



The PLS GAZETTE

A newsletter of the Pennsylvania Live Steamers, Inc.

MAY-JUNE TOPICS: From Along the PLS Mainline 1 PLS Popular on Perkiomen Day 1
Calendar 2 Spring Meet Thanks 2 Donations 2 Making Pipe Unions 3 RS-3 For Sale 5
Spring Meet Report 6 Membership News 7 Membership Gauge 7 Lost and Found 7

From Along the PLS Main Line

As you read this, spring will just about be behind us and the hot summer months just beginning. This is usually a good time for PLS and I expect that this year will continue that trend. There are the regular run days scheduled for the fourth Sunday of the month; the annual picnic to be held on Saturday, July 28 (rain date the following day); and the Fall Meet which will be held on Friday,

Saturday and Sunday of Labor Day weekend. There are also the afternoon/evening runs which take place following PLS membership meetings on the third Saturday of each month (which may not be well attended and at which rides may not be available.) Not known to many, PLS also participates in other events not listed on the regular schedule. We host several visits each year for pre-school and day care organizations, usually on weekday mornings for a few hours each. PLS also participates in the annual Perkiomen Township community day, providing additional entertainment for township residents at-

tending the function at the township's facility across Route 29 from PLS.

With so much activity, safety must be of the utmost concern for everyone while on our property. Although common sense should prevail, there are certain things in our environment that may not be immediately apparent. For that reason, I would ask that all members review the PLS General Rules and Passenger Rules in the rules section of the PLS website, and that anyone who owns or plans to operate equipment

(Continued on page 2)

PLS a Popular Station Stop on Perkiomen Day

Perkiomen Township celebrated its annual community picnic on June 2nd. PLS provided rides and a slice of railroading to many visitors who enjoyed seeing and riding trains during fantastic weather.

PLS offered over 1,800 rides during the 4 ½ hours we were available to give them. Judy Braddick served as Station Master, marshalling the riders and instructing them on train safety. Eric Peffel offered steam rides and diesel service was provided by Bruce Saylor, Paul Rice, John Bortz, Jr. and others. Big John Geib handled operations. Jim Salmons and Rose Ann Wagner brought back refreshments.

— Allen Underkofler



From Along the PLS Main Line

(Continued from page 1)

at PLS review all of the rules therein. I would also ask that members inviting guests to attend ask those guests to review the applicable rules before attending. Safety should be everyone's concern and unsafe acts should be brought to the attention of those committing them or to a responsible PLS member for appropriate action.

While things are busy around PLS, there are other live steam clubs, near and far, that host events similar to our spring and fall meets. Just as members from other clubs attend our meets (see PLS Spring Meet report elsewhere in this issue), so do some of our members attend the other clubs' meets. A few of those that are relatively near are New Jersey Live Steamers, Adirondack Live Steamers in New York, Finger Lakes Live Steamers also in New York and Waushakum Live Steamers in Massachusetts. There are also *far* live steam clubs, such as Train Mountain in Chiloquin, Oregon. This is the most extensive live steam club anywhere comprising over 30 miles of track. At least a few of our members will be making the trip to the Triennial Meet to be held there from June 25 through July 1 of this year. They will drive there towing a trailer with their locomotives and cars to run for the week. We wish them a safe and enjoyable trip and look forward to their stories (and maybe a *Gazette* article) when they return.

Yours in steam,

Lee Nonnemacher – President

2012 PLS Calendar of Events

Saturday, June 16	Board of Directors Meeting - 9:30 AM Membership Meeting - 12:30 PM Afternoon/Evening Run*
Sunday, June 24	Run Day - Members & Guests
Sunday, July 1	Run Day Rain Date
Saturday, July 21	Board of Directors Meeting - 9:30 AM Membership Meeting - 12:30 PM Afternoon/Evening Run*
Sunday, July 22	Run Day - Members & Guests - No Rain Date
Saturday, July 28	Club Picnic
Sunday, July 29	Club Picnic Rain Date

