

**FEATURING THE JOE MARTIN
FOUNDATION 2016 WINNER**



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COVER FEATURE

**The Work of
George Britnell**



THE ORIGINAL MAGAZINE FOR MODEL ENGINEERS



George Britnell

Joe Martin Foundation Metalworking Craftsman of the Year

A look at the work of this outstanding model engineer.

Each year the Joe Martin Foundation for Exceptional Craftsmanship presents an award to a craftsman who has exhibited a lifetime body of work that is head and shoulders above others in his or her field. The Foundation is funded primarily by Sherline Products, a U.S. manufacturer of precision miniature machine tools, so special emphasis is placed on projects at the small end of the size scale.

The winner for 2016 is George Britnell of Strongsville, Ohio. George exhibits a wide range of talents from model building and model engineering to miniature gunsmithing and pencil and paint artwork. George is the 20th winner of the award, which includes a prize of US\$2000, an award certificate and an engraved medallion. The award will be presented at the North American Model Engineering Society (NAMES) Expo in Wyandotte, Michigan on April 23, 2016. George's work can be seen at www.CraftsmanshipMuseum.com/Britnell.htm

An early start in model making

George Britnell was born in Canada and lived there until he was 10 years old. He notes that he has always enjoyed building things. His first recollection, at the age of seven, was carving a helicopter out of a block of balsa wood based on an illustration in a comic book. About a year later his father had made a trip the U.S. looking for work and brought home a plastic kit for George that led



Coloured pencil drawing of a 1932 Ford hotrod engine.

him to take an interest in more detailed models.

In 1955 his family moved to Cleveland, Ohio where his dad had been hired by the Ford Motor Company as a wood patternmaker. By now George was fully into plastic models, mini bikes and lawnmower engines.

A teenager discovers metalworking

His interest in machining didn't start until he was about 14, when he met an older fellow in the neighborhood. This gentleman had a small machine shop and, one day, while rooting around in his shop he found an old Dunlap lathe that he gave to George. When he was about 17, George discovered a place in Cleveland called the Dennison Pattern Works. They sold Stuart Turner steam engine casting kits and had completed versions of most of them on display in their office.

The models inspired him, but George's early machining career didn't progress much as cars and motorcycles took centre stage in his life. In high school he mainly took college prep classes but did manage to sneak into the metal shop on occasion and hang out with his buddies. He took a course in mechanical drawing but that was the only industrial arts course he attempted.

Art career interrupted by military service

After graduating from Brunswick High School in 1963, he attended Cooper Art School in Cleveland with the goal of becoming a commercial artist (photo 1). He was only able to attend about a year and a half because he had to find work to help pay the bills. He did work in the art field for a short time until he got drafted into the army during the Vietnam war.

In the army was where his machining education grew.

All photographs courtesy of the Joe Martin Foundation.

