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DECEMBER 2011
Volume 21 Number 9

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ON THE COVER

Volume 21 • Number 9 • Our 179th Issue

As Greek myth stated the story, Icarus was able to fly using hand-made wings. His downfall (literally!) was in not following directions. According to Lock Baker, the builder of the bike called Icarus shown on the cover, *this* Icarus can certainly fly. But the bike's success comes from doing just the opposite of our mythical friend; Lock and his Icarus have taken off essentially by *not* following any pre-determined directions at all. Turn to page 8 to read more about this unique machine.

FEATURE BIKES

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SPOTLIGHT: DP Customs

The Motor City roots of brothers Jarrod and Justin Del Prado come through loud and clear in the bikes they build at their shop, DP Customs located in New River, Arizona. But even more than that apparent influence there's also a strong sense of American style in the machines they design. Add that Justin is a mad mechanical wrench and Jarrod is a lifelong racing fan and you'll get even more insight into why they do what they do. Go to page 24 to see a selection of their builds here in *IronWorks* for your perusal and enjoyment.







Last Licks

Photo Credit: Riles & Nelson, courtesy of H-D

It is odd to be writing my final column for 2011 just as the summer begins to fade but it is fitting, perhaps even appropriate, that it be this way. In places that suffer from having true seasons, the end of summer is a bittersweet time allowing an opportunity to get some last licks in while the getting is good. Like a fuse burning, you flash on how much time you've had and how little you've got ahead. The AC is off, the windows are open, kids are back in school, and the air is clear and crisp. You can feel time is marching on.

I am not ready to look back on the year quite just yet; we still have time to travel on two-wheels comfortably. Putting the wrapper on the season this early would be wrong. The two months after Sturgis are a nice time to get out in the Northeast. Looking at the calendar, travelling has calmed down and so I am able to look up and appreciate the good stuff IW has coming up and maybe get a few no-agenda personal la-dee-dah rides in, personal overnighters, do a little visiting.

While I was waiting for Hurricane Irene to visit last week, I received a call from Chris Callen, Publisher of Cycle Source, on his way to Bonneville, for the BUB speed event. As he was heading west towards Utah, he called to report on a stream of utility vehicles, power line crews, arborists, and cleanup crews parading their way east towards what would be a mess. He was heading towards bright sun and the salt of Bonneville and was watching an army move towards home. It was a strange feeling.

I know many of our readers, subscribers, fans, and fellow riders were affected by Irene. Ugh, what a disaster. My heart breaks for those deeply affected. I can think of few things sadder than damage to a home, business, town, etc. I lived through a house fire and I can say this with absolute certainty: floods and fires suck. Take it away, just please don't leave me with a heartrending mess to contend with.

But on the other hand, we are fortunate. Nearly all survived and will be able to rebuild. Some things can and will be replaced, many things can't. And it is the loss of those photo albums, the old pictures from past generations, home movies, those pieces of paper and things that prove we were here and accomplished things, which hurt the most. A little bit of us gets lost when we lose those things and so we lean on the folks around us to give us strength, help us redefine ourselves in this new context.

Americans rebuild—it is our nature; it's what we do. The phrase, "What doesn't kill us, makes us stronger," applies to a certain extent to this past year when it comes to weather. To boot, I smell some action in the air, I look around and see that we are percolating. I am hopeful that politically we are collectively realizing that it's ours to lose. And hey, Washington: time to stand up, go to work, stop the infighting and pursuit of self-serving agendas, and look to our future. I see it happening amongst the citizenry, it gives me heart. You guys need to follow our lead.

So in this context of the pot simmering, what's up with *IronWorks Magazine?* Well, I can say with a high degree of confidence, IW has some good things coming your way in 2012. We've got a groove going if what I am hearing from our friends, competitors, and readers is any indication. While we are keeping our editorial line-up, we've got some new contributors, some new columns, and some great machines teed up for 2011.

We've got our challenges like every other business. The bee in our bonnet is an ever-shrinking newsstand universe. As small and large convenience and bookstores alike close it becomes harder to find magazines, IW included. Interestingly, as newsstand has shrunk, subscriberships have increased, because folks want and will seek out their *IronWorks Magazine.* So a balance is maintained but it is still a challenge. My suggestion is that if you like *IW* and want it regularly, you take advantage of the substantial savings and subscribe.

I suppose that every year's end missive should also have some sort of resolution/look ahead type of communication in it, seems that that'd be only right. Well, I am pretty clear on one: I want more. I want more talented contributors in these pages, more new voices in *IW.* I want more pages of bikes. I want more features from around the world. Basically, I want to turn up the volume. I want more of what we already have. Typically American, I know, but heartfelt. I want more of what I like! And you can be certain; I am going to work on bringing that resolution to fruition.

