

Fay Butler's Principles of Metal Shaping

By Jack Renaud

2005 is here, spring is coming, and the days are getting longer. At least they are for Graham Creswick, Tom Newton, Ozzie Pillon and me, Jack Renaud. Graham came over from Chatham Friday afternoon Jan 7 to my home in Dearborn. At 4 am things started happening. Tom Newton was up at 4 am, looked out the window to a beautiful clear day. Ozzie left his home at 4:15 am heading for Dearborn. By 5 am we started leaving to pick up Tom, also in Dearborn. Our Windsor-Detroit MG Club was evenly represented by 2 U.S. and 2 Canadian members. The clear day had turned into a huge snowstorm that was to plague us all across Michigan! Already we had an inch of snow on the ground. We left Tom's home about 5:30 am. We made our stop for fuel at Dunkin Donuts and jumped on I-94. Our normal trip time to Holland, MI of 3

seminar on Metal Shaping and Fabricating!

Fay Butler graduated in 1976 with honors and obtained a job at Amsley Antique Body Company in Chambersberg, PA where he was taught how to shape metal into compound curves working on diverse vehicles such as a 1912 Pierce Arrows and a 1931 V12 Cadillac, some Auburn Speedsters and an antique Mack truck hood (bonnet) which curved in all directions. He is now known as one of the best metal shapers in North America. In 2004, he was visited by Jesse James, of Motorcycle Mania TV show and Monster Garage TV show fame. Yes! He is related to the original Jesse James. Fay taught Jesse how to rivet and work with copper. Jesse James then did a custom all copper chopper motorcycle in his shop, West Coast Choppers. Jesse also built a chopper for Detroit's music star, Kid Rock, and the 2 of them toured Mexico on these bikes. Jesse's visit to Fay and the Mexico trip were



hours turned into a 4+ hour trip. On I-94, we did not see the pavement until we got to Jackson, MI where, accurately, Tom predicted that the snow would lighten up. Then we drove to Kalamazoo and north on US 131, then M89 & 40 to Holland. Many cars were in the ditch along the freeway. We were in my Ford Escape and the aggressive tires really helped. Our plan to stop for breakfast was dropped due to the snow storm. We finally arrived, the last ones to come in, at 9:30 am to Fay Butler's one day

featured in the Motorcycle Mania 3 show on the Discovery TV channel. Fay said Jesse was one of the best welders he had seen.

The seminar started at 9 am. After an introduction from Carl Heideman, of Eclectic Motorworks, Fay started the Seminar with a lecture on metallurgy related to steel and aluminum in automotive usages. He covered molecular structure and how it is affected during metal shaping. He covered the different metal classifications, such as AISA 1015 steel and 3003 aluminum, and

what the numbers meant. He gave a short history of aluminum and how it was first refined in 1843 and was more precious than gold at that time. World War II put the pressure on aluminum development due to the need for large quantities of light building material for war planes.

We had a couple breaks for coffee and snacks in the morning, a nice sub sandwich lunch around 12:30pm and a couple more breaks in the afternoon. It was an intense group of about 80 people from as far away as St. Louis, Missouri and Canada! Tom commented that when Fay was lecturing the attendees were quieter than people in church and, besides that, they all sat in the front rows!!

A lot of information was delivered to us. Fay took a claw hammer and a thick circular leather bag about 12 inches in diameter and 1 1/2 inches thick filled with sand, and formed a dome top for a motorcycle tank out of a flat piece of sheet metal just to show us that it did not take really sophisticated tools to shape metal, but, the sophisticated tools really speed up the process. He told us about his Yoder power hammer, a machine about 8 feet tall and 5 feet deep, which is his favorite tool. He showed us many different body hammers (arm power) and how to modify the wood handles for more flexibility. He suggested that the steel and fiberglass handles put too much shock into your arm when you are hammering with them all day long. He showed us various metal clamps, and a cardboard motorcycle gas tank form. He showed us how to make a pattern using flat paper to find out what size piece of sheet metal you would need for a project like the motorcycle tank. Fay said to throw away all our old worn out files and go out and buy some good Nicholson files at about \$6-\$12 each. There were a lot of chuckles, mine included, as we all thought of all our dull files that everyone hates to part with. He discussed the difference between shape (changing the metal thickness) and form (folding metal). He demonstrated how to use an English Wheel, Pullmax and Planishing machines. He suggested some different books to help us better understand metal and metal forming.

After hand forming the dome for the motorcycle tank, he did the same thing with all the power tools from a much larger piece of sheetmetal. He said that the larger sheet you can use, the less seam welding and weld clean up you will have to do. It was amazing to see this flat steel move into this flowing curved surface.

His last demonstration was the making of a patch panel for an older Triumph auto front fender, lower rear section, which included inserting a wire rod reinforcement around the wheel area and rolling the metal over the rod. This is a prominent flange design on a lot of the earlier cars instead of the 90 degree flange that is commonly used today.

Fay then gave us a wrap up speech and Carl Heideman gave a closing speech, too. Then, the 2 of them pulled out a box of Grassroots Motorsports magazine T-Shirts and a couple "Fay Butler" coffee mugs and had drawings from a box with all the participants' names. Graham won a t-shirt. This ended the Seminar.

It was a long, intense seminar, well worth the time and money.

Carl Heideman and his assistant, Ted Archer, did a superb job of keeping the day running smoothly. I would highly recommend any of Eclectic Motorworks Seminars. February 2004 Tom and I took the MIG welding and MGB Body repair seminar by Carl Heideman and we both felt we learned a lot! We had dinner in Holland, a quaint town where the main street and sidewalk are heated. With snow all around the area, there were absolutely clear walks on the main street, not even a hint of snow! We arrived in Dearborn at 9:30 pm. Ozzie and I had shared the driving. Ozzie and Graham still had more driving to complete their journey. Life is good!

Reference:

Fay Butler at Work www.metalshapers.org/tips/fay/index.htm

Fay Butler Fabricating and Metal Shaping

Scientific and Practical Motor Car Fabrication

51 Cleveland Road, Wheelwright, Massachusetts 01094

412.477.6449

Email: fayfab@mindspring.com

Recommended Reading by Fay Butler

Advanced Sheet Metal Fabrication by Timothy Remus

Wolfgang Publications, Inc 2003

www.wolfgangpublications.com

Yoder Power Hammer

<http://dsc.discovery.com/convergence/motorcyclemania/>

[photogallery/photogallery_zoom9.html](http://dsc.discovery.com/convergence/motorcyclemania/photogallery/photogallery_zoom9.html)

Carl Heideman's shop: Eclectic Motorworks

LLC 445 West 22nd St, Holland, MI 49423 616-355-2850

www.eclecticmotorworks.com

See Jesse's copper chopper fuel tank, click on [View Photo Gallery](#) at:

[www.motorcycle-usa.com/Article_Page.aspx?](http://www.motorcycle-usa.com/Article_Page.aspx?ArticleID=1306&Page=1#)

[ArticleID=1306&Page=1#](http://www.motorcycle-usa.com/Article_Page.aspx?ArticleID=1306&Page=1#)

Jesse's trip to Fay's shop and tour of the Sierra Madre

Mountains is available on DVD: Motorcycle Mania 3

www.vabiker.net/ads/motorcycle-mania.html

Discovery Channel and Jesse James

<http://dsc.discovery.com/fansites/monstergarage/meet/meet.html>