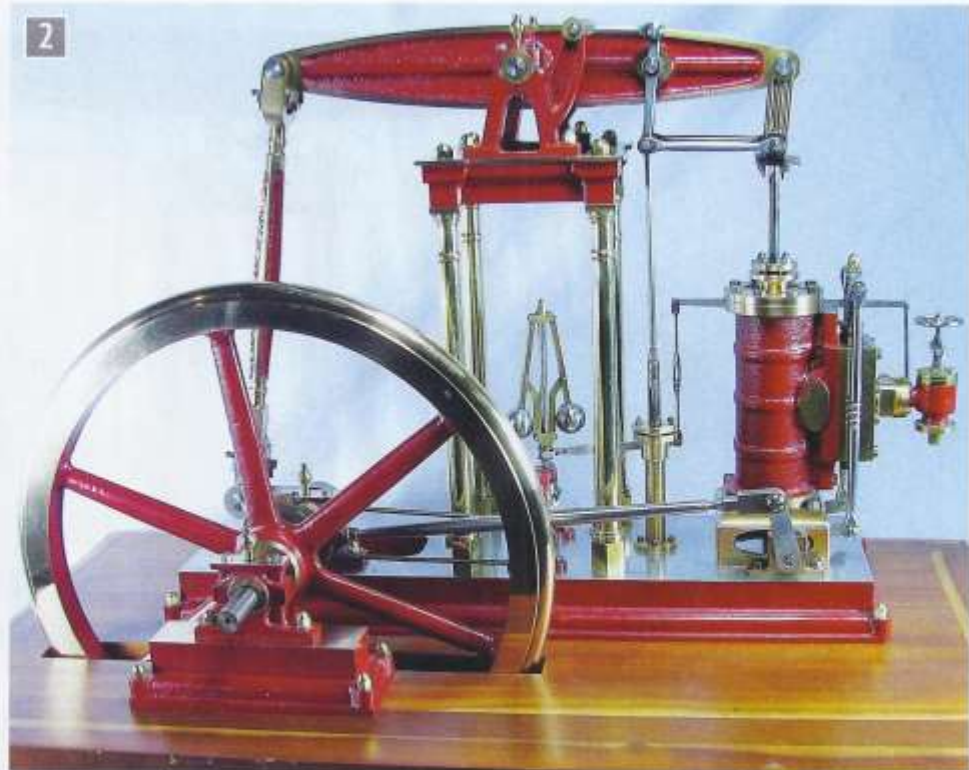
Although the army initially trained him to be a radio repairman, the machine and maintenance shop needed people and he was recruited. He worked with a German fellow who taught him some of his early skills.

An apprenticeship at Ford Motor Company leads to a lifelong career

Upon discharge from the service he tried to get back into the commercial art field but didn't have much luck. He worked at several jobs until they opened up the apprenticeships at the Ford Motor Company. He was offered the choice of electrician or metal patternmaker and chose the latter. The apprenticeship was extremely comprehensive and that is where he gained the bulk of the machining knowledge that he has today.

