Since this is our initial newsletter we thought we’d answer the how a clockmaker from Pennsylvania and a toolmaker from St. Louis could get together to build an obscure machine that has been out of production for over 40 years. The simple answer may be “fate,” but here’s the story.

Steve White began ornamental turning in 1991 making inlays for turnings. Having the abilities of a toolmaker he converted a Nova lathe into a Pudsy Dawson type lathe that incorporated a geometric slide. The machine was heavily influenced by Paul Cler who has built many machines through the years. This machine sparked Steve’s desire for more and better equipment. He purchased and rebuilt an antique Charles Field rose engine followed by a Hall rose engine both of which required a lot of work to get them into top shape. The enormous amount of skilled labor required to restore an antique rose engine coupled with the intrigue of the mechanical manipulation caused Steve to see the need for a modestly priced rose engine with full capabilities. As Steve traveled for work he tried to visit all the OTI member shops in the areas he visited. One of these contacts led to meeting David Lindow.

David is a clockmaker and restorer who fell in love with period antique mechanisms such as clocks, automata, and machine tools. One day in about 2001 someone said to him, “My friend has a couple of machines you’d be perfect for as they need a lot of work. They’re rose engines.” The deal was made and his fate was sealed. He thought he was getting 2 rose engines, but one was a straight line engine and one a rose engine, both Lienhard. Both machines had been left out in the rain and were in desperate need of restoration. They sat in his barn for about 4 years before he began restoration of the rose engine.

Before starting restoration David met Alan Bugbee. Alan introduced David to the OTI which he promptly joined. This allowed Steve and David to meet sometime during the restoration of the Lienhard. By the time David was done with the restoration he was firmly devoted to the idea of producing a modern rose engine of superb quality. As his travels took him to St. Louis to visit family and speak at seminars, he and Steve were able to develop a relationship. By May of 2006 they decided it was time to stop talking and start working.

In July of the same year Steve produced the first patterns, and David took them in loose form to the Amish foundry that cast his clock weights. They made iron castings for the prototype rose engine. The prototype was introduced at the 2006 OTI meeting in Portsmouth, NH where it was well received. They found enough interest and orders to embark upon making the first run of 12 machines right away. Deliveries began on these first machines in April 2007 which were sold out by June when they began taking orders for the second batch of lathes. Late in 2008 the idea came to David that Sherline machine components could be used to make capable, modern versions of old tools such as a dome chuck. This started the line of accessories that complements the L-W rose engine. The second run of 13 rose engines began delivery in the spring of 2008 almost exactly a year after the first run. The rebuilt Hardinge slide option also began about this time. This batch also sold out almost immediately upon their completion, and a third batch was immediately begun.

In 2009 the barrel, crossing wheel, and worm assembly was introduced which greatly improved the capacity of the machine and made engine turning possible. Today this feature can be found on about 70% of the over 50 machines that have been produced. We also introduced the steel stand and table tops in 2009 along with the slow speed drive. This year we have already released the dovetail slide tower which is especially needed for engine turning. Several items have been prototyped which will release soon. These include detent/segment stops, the oval, spiral and curvilinear apparatus, and the automatic headstock advance which is needed for fixed tool work.

Whatever your goals are for rose engine work, we hope our machine helps you reach them. It seems incredible that in just three short years we’ve come so far. The reception to the machine has been far beyond our expectations, and we look forward to serving you as you grow with your machine.