Spring Meet Thanks

As always, our kitchen and snack areas were extremely busy. Kathy Parris wishes to acknowledge the *generous* donations of food and time by: Redner's Warehouse Markets, Catherine Barker, Bruce Barrett, Sue Borders, John Bortz Jr, Pete Brown, Sharon Connelly, George Cooper, Mary Lou Delp, Janet Fego, Al Hansen, Al Hein, Pat Heller, Julia Kiefer, David Laird, Jane McDevitt, Walt Mensch, Barbara Miller, Barb Moore, Carol Quirk, Paul Rice, Deb Rose, Jim Salmons, Bruce Saylor, Mary Saylor, Sean Skelonis,

Barry Shapin, Pat Speak, Dave Taylor, Rose Ann Wagner, and Sue Webb.

Thanks also to Elizabeth Kiefer for her time assisting Walt Mensch at the Sales Table.

— Kathy Parris

Donation Acknowledgements

PLS wishes to thank the following members for donations received during April and May: Daniel Kluz, Thomas P. O'Leary Jr, Robert Andorn, John and Rita Bixler, Jim Barker, and Paul Miller.

Pennsylvania Live Steamers, Inc.

President	Lee Nonnemacher	1474 North Wales Road, Blue Bell, PA 19422-3687	president@palivesteamers.org
Secretary	Robert Blackson	303 North Tulpehocken Road, Reading, PA 19601	PennsylvaniaLiveSteamer@comcast.net
Treasurer	Walter Mensch	1348 Sheep Hill Rd., Pottstown, PA 19465	
Gazette Editor	Allen Underkofler	Box 609, Kimberton, PA 19442-0609	pls@apunderkofler.com

Board of Directors: John Bortz Jr., jonyx@netzero.net; Sharon Connelly, connellywood@verizon.net; Bob Freer, W3YLT@Juno.com; Paul Rice, ricepaul@verizon.net; Jim Salmons, jshay6@verizon.net; Ron Shupard, shusmoke@aol.com.

Safety Committee Members: John Geib, chairman; Buddy Borders; Pete Brown; Pat Murphy; Bruce Saylor.

Pennsylvania Live Steamers, Inc. • P.O. Box 26202, Collegeville, PA. 19426-0202 • 610-454-0477 • www.palivesteamers.org

Making Minature Pipe Unions

For that
Prototype Look

By Bob Thomas, W3NE

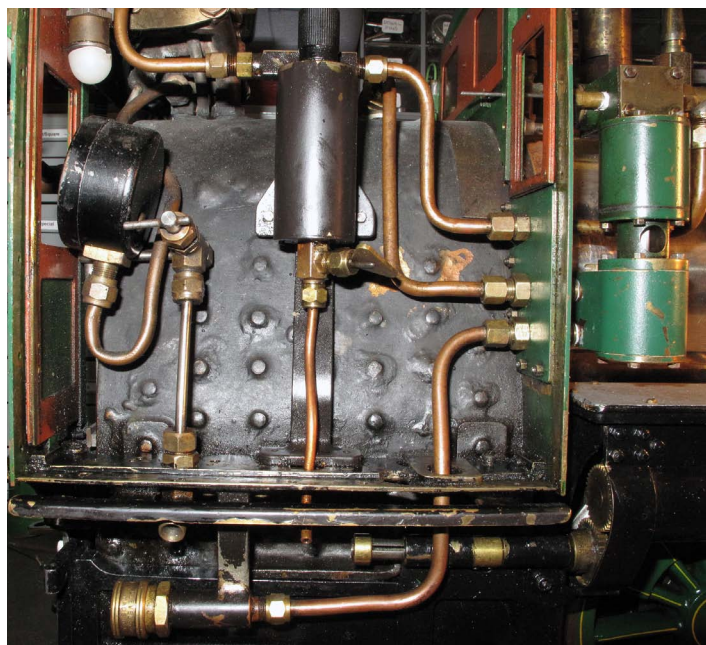


Fig.1. Application of several pipe unions on a 1" scale live steam locomotive.

