

**A Little-Known Chapter
From The Golden
History Of The
Golden Age Of Automobiles**

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USN WRINKLE ROTARIAN

NEWCOMERS TO the automotive field may believe the NSU Wankel Rotary engine is a mid-20th Century innovation, a product of clever German engineering. Such may not be the case. Research shows there was a USN Wrinkle Rotarian engine, developed in the United States in 1916, which could very easily have been the forerunner of the Wankel.

In that year, 1916, as the black clouds of war descended over Europe, the U.S. Navy sought a light amphibious motorcycle, suitable for one-man ship-to-shore courier duty from submarines.

Auto and motorcycle manufacture was in relative infancy. Designers and patent holders flocked to the Navy's newly created BuFib (Bureau of Amphibunautics) with bids and specification proposals for the announced project. However, the development contract, totaling \$23.98, was awarded to one Ole Barnfield for production of a prototype machine.

In his converted steam tractor repair shop in South Prairiehole, Kan., Barnfield first undertook creation of the unique machine. For the combustion chamber, or bucket, Barnfield used a carefully machined No. 2 bucket, reinforced by overlay of a heat-treated Dutch oven. The rotating piston was quite hammerlike in appearance, for it was carefully forged from a 3-lb. machinist's hammer. The eccentric crankshaft, likewise, appeared to be quite crankshaftlike, as it was taken from the eccentric drive of the Barnfield family farm windmill—a factor which may have contributed to the engine's later eccentricity.

The oiling system was rather crude