Outfitting his home shop

Now that he was bringing in a reasonable income he was able to purchase his first serious lathe, a 6 inch Sears/Atlas, with all the attachments. Over the years he has made numerous parts and engines on this lathe. Around 1978 he acquired a new Enco mill/drill that he still uses it today. After



Large Mary beam engine.

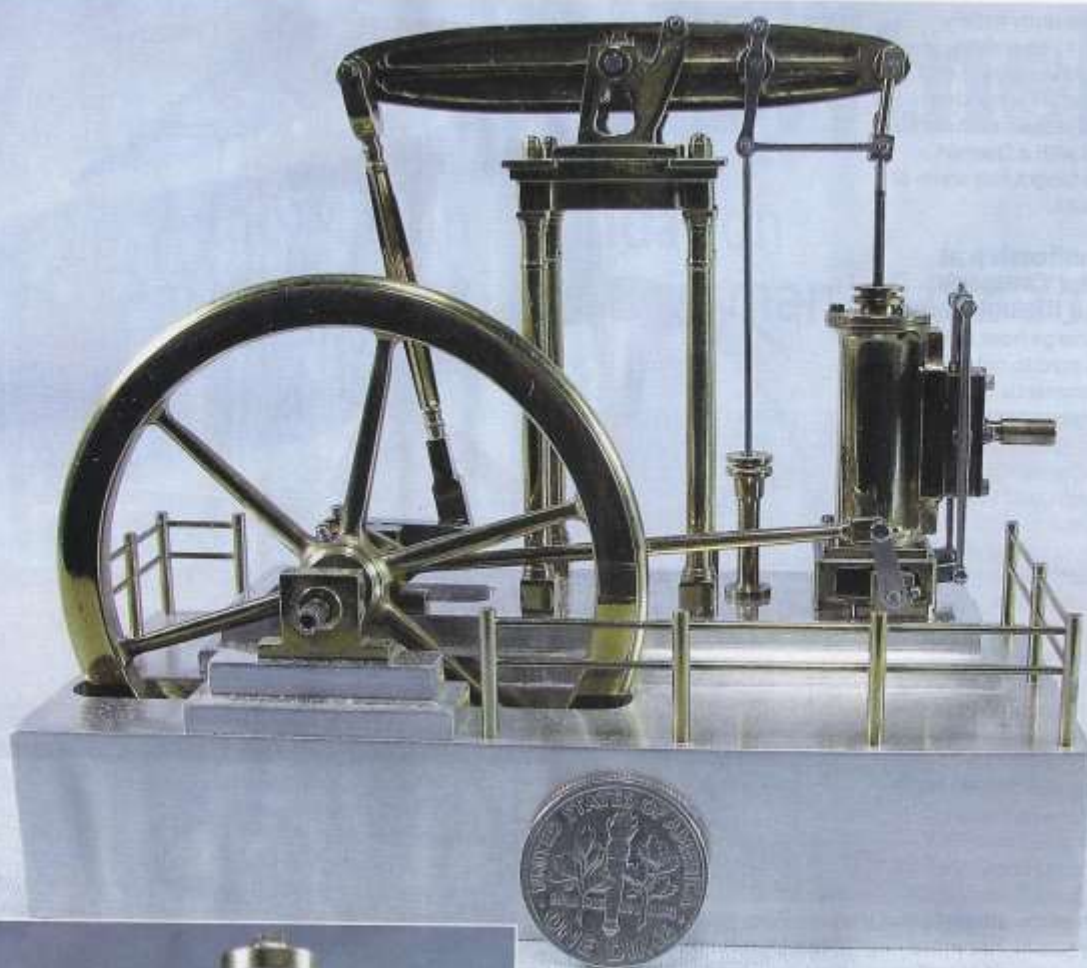
building a number of Stuart Turner kits (photo 2) he bought the Cole's Power Models' 1:12 scale Case traction engine kit. This was quite a departure from the Stuart kits and he learned a lot about set-ups and fixtures during this build (photos 3 and 4).