WELCOME TO OUR FIRST NEWSLETTER

We hope this newsletter will keep Lindow White owners and those interested in purchasing a Lindow White Rose Engine (LWRE) informed about its current state of development. We welcome your submission of articles relating to the LWRE and its growth. We DO NOT intend to duplicate the efforts of the OTI Newsletter and encourage you to submit OT articles of a general nature to the OTI Editor for publication so that they may be seen by the entire OTI membership.
There were 15 LWRE owners from various parts of the US and 1 owner from Canada in attendance at this spring’s meeting held April 16 and 17 in Pennsylvania. It was a great learning and social experience. We learned more about our Lindow White’s as well as a few new jokes. On Friday we spent the day making shaped cutters. These are concave cutters of various shapes and sizes. Having cutters of this type greatly expands the range of shape and decoration that can be done with your cutting frame. Since they are not currently available commercially it was great to learn the techniques for making and sharpening them. On Friday evening Andy Woodard and Brian Clarry gave a bowl turning demonstration using a standard woodturning lathe and tools. This was a great revelation for some of our group who have only done OT work. Now they understand that to make a bowl you have to make some chips and dust. Saturday was hosted by Eric Spatt in his shop. It was great to see the variety of antique, refurbished, operating equipment that he has. Of course, the highlight of the shop is his recently purchased Armbruster Rose Engine. David began the day by making and decorating a pepper shaker from African Blackwood. He demonstrated a variety of cutting techniques and used some of the cutters made the previous day. He also demonstrated a variation of the fish pattern. The original pattern is well described beginning on page 99 of Ornamental Turning by TD Walshaw. However, we need to remember that Walshaw made this pattern using an ornamental lathe rather than a rose engine. Instead of using a mandrel index, in this case of 4, we can use a rosette making the pattern easier to cut. David used a 12 bump rosette, but could have used any rosette from which he could achieve 4 divisions. We finished the day with a discussion and demonstration of engine turning which allows you to make many interesting patterns for metal inserts for other work. Make your plans to attend a future gathering. We hope to have summer meetings in Colorado and Detroit. The prerequisite for admission will be to make a four sided box similar to the one David will demonstrate at the upcoming AAW meeting. If you cannot attend that meeting you can get instructions from David or Brian Clarry. They will also be posted on the Website.
Upcoming OT Meetings
AAW Symposium, Hartford, CT, June 18-20
The AAW Symposium will feature several OT presentations. John Calver will present Eccentric Turning on a Rose Engine. David Lindow will present The Many Facets of the Eccentric Cutting Frame and Ornamentally Turning a Polyhedron. Jon Sauer will present Rose Engine Lathes, Then and Now. In addition Special Interest Night will include the OT group. LW will have a booth in the trade show.

OTI Biannual Meeting and Symposium, San Jose, CA, Sept. 17-19
This meeting offers the opportunity to meet some of the best OT practitioners in the country. Along with the speakers there will be a shop room, show and tell area, instant gallery, and a Saturday banquet. Complete details and registration can be found on the OTI Website. LW will have a table in the Show and Tell area.

The Lindow White Rose Engine
The LWRE is a modern lathe that incorporates the qualities of the classic Victorian rose engines at an effective price. The basic lathe includes several major subsystems. The Table Top Assembly includes a wooden or metal table top measuring 1 3/4" x 17" x 29". The headstock which holds the spindle, index plate, and rosettes. 20 rosettes of varying shapes and 12 spacers are included with your purchase. 12 of these rosettes can be mounted at one time. A drive plate pulley with 96 hole indexing connects to the drive system via a poly belt to turn the headstock. In addition, its 96 indexing holes allow for precise index cutting. The main spindle is 1" in diameter and it holds the rosettes and presents a 1" x 8 tpi threaded mandrel for attaching turning materials to the lathe. The indexing pin locks the index plate in place. The spring assembly applies tension to the headstock for a smooth rocking motion. A cast iron tower holds the rubbers against the rosettes. Three rubbers are included. The Drive System includes a cast iron yoke hand crank assembly consisting of 3 cast iron pulleys that are the drive pulleys for the Rose Engine. 2 round poly belts connect the drive pulleys, a 1" shaft for the pulleys, and two pillow blocks.

A Horizontal Cutting Frame. You may choose from a powered cutting frame or one powered from an overhead belt system.

This Rose Engine is a modern translation of the original Victorian machines, and you don't have to be Royalty to own one.

The Next Step—A Complete Kit of Accessories
Once the LWRE became a reality we began to develop a full line of accessories to add to the lathe’s capabilities. This work is ongoing and new accessories continue to be developed. In this article and future newsletters we will describe our accessories.

Rosettes
20 rosettes are shipped with each lathe. An additional set of 5 ovals is available along with a set of 5 sine wave rosettes.