So in closing, friends and readers, I hope you will look forward as I do, to the coming year. But for right now, let's get some last licks in on 2011. We've still got places to go, tires to turn, and friends to visit.

As for 2012? Bring it on, we're ready.

Stephen Berner
steveb@steveb.biz

Icarus Flies

Eastern Fabrications builds a great bike with a new-think engine

Story by Lock Baker
Photos by Stephen Berner

We talk about new. We talk about the spirit of adventure. But look around: what is truly new, inventive, and adventurous? So when someone, in this case Lock Baker from Eastern Fabrications, takes the long way around and designs, builds, and then rides a bike with his own unique one-off hand-fabbed engine, we have to step back and appreciate as well as applaud his efforts, if for no other reason, than he had the balls. He did it—and he made it work.
—Stephen Berner

The inspiration for Icarus was primarily to push my limits as an engine builder. You see, for years I only did the metal fabrication on my motorcycles, leaving the motor rebuilds to professionals. The problem was that the local professionals, in many instances, turned out to be unreliable, costly, and difficult to work with. I knew that in order to become a true bike builder I needed to master every aspect of bike construction.

I had assembled a few engines in a conventional manner but nothing that proved I knew the true dynamics and intricacies of internal combustion. When you simply assemble a motor from a parts catalog you do not need to know much, other than how it all fits together. Look at a shop manual for the given engine type, follow the instructions, and presto—you have a running engine. This engine may not be a competitive race winner, but it will go down the road.

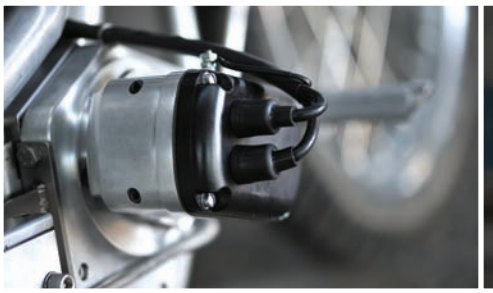
I wanted to prove to myself, and my peers, that I truly understood the mechanics and theories of internal combustion. The only way to do this was to design and build—not simply assemble—a custom engine.

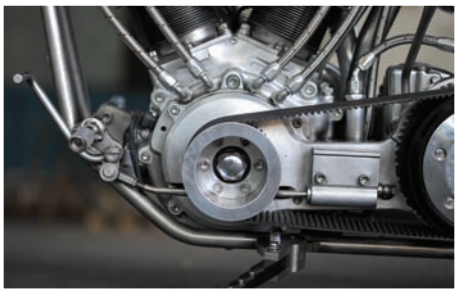
I remember several years ago watching a TV program with Indian Larry. He was explaining one of his engines, one with two different Harley heads on a common crankcase. He said that he liked engines to be as bizarre and mechanical looking as possible, hence the two different heads. I couldn't agree more! I thought that I could push that concept further still—by not using Harley parts at all.

This engine is a hybrid of different designs. The crankcase is Harley style. In other words it is a V-twin, single cam, 45-degree cylinder angle, with a gear driven breather system. The cylinders, pistons, and heads started life as Continental O 200 parts. Continental is an aircraft engine company that primarily builds boxer style prop plane piston engines.

The work involved in making this whole thing come together is too long a story to tell here, but I will cover some of the major challenges. The task of mating the cylinders to the case was a big one. Continental cylinders are "oversquare," meaning that they have a larger bore than stroke. In this case, the bore is 4⅛" while the stroke is only 3½". In order to make this fit the case, I needed a much larger "deck" area than a typical Harley.

The cases I used were manufactured by Delkron, who were kind enough to sell them to me with a blank deck, meaning there were no stud holes. I also specified a case set up for a ¼" extended pinion shaft, essentially moving the entire cam compartment over in order to make room for the increased cylinder base area. There are





more differences between typical Harley cylinders and Continental cylinders.

Continental cylinders have six base studs instead of the usual four, as well as an O-ring base gasket instead of a flat paper one. The base studs were a problem because two of the six studs per cylinder were located exactly where my tappet blocks were! To fix this I built up weld material outward from the deck area towards the tappet blocks then shaped them by hand, blending them into the case. This provided the extra meat I needed to accommodate these new base studs. The tappet blocks themselves then needed to be machined in order to have them fit this new deck modification. They barely fit!