Pipes on steam locomotives – and there sure are a lot of them – are usually connected at each end with a fitting known as a *union*. Unions allow a pipe, especially one snaking around obstructions, to be conveniently connected or removed for service if necessary. A pipe arrangement for a pump on a 1" scale locomotive is shown in Fig.1, where no fewer than *ten* unions can be seen. There may be several dozen pipes on a really complex locomotive for steam, water, air, and vacuum, and for electric conduits. With so many unions required, it pays to be able to make the components rapidly in "mass production," so let's see how some shortcuts can be applied.

A union consists of three parts:

- 1) a cone-shaped copper or phosphor bronze ferrule, usually with a 60° included angle and typically silver soldered on the end of the pipe
- 2) an internally-threaded nut that slides over the pipe and cone with an internal shoulder at the back that presses against the back of the cone
- 3) a bushing with a tapered cavity matching the cone, and external threads on which the nut is drawn tight. The bushing might be on the end of another pipe or on a fixed appliance such as a pump or hand valve.

This article is primarily concerned with making tapered cones for unions. The other parts can be made using routine machining methods. Dimensions of union components are given in Table I, which was prepared by the late Bill Van Brocklin of the Waushakum Live Steamers. It was originally published in *The North American Live Steamer*, and later in the August 1971 *PLS Gazette*. Bill, known for his superb steam pumps, built more than thirty-five live steam locomotives, and knew what he was talking about, so the dimensions given in Table I will produce unions of minimum size and adequate strength for each size of pipe listed. They make about as neat a fitting as you will find anywhere.

The tapered cone can be a vexing part to make because of its small size and odd shape, and having to make a large quantity can exaggerate those difficulties. Fortunately, British live steam pioneer LBSC came up in 1930 with a clever way to rapidly produce cones, or olives as he called them. Curly's method relies on his design of a clever dual-purpose lathe cutting tool shown in three views in Fig.2. The left edge of the tool is used for facing the back of the cone, so all that is required is a straight edge with relief of about 5°. The right edge of the tool is used

to turn the tapered surface; it should be ground at an angle of 20° to 25° relative to the left edge, and with side relief of about 10°. The tool illustrated was made from a plain ¼" tool steel blank, but a larger one of better steel would be preferable for anyone starting out today. Grinding must proceed slowly with frequent pauses for cooling the tool in water to prevent the thin, sharp point from burning and losing its temper. Stroke the ground tool's top and side surfaces with a fine stone to produce keen cutting edges for the best finish.

Offset the lathe compound rest for turning a taper of exactly 30° (60° included angle) using a taper gauge or protractor-scale to ensure accuracy. Refer to Table I for required round



Fig.2. An LBSC dual-function lathe tool, showing ground and stoned surfaces on left side, top and right side.