Accessories In the Pipeline
One of the purposes of this newsletter is to inform owners about the status of additional tools and accessories being developed.

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<td>2MT Spindle</td>
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Rubbers
Along with rubbers that lathe, has several combination variety of the user to produce thousands of potential patterns.
Chucks

In handturning chucks are used to attach the turning material to the lathe. In RE work they serve this function along with allowing the development of shapes and patterns. For some work you will need to combine two or more chucks or elements of separate chucks. For special needs Lindow White is usually able to supply additional chuck components.

Leveling Chuck

The leveling or truing chuck is the traditional way of compensating for uneven materials or inaccuracies in work holding systems when using more than one lathe. The chuck not only compensates for inaccuracies radially like a four jaw chuck, but it also allows for adjustments axially which are virtually impossible to deal with otherwise. This tool is an absolute must for anyone turning layers or large diameter pieces where run out becomes pronounced. Both the male and female threads are 1-8.

Dome Chuck Package

This package includes 3 valuable accessories for the Rose Engine; dome chuck, phasing chuck, and double eccentric chuck. They may be combined or used independently. The dome chuck allows domes and hemispheres to be shaped on the rose engine. A tailstock is included if you want to use the dome chuck as a pen mandrel chuck. The phasing chuck allows controlled indexing which can be done in 1 degree intervals with a 5 degree spring loaded detent. The double eccentric chuck enables you to use 2 separate axis at one time. An optional faceplate is included. The outgoing spindle size on the phasing chuck is 3/4" x 16 tpi. If you choose to use your standard 1" x 8 tpi accessories, you may need our spindle adaptor. Riser blocks are available to allow larger diameter work. Also available are extra slides so that the dome chuck and eccentric chuck can be combined to produce concave and convex designs.

Straight line Chuck

A straight line machine allows the cutting of straight line patterns rather than circular, oval, or rosette patterns. A straight line chuck converts the rotary motion of the rose engine to straight line motion to reproduce these designs. Many art deco patterns were produced on straight line equipment.

The Lindow White straight line chuck allows for a wide variety of setup options including the dome/pencil chuck, the phasing chuck mounted flat, and with the addition of an oblique plate the phasing chuck can be mounted angularly.
Oblique Chuck Accessories

These two attachments are meant to be used with other chucks to create oblique angles.

The **Angle Plate Oblique Attachment** is used either on the Straight Line Chuck or the Dome Chuck with or without the Eccentric Chuck for ornamenting pieces at an angle. For example, it can be used for faceting, as well as ornamenting tapered pens. The Angle Plate can be used in both the horizontal or vertical positions on either of the chucks and the base moves from zero to 90 degrees. A phasing head can be mounted on the Angle Plate from either side of the base, as well as either horizontally or vertically to the Saddle on either chuck.

The **Oblique Dome Chuck** is designed to both “pitch” and “roll” giving adjustment in two directions. The phasing head mounts to the short section of dovetail and can be tipped backwards while the base on which it rides can be swiveled around 360 degrees. Not only can complex shapes be developed but decorations can be applied to angular pieces as well. This tool also allows for multiple operations to be accomplished with only one chucking in many otherwise awkward situations. The tool mounts to the saddle of either the Dome or Straight Line Chuck.

Ornamental Turning Texts

Many of the books written on Ornamental Turning are like the antique equipment—difficult to find and hard to understand. A majority of the very early works are out of print and the language of these texts is difficult to understand. However, there are a few books that are still available today and are valuable for your knowledge and progression in ornamental work.