One inch scale Case steam tractor.
INSET: Detail of tractor.



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Small scale Mary beam engine.

6



2 inch scale governor.

Other projects

In addition to building steam engines and then going on to build smaller versions of the same engines as an additional challenge (**photo 5**), George also tried his hand at making things like a Case hay bailer and a water tank trailer, a small governor (**photo 6**) and a PM Research 1:12 scale lathe. He also did some gunsmithing,

building a half scale Colt Army Revolver (**photo 7**) and a Manlicher Schoenauer bolt action sporting rifle as well as a 1:8 scale Gatling gun. The wide variety of these projects reflects his interest in all sorts of precision mechanical items. **Photographs 8, 9 and 10** show three further examples of his work.

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Half size Colt army revolver.

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Two cylinder compound marine steam engine.

Topsy Turvy hit-n-miss engine from plans by Phil Duclos.

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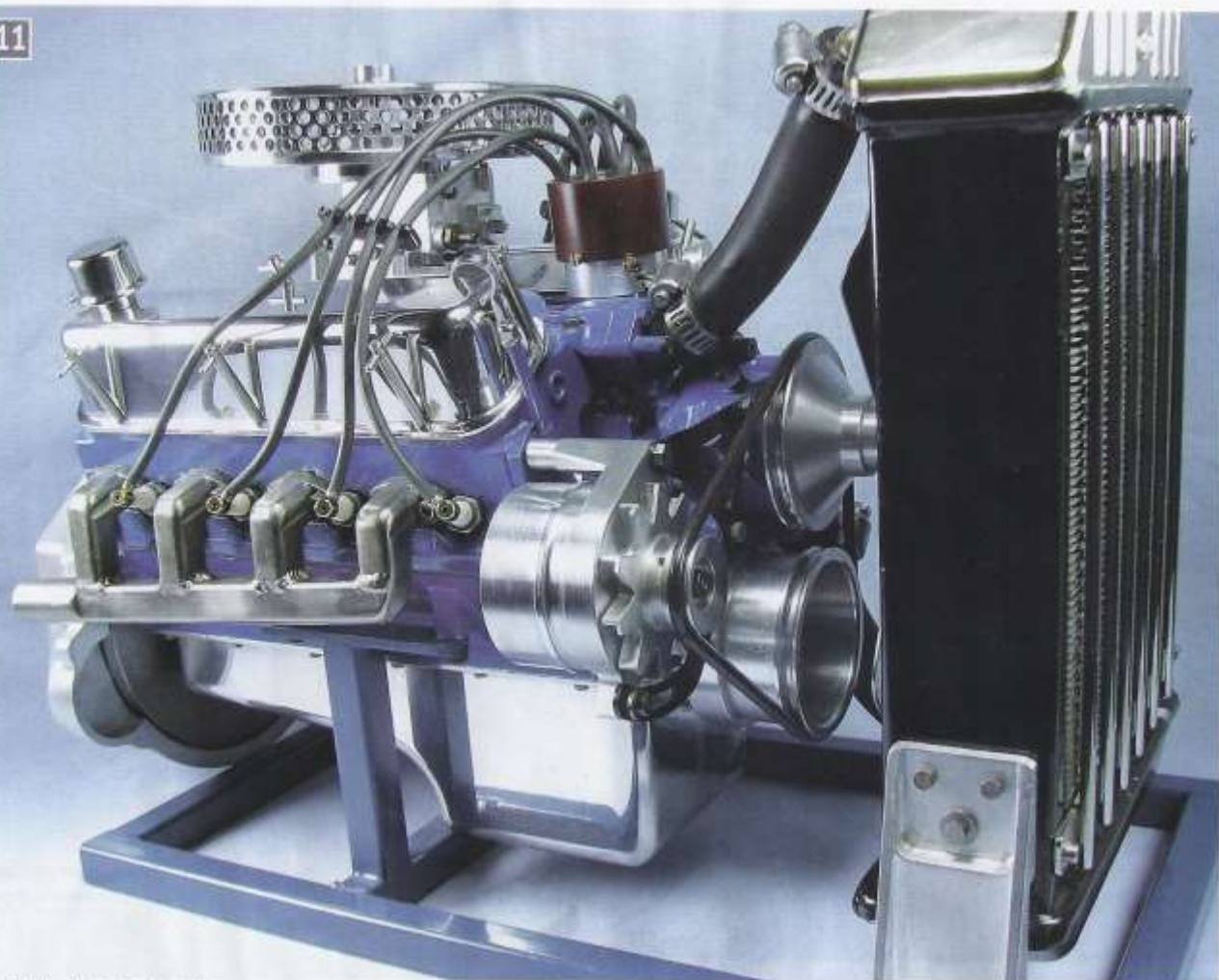
Small version of the compound two cylinder launch engine.

A move from steam engines to custom I/C engines

From steam engines he moved on to internal combustion engines with the casting kits offered by the late Paul Breisch. With more knowledge and confidence, he started building a 1:3 scale Ford 302 cubic inch V8 engine (photo 11). Through his job he had the availability of the Ford engineering drawings for the parts that were cast at the foundry where he worked. He scaled them down and made the necessary changes to make them work for a miniature engine. The total time for this project was around three years. He didn't keep track of the exact number of hours it took, but he estimates it to be about 2000 (ref 1).

His work at Ford took George into the area of pattern design and later into computer >>

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One third scale Ford 302 V8 I/C engine.

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Ford 300 inline six cylinder engine.