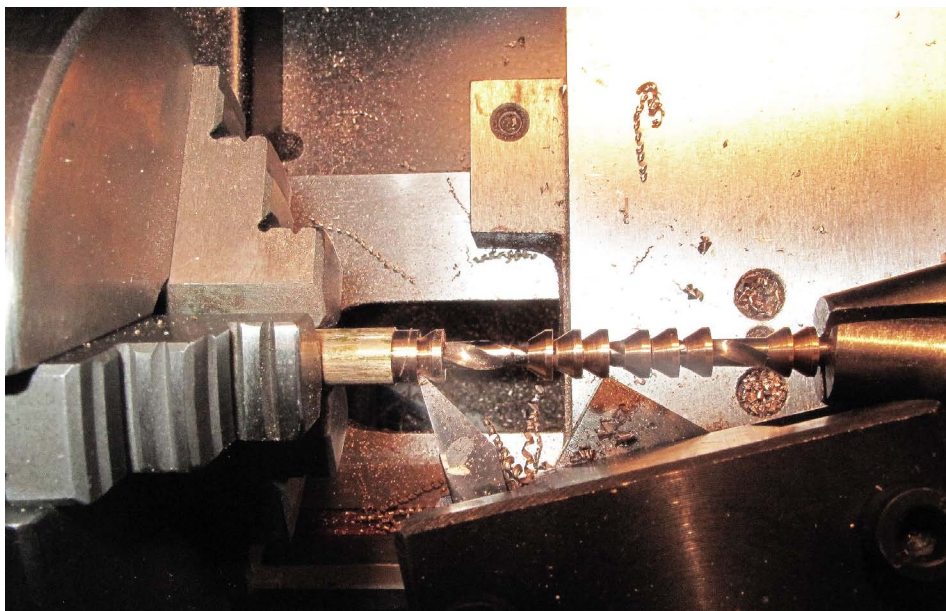
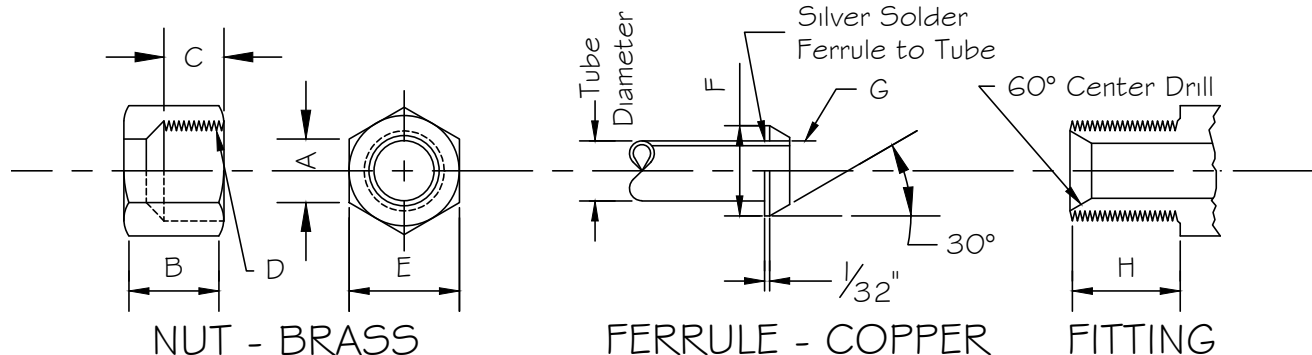
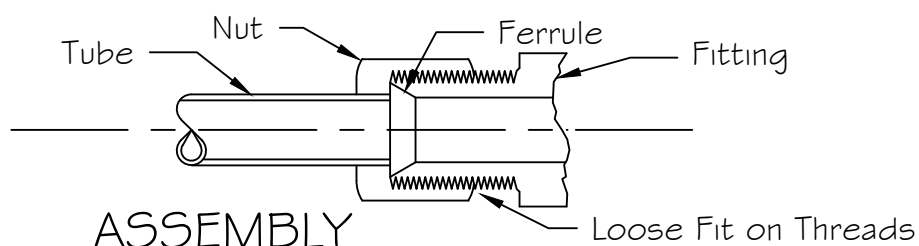


Fig.3. Setup for making union cones as tool nears end of cut. Note slight angle between tool's right cutting edge and surface of cone. Previously made cones are stacked up on drill to save time in production.

stock diameter. Use a collet chuck, if available, with at least 1" of rod extending from chuck. Using a three-jaw chuck might necessitate a light cut with a regular cutting tool to true the stock so subsequent operations will be concentric. This would also be the time to turn-down oversize stock if the specified diameter is unavailable. Then mount special cutter in lathe's tool holder with its left side at an angle for facing.

UNION NUTS & FITTINGS



TUBE DIA.	A DRILL	B LENGTH	C DEPTH	D THREAD	E HEX	F DIA. +0, -0.005	G DRILL	H LENGTH	TAP DRILL (NUT)
1/16	#51	3/16	5/32	5/32-40	3/16	1/8	1/16	3/16	#30
3/32	#41	3/16	5/32	3/16-40	1/4	5/32	3/32	3/16	#21
1/8	#30	7/32	3/16	7/32-40	1/4	3/16	1/8	7/32	#12
5/32	#21	1/4	3/16	1/4-40	5/16 (9/32)	7/32	5/32	1/4	#2
3/16	#11	9/32	7/32	9/32-40	5/16	1/4	3/16	9/32	F
1/4	F	5/16	1/4	5/16-40	3/8 (11/32)	9/32	1/4	5/16	L
5/16	O	11/32	9/32	3/8-40	7/16	11/32	5/16	11/32	S
3/8	V	1/2	7/16	1/2-40	9/16	29/64	3/8	7/16	15/32