- **First and foremost we recommend that everyone join AAW and OTI. This gives you access to the collective knowledge of the OTI membership and the OTI newsletters.**
- **Bulletins of the SOT. The Society of Ornamental Turners in England has published a Bulletin since 1949. The back issues have been available on CD and contain a great deal of valuable information.**
- **Ornamental Turning by T. D. Walshaw. First published in 1990 this volume is currently available in a paperback reprint by Special Interest Model Books. It contains information about the history of OT and also gives step by step directions for several projects such as basket weave and the fish box.**
- **Ornamental Turnery by Frank M. Knox. This volume was published in 1986 by Prentice-Hall. This thin volume gives a brief history of OT and gives several good photographs of historical and contemporary OT work. The latter part of the book gives examples of several types of cuts and patterns.**
- **Ornamental Turning by J. H. Evans. Evans was a contemporary of the Holtzappfels and a lathe maker. This 1886 work was reprinted in 1993 by Astragal Press. It is a good book to teach terminology, history, and has some excellent photos and drawings.**
- **Turning and Mechanical Manipulation by Jacob Holtzappfel and family. This five volume set is a magnum opus of turning and lathe work. Volume 5 is the volume on OT. It is available as a reprint from Dover Publications through the efforts of Frank Knox and Robert Johnson. This is probably the best known book on OT, but as Wilfrid Osborne says in his Forward to the Knox book, “Holtzappfel’s book is a masterly exposition of the craft but was written by an engineer in a somewhat tortuous style, with eccentric punctuation.”**
- **Classic Forms by Stuart E. Dyas. Published in 2008 by Stobart Davies Limited. While this book is not strictly an OT text, its subtitle is “a source book for architects, designers, turners and craftspeople.” It is primarily a book of drawings of classical shapes as well as some photos. You may find these shapes, or portions of these shapes, useful in your designs for turned objects. The last few pages also include some information on turning from a design and some formulae for the development of columns and moldings.**
Cutting Frames
Cutting Frames are powered cutters that allow cutting at various angles and with a variety of cutters thus greatly increasing your ability to produce a wide variety of shapes and patterns.

Horizontal Cutting Frame with Carbide Cutters
The horizontal cutting frame is the backbone of rose engine work. It is the most used tool. This tool incorporates two commercially available indexable carbide tips with three sides each ensuring long life. It is powered by a 1/5 HP 10,000 RPM motor with which we recommend the use of a router speed control as it's seldom that full speed is needed and slower speeds will extend the life of the motor. The diameter of the cutter head is approximately 1 1/16". Cutter heads are available individually including the two cutter tips and screws.

Universal Cutting Frame adapter - This attachment converts the motorized cutting frames into universal cutting frames that can be used at any angle from horizontal to vertical.

Universal Cutting Frame (UCF)
The Universal Cutting Frame is a versatile tool because it can be used at any angle from vertical to horizontal. This tool requires the use of an overhead drive which gives smooth and quiet operation.

It is available with either one of two cutting heads; carbide cutters or 3/16" round cutters. The pulleys are made from steel and ride on high grade Japanese shielded bearings. The UCF can be driven by belts from 1/8" to 3/16"; the small belt that drives the head is 1/8" and is included. The shank is 9/16" square making it usable in older style slide rests.

The frame with 3/16" cutters comes with a square cutter tip to make the ever popular basket weave, but cutters can be made that will cut beads, coves, the traditional 60 degree angle tip, as well as anything else that one brings to mind. Cutters can be made to cut basket weaves of any size. Another nice feature of this tool is that it can be adjusted to accommodate diameters from about 3/4" to about 2" if well balanced. The mounting arms have been made long to give the clearance needed to allow one to reach deep inside of boxes to decorate both the sides and bottom.

Straightline Guilloche on LW
Steve White has continued his experiments with guilloche work. This fine example was done on the Lindow White Rose Engine with a straightline chuck with an extra slide. Steve has done a new video for YouTube demonstrating the principles of this project. Search for Rose Engine Lesson 12.

Steve has also posted a video showing the use of his antique radial straightline machine which he restored to working order. This video is Rose Engine Lesson 13.
Preparation of Cutters for LE Cutting Frame

The owners of traditional ornamental lathes usually had boxes of cutters in various shapes and sizes. You can see photos of these cutters in the ornamental turning books such as Ornamental Turning by T D Walshaw and others. Unfortunately, at the moment there are no commercial makers of either the convex or concave cutters, but with some effort and machine shop work you can make your own.

One of the first questions was why are we using oil quenched high speed steel for these cutters when we have heard that tungsten is best? The answer is in the type of cutter. If we used carbide we would not be able to contour it in a concave shape without very specialized grinding equipment. 0-1 can even be shaped with a file and sand paper. Also HSS will take a sharper edge.