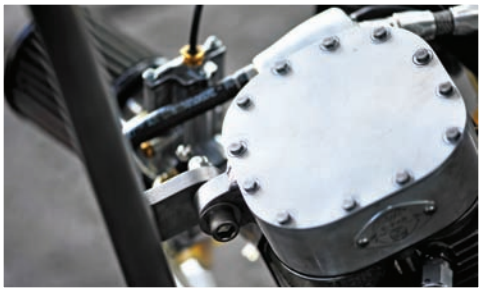
The connecting rods had to be custom made for a few reasons. The wrist pin was Continental and the crank pin was Harley style. Also, the distance between the two pins was much longer than a Harley. Carrillo was chosen to manufacture these custom rods, and after four months of waiting they showed up. They are the most beautiful rods I have ever seen: H-beam, shot-peened, perfect.

The crank assembly was another challenge. Because of the short stroke the Continental cylinders called for, I needed to have custom flywheels made. You see, the only Harley flywheels to have a 3½" stroke were 61" Knuckleheads. My crankcase calls for Evolution style pinion and sprocket shafts, meaning a corresponding set of flywheels. I called Truett & Osborn, a trusted flywheel manufacturer, and asked them if they could build these custom wheels around my custom connecting rods. Once they started, I received a phone call saying that because the stroke is so short, the nuts that hold the crank pin in place are too close to the sprocket and pinion shaft bases. Makes sense when you think about it. Luckily for me, they are cool people over there at T&O, and they came up with a neat solution: make a custom crank pin with smaller threaded ends, meaning they could use smaller nuts. Problem solved.

Here's another: Harleys have two different cylinder heads, a front and a rear. They are almost mirror images, allowing for both intake ports to be located across the street from one another. This allows them to use a common intake manifold and a single carb to feed both cylinders. Continental engines are boxer style, so every head and cylinder is exactly the same.

When you take two of them and put them upright in a 45-degree configuration, they look like two rear Harley heads. This means a few things. I needed two custom-made intake manifolds and two carbs. I also needed a custom camshaft with the front two lobes reversed. In addition, the rocker arm ratio of the Continental is 1.2/1 while modern Harleys are 1.6/1. This would mean that in order for the valves to lift as much as Harley valves do, I would need a much higher lift cam. The cam design and construction was given to Redline Racing Cams out of California. It took over six months but they eventually nailed it. Thank you Redline!

I could go on forever, but here is a basic synopsis of the other challenges: custom collapsible pushrods, custom intake manifolds, custom Lectron carbs, custom load bearing rocker boxes, cus-



tom pushrod boots, custom top end oil drains, magneto re-degreed, custom exhaust, cylinder fins extensively clearanced, custom base studs and nuts, and I even had to make a custom valve spring compressor due to the fact that the cylinders and heads are permanently attached to each other! (No head gaskets.)

The rest of the bike is every bit as wild as the engine. With the help of Acme Choppers, we made an entirely stainless steel frame in order to fit the taller engine. I made the hubs from scratch and had them laced to imported Morad rims from Spain. Bandit Machine Works provided the primary drive, which I modified to accommodate a 10-degree transmission plate tilt.

This allowed me to get a fair lead on the final belt drive (an old Indian Larry trick). I also made the fuel tank from scratch out of aluminum (see past *IronWorks* article for that one!). The fork is a shaved 35mm narrow glide. Everything else, including the bars, foot controls, fender struts, taillight, plumbing, seat, oil tank, and 4-bar pneumatic seat suspension were all made by me at Eastern Fabrications.

I feel very satisfied with the final result. The engine runs like a top and the bike rides exactly the way I wanted it to —light, quick, agile and fun. It goes without saying that I had the help of a lot of talented and generous people. Mark Simiola, from Sterling Performance was instrumental in helping me calculate the length of the rods to get my desired compression ratio. He also answered countless questions and helped me time the engine. Acme Choppers came through as usual with the bottom half of the frame.

Clifford Frizzel from Esquire Machine helped make the beautiful rocker boxes and decked the cases. Cooney Engraving did the custom badges that adorn the bike. Truett & Osborn, Carrillo, Delkron, and Redline all treated me with professionalism and kindness. I would like to thank all of you for your willingness to think outside the box with me.

Oh yeah, the name. The story of Icarus comes from Greek myth. Icarus was the son of Daedalus, a craftsman who built a set of wings that allowed man to fly. Icarus was allowed to use the wings on one condition; that he not fly too close to the hot sun, as the wings were held together with wax.

As Icarus flew he did not heed his father's warning; the wax melted and he fell to his death. I chose the name because, by using aircraft parts, I was taking a risk. I knew that if I was not careful and diligent it would not work. Luckily, patience pays off and so, *this Icarus Flies.* IW

*RESOURCE

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