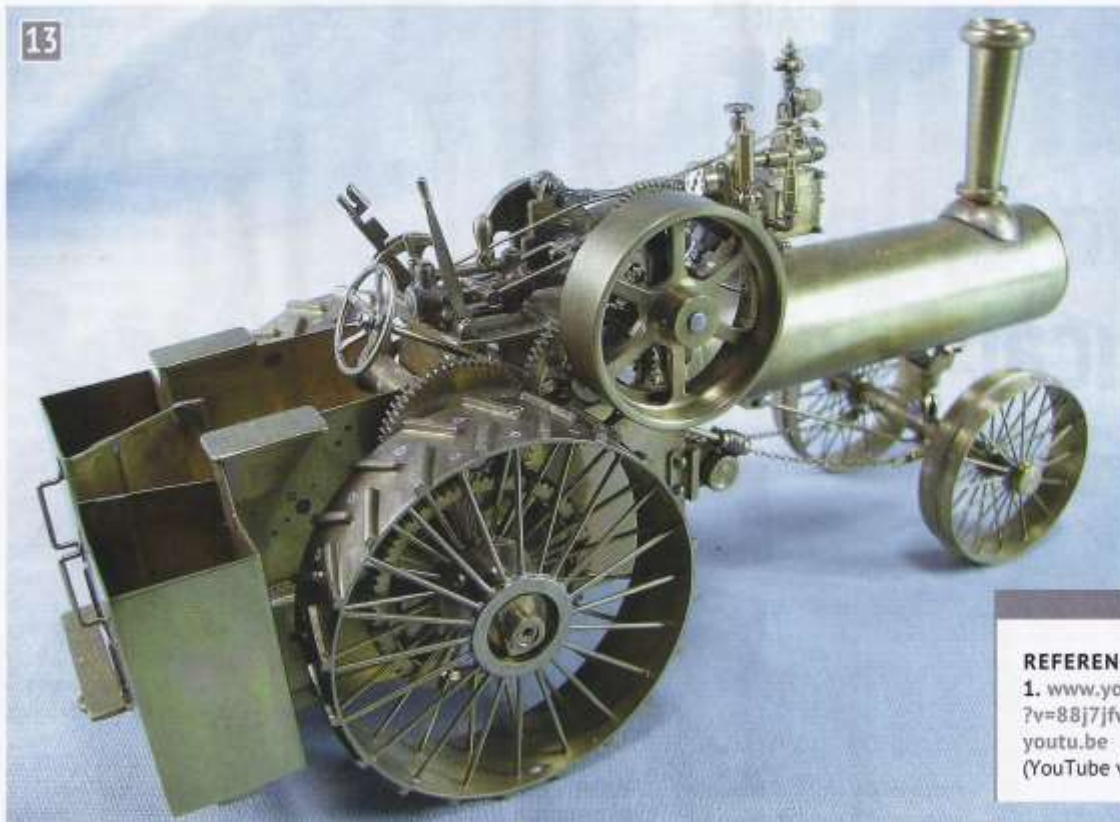
modeling and cutter pathing for the pattern shop. Along with this he had the opportunity to learn AutoCad and several other CAD programs. He has used these tools to design and build some of his own engines; namely an inline, overhead valve engine for which he now offers drawings (photo 12). He has also designed miniature saw mills, hay balers, rifles, pistols and many other small tools and projects.

George entered the first Sherline Machinist's Challenge contest in 1992 and took first place. He followed that with another first place in 1993 and placed well in several contests in the following years as well. One of his entries was a small 5 inch long brass model of the large Case steam traction engine he had built previously (photo 13).

Ford flathead engine, 1:3 scale; his latest project

George had always wanted to build a true Ford flathead V8 engine, but with extensive research and drawing the only way to make it perfectly accurately would have been to make castings. Even then it would have been very questionable as to the outcome. The location of the water passages in the block required the relocation of the exhaust manifold to the top of the engine as on a Cadillac engine rather than the side as it was on the Ford. He started the detailed drawing set of the 'Fordilac' engine in August 2014 and completed building the engine in December 2015 (photos 14 and 15). Over 1900 hours of work on the drawings and engine have gone into

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5 inch long reduced size model of Case steam tractor for a Sherline contest.

REFERENCE

1. www.youtube.com/watch?v=88j7jfwaha0&feature=youtu.be
(YouTube video of 302 V8)

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Latest project; a one third scale 'Fordilac' flathead V8.

the project so far. Other than the exhaust placement the engine was built to replicate a late Ford flathead engine (8BA). All the work was done on manual mill and lathes. Photographs of George's

work can be seen at www.CraftsmanshipMuseum.com

Manual machines vs. CNC

Though he is trained in the use of CNC, he prefers to do his personal work using

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One third scale flathead V8.

manual machines. He notes; 'I have seen countless examples of metal artistry through the years, with more and more of it being produced by CNC machines. There is nothing that can take away from the

quality and exactness being produced by that process but, to me, working metal, wood and glass by hand more befits the term 'craftsman'.

ME