The LWRE cutting frame takes cutters with a round shank of 3/16 inch diameter. David prepared blanks (Photo 1) in advance. He started with various diameters of oil hardening rod stock cut to length with one end turned to 3/16 leaving the other end at full diameter to make the cutter. The first step is to remove about half the diameter of the cutter stock. This was done using a fixture on the mill which allowed us to mill six blanks at once (Photo 2). The blanks were then deburred on their ends and taken to the turret mill which allowed the rough shape to be placed on the ends and sides of the blanks. Grinding burrs were then removed on a belt or stone making the blanks ready for polishing on the Accu-Finish machine (Photo 3). Achieving the best possible finish before hardening is faster and easier than doing this after hardening. The next step is heat treating. This is simply done by heating the cutter to cherry red in a propane or MAP gas flame and then quenching it in oil. Used motor oil can be used and some people recommend olive oil. In either case make sure you have enough volume of oil for the volume of metal to be hardened. Using too little oil is likely to start a fire. Make sure heat treating is done in a safe area with a fire extinguisher available. The cutter should now be cleaned using sandpaper, and polishing stones. If the cutter is hardened a file will skate across it rather than cut. The cutter is now hard, but brittle and needs to be tempered. After the oxidation is removed from the surface, the cutter is brought gently to “straw” color using a torch, or it can be put in an oven at 350-400 degrees for one hour. In either case it is allowed to cool slowly. The hardened, cooled blank is then ready for final sharpening and polishing (Photo 4).

David recommends sharpening these cutters after each project. There are multiple opinions on sharpening methods. Unless the cutter has been damaged the simplest method is to hone the top surface which will expose a sharp edge ready for use with the next project. However you will eventually lose the centerline using this method so when the center line gets too eroded just make a new cutter. Other turners insist on using sharpening cones to regrind the cutter edges. This will maintain the centerline, but care must be taken not to change the profile. This is certainly the method of choice for an antique cutter.

When making a half round cutter it is easy to make it with a return curve. However, that shape impedes the cut and changes the curve that will be produced (Fig. 1). Using the same example of a half round cutter you may not want to make both flat and pointed cutters as shown in Fig. 2. To keep your versatility and decrease the number of cutters needed you could make only half round cutters with pointed tops. Then if you require a flat next to your half round cut you could easily make a second cut using the appropriate width of flat cutter. When using a beading cutter to make beads, columns, or pillars you have a choice of a deeply curved cutter or a shallower cutter as shown in Fig. 3. You may find that the deeper cut produces a more prominent bead, but the shadow line from such a bead may be decreased compared to the shallow bead which reduces its effectiveness. (Cont. on Page 7)

Photo 1 A) Blank cut from O-1 with the shank area turned to 3/16. B) Blank ground to thickness and rough shaped. C) Finished cutter after heat treating.
The bearings on the cutting frames used with these cutters are small and delicate. There are a few things you can do to make them run and cut better as well as making them last longer.

First, always use a sharp cutter. This will reduce the stress on the cutting frame.

Second, if possible, balance the cutter in the cutting frame. Since half the thickness of the cutter has been ground away you should put twice the length of the cutter in the front to balance the weight in the back.

Third, always tighten the top set screw first to secure the cutter and then tighten the bottom screw. By tightening the top screw first the cutter seats on the bottom of the round hole. If the bottom is tightened first the cutter will ride against the top of the hole, and the impact from the cut will be driven against one small point on the set screw as opposed to the entire length of the hole. This will help distribute the tension on the cutter arm.

Fourth, lightly oil the frame bearings. You can place a drop of oil on the top of the bearings after use and store the frame top up. The next time you can place a drop of oil on the bottom of the bearing and store the frame bottom up. This will allow the oil to seep into the shields on the bearings.

Fifth, slow down the speed of the cutting frame. This will increase the bearing life and usually give you a better cut. You can try slowing down the speed until the cutter does not give a good cut and then bring it back up slightly to a good cutting speed.

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