAN LANGUAGE.	6.00
SJI 30.	Talbitzer, Wm THE ESKIMO LANGUAGE.	6.50
SJI 31.	Ewers, J.C. EARLY WHITE INFLUENCE UPON PLAINS INDIAN PAINTING.	2.00
SJI 32.	Fenton, Wm. CONTACTS BETWEEN IROQUOIS HERBALISM & COL. MEDICINE. 1941	2.00
SJI 33.	Mason, O.T. CRADLES OF THE AMERICAN ABORIGINES. 1889	5.00
SJI 35.	Steedman, Elsie V. & James Teit. ETHNOBOTANY OF THE THOMPSON INDIANS OF BRITISH COLUMBIA. nd	4.50
SJI 36.	Teit. TATTOOING & FACE & BODY PAINTING OF THE THOMPSON INDIANS OF BC	4.50
SJI 37.	Merrit, Gen Wesley. THREE INDIAN CAMPAIGNS. 1890	1.50
SJI 38.	Remington, Fred. ARTIS WANDERINGS AMONG THE CHEYENNES. 1889	1.50
SJI 40.	Pilling, James C. BIBLIOGRAPHY OF THE CHINOOKAN LANGUAGES. 1893	6.00
SJI 41.	Bagley, Clarence. INDIAN MYTHS OF THE NORTHWEST. 1930	8.50
SJI 43.	Mason. ABORIGIANL SKIN DRESSING.	5.00
SJI 45.	Kelly, Wm A. & Francis H. Willard. GRAMMAR & VOCABULARY OF THE TLINGIT LANGUAGES OF SOUTHEAST ALASKA. 1905	3.50
SJI 46.	Thorne, J. Frederic. IN THE TIME THAT WAS. 1909	2.50
SJI 48.	Hough, Walter. THE HOPI INDIANS. 1915	12.50
SJI 49.	DeSmet, Rev. P.J. NEW INDIAN SKETCHES.	8.50
SJI 51.	Mason, O. THE MAN'S KNIFE AMONG THE NORTH AMERICAN INDIANS. 1899	2.00
SJI 53.	Holmes, Wm. H. POTTERY OF THE ANCIENT PUEBLOS. 1886	6.00
SJI 55.	Dorsey, James O. A STUDY OF SIOUAN CULTS. 1894	10.00
SJI 57.	Mason. POINTED BARK CANOES OF THE KUTENAI & AMUR. 1901	2.00
SJI 58.	Mason. ABORIGINAL AMERICAN HARPOONS. 1902	7.50
SJI 59.	Hough, W. THE LAMP OF THE ESKIMO. 1898	5.00
SJI 60.	Hrdlicka, Alex. ANTHROPOLOGICAL SURVEY OF ALASKA. nd	20.00
SJI 61.	Drucker, P. ARCHEOLOGICAL SURVEY OF THE NORTHERN NW COAST. 1943	7.00
SJI 62.	INDIANS IN WASHINGTON.	3.00
SJI 64.	Steward, J.H. PETROGLYPHS OF THE U.S. Ext. 1936	2.00
SJI 67.	Shallcross, V.W. AMERICAN LANGUAGE IN THE KIRILLIC ALPHABET.	5.00
SJI 68.	Fletcher, Alice C. HOME LIGE AMONG THE INDIANS. 1897	1.50
SJI 70.	Teit, J & F. Boas. SALISHAN TRIBES OF THE WESTERN PLATEAUS. 1930	15.00
SJI 70a	Teit & Boas. COEUR D'ALENE INDIANS. Ext from BAE #45 1930	9.00
SJI 70b	Teit & Boas. THE OKANAGAN INDIANS. Ext from BAE #45 1930	7.50
SJI 70c	Teit & Boas. THE FLATHEAD GROUP. Ext from BAE #45 1930	7.50
SJI 72.	Hoffman, Walter J. GRAPHIC ART OF THE ESKIMOS. 1897	20.00
SJI 73.	Durham, Bill. CANOES & KAYAKS OF WESTERN AMERICA. 1960	7.50
SJI 75.	Mason, O. A PRIMITIVE FRAME FOR WEAVING NARROW FABRICS. 1901	2.50
SJI 76.	Millikin, Linna Loehr. PINE NEEDLE BASKETRY. 1920	3.00
SJI 77.	PURPLE-DYEING - Ancient & Modern. 1840's	1.50
SJI 78.	Austin-Walker Sales Co. APACHE BEADWORK-Instructions & Designs.	2.50
SJI 86.	Krieger, Herbert W. AMERICAN INDIAN COSTUMES in the U.S. National Museum. 1928	3.00

NOTE TO STUDENTS AND COLLECTORS

Many scarce items turn up in antiquarian book stores only once. And while such works are in great demand, the high prices usually commanded by the older, scarcer items put them beyond the reach of the average student, library and small collector. Nor is there sufficient interest in such works to support the publication of a large edition. To meet this need we are bringing back into print in limited editions a diversity of Pacific Northwest and Alaskan historical materials which are selling at moderate prices. In their original form these bring prices ranging from $5.00 to $500.00; some even higher.

We limit most reproductions to 100 to 300 copies and reprint as the demand warrants. The books have heavy paper covers that are attractively designed and usually are bound with velo plastic binders. They show both original and reprinting dates. Regular libray and dealer discounts are granted. For detailed descriptions of these titles send for Shorey's free complete checklist of publications or the more comprehensive COMLETE CATALOG OF SHOREY PUBLICATIONS at a cost of $2.50. They both list some future Shorey Publications.

An increasing number of West Coast libraries are coming to regard our line as absolutely indispensable to their programs of promoting interest in our western history. A full set of the originals of our publications would cost between $15,000 & $20,000 even if they could be found. Our publications would cost but a small fraction of that. Many libraries regard our publications as so important that they are carrying our entire line as well as leaving standing orders for all titles to come. May we be of service.

- The management -

This Renaissance handbook on the making of fireworks will be of interest not only to the amateur chemist, but to the historian and bibliophile as well. Pageantry was an important part of English life under the Stuarts, and no pageant would be complete, then, or now, without such fireworks as are explained and diagrammed in this book.

ISBN #0-8466-0120-6