TABLE I: Recommended dimensions for miniature pipe union components. This chart was devised by William Van Brocklin, Jr. It originally appeared in *The North American Live Steamer* and was subsequently published in *The PLS Gazette*.

LBSC's procedure for mass producing cones with his ingenious tool is described below. It might look complicated in print but it actually takes much more time to describe this process than perform it, so read over the sequence and then go to it.

1. Center-drill, then drill a hole corresponding to pipe O.D. to a depth of at least $\frac{3}{4}$ ".

2. Temporarily back off drill.

3. Face end of rod with left side of LBSC tool.

4. Re-insert drill part way so it will capture a cone after it has been parted off.

5. Position point of tool at start of taper using lathe carriage and cross slide controls.

6. Turn the taper with the *point* of the LBSC tool by advancing compound rest feed. Fig.3 shows this operation in progress. Note the slight angle between the right side of the tool and the tapered cone. The taper must be turned exclusively by the point of the tool; do not allow the right side of tool to touch the material.

7. Stop advancing compound rest just as tool point cuts through the rod.

8. Push new cone back on drill.

9. Repeat Steps 2 to 8 until the required quantity of cones has been made.

To repeat, *this operation is far more complicated to explain than perform!* The entire process for turning a $\frac{1}{4}$ " rod down to .218" diameter, drilling for $\frac{1}{8}$ " tube, and making the eight cones shown stacked up on the drill in Fig.3 took less than a half-hour, including time for making several photographs to get one good one. Fig.4 is a closeup of a finished phosphor bronze cone on the shank of a $\frac{1}{8}$ " drill.

Manufacture of union nuts is a routine process of machining hex

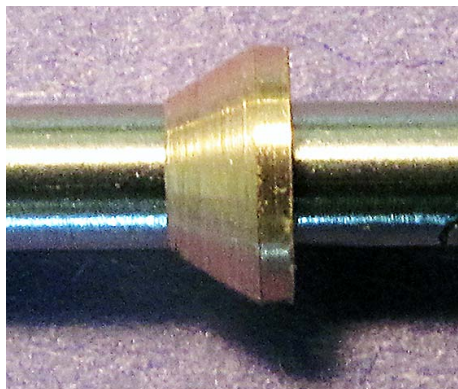


Fig. 4. A finished cone on a $\frac{1}{8}$ " drill shank.

brass stock to dimensions in Table I. After a tapping diameter hole has been made with a conventional drill, the back shoulder can be squared with a bottoming drill or D-bit so the nut will press uniformly against the cone. Fig.5 shows a loose nut with the cone silver soldered to the tube. It takes very little silver solder to do the job without getting excess solder on the taper where it is not wanted; use $\frac{1}{32}$ " 45% silver solder sparingly, and even hammer the end flat for about a half-inch for accurate control of the amount of solder in the joint.

To determine the exact length of pipe needed, as well as location and radii of bends necessary to dodge multiple obstructions, a piece of $\frac{1}{8}$ "

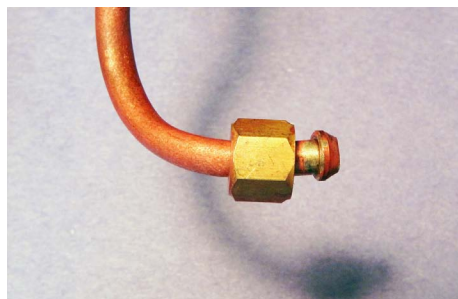



Fig.5. Completed nut and cone on end of a $\frac{1}{8}$ " pipe

round soft solder can be bent to follow the path of the proposed pipe. Begin with an excess length of solder, measure its length, then bend as required. Cut off excess solder at each end and subtract those two lengths from the original length measurement. That will give the exact length of tube required, and bends in the solder will provide a pattern for the tube. The tube can then be cut to exact length, annealed, and bent to duplicate the solder pattern. Silver-solder a cone on one end then slide both nuts on the tube, and solder the second cone. *Be sure both nuts are on the tube before applying the second cone!*

Commercial hex unions are available for those who don't want to make anything that can be bought. The disadvantage of commercial plain-hex unions is the long tail on the cone intended to simplify silver soldering, however, the tail sticks out prominently behind the nut, spoiling the "prototype look." Where prototype appearance is paramount regardless of cost, exact scale octagon unions are available from SuperScale Locomotive Company, as used in profusion on Dave Sclavi's K4. In the halcyon days of live steam locomotive construction some builders made more than enough unions than needed before beginning actual construction of their locomotive. Doc Buyse was one of those; he made all the unions for his 1" scale 0-4-0 *Gleishu* and stored them on wire loops so he had a stock to draw on later when needed.

For such small parts, unions play an important role in full-size and miniature locomotives, both in form and function. A little effort to make them correctly pays big dividends in satisfaction with a locomotive's performance, maintenance, and appearance. 

For Sale

One-inch scale Scale Railroad Supply RS-3 with riding car. 24 Volt Schauer wheel chair charger, New 4QD power supply system, and hand controller. This loco is at PLS and ready to run. \$5000. See Bruce Saylor, (610) 666-6572 bgsberk@comcast.net



Spring Meet Report

By Lee Nonnemacher

Photographs by Allen Underkofler

The PLS Spring Meet has just concluded as I am writing this. It was one of the more successful and better attended meets in my recent recollection. There were a good number of visitors arriving before noon on Friday and many trains were running early that morning. However, the meet got off to an unofficial start on Thursday morning when Ruth Morewood and her two daughters arrived with the $\frac{3}{4}$ -inch scale Raritan designed and built by her late husband Bill. The locomotive hadn't run since Bill's passing, but with assistance from Ron Henderson the family enjoyed several hours of operation on our multi-gauge loop. Throughout the weekend there was a good mix of motive power operating on the major main lines. One very long train ran for most of the weekend pulled by a variety of double-headed steam power on the $7\frac{1}{4}$ -inch main line. A good barometer of attendance is lunch sales from our kitchen; and so far it looks very good. Which brings me to saying thank you to Kathy Parris for organizing the food sales, and to those who sweltered in the kitchen while serving the food. Also, thanks to Jay Shupard, his assistants and all those who provided food to make the Saturday pot luck dinner a success. 🍷



Clockwise from Top: Dave Scalavi moves his new PRR combine to the track. Ken Chermack runs his Southern PS-4. Pat Murphy passes Dave Johnson at the car barn. Jim Connelly takes a run through the station.





Clockwise from Above: Kaeden Peffel runs his father's New Haven Mountain while father Eric rides behind. Jim Salmons watches the action. Jared Schoenly and Don Maleta push their Pennsy Geep. Bob Blackson works on *Phantom*.



Club Membership News

PLS welcomes new Associate members J. Stiles Patton, Patricia E. Appel, Denise Pokorny, Michael B. Yingling Sr, William Bury, Fred Daddi, Susan Gallo Giesler, Dennis L. Johnston, Sean Lizak, David Rhodes, and Jonathan K. Riehl. Also,

James Gotlewski, David Munson, Richard Poletto, and Ryan Bednarik have applied for Regular membership

Membership Gauge

As of May 31, PLS has:

102 Regular Members
256 Associate Members
8 Honorary Members

Lost and Found

There are a couple of items that were left behind from the spring meet. One is a seat that may have been from a 7 1/4-inch loco or riding car and another appears to be a roundhouse blower valve. If you're missing either of these items or anything else, e-mail president@palivesteamers.org.



The PLS GAZETTE

P.O. Box 26202
Collegeville, PA 19426-0202

FIRST CLASS



Donations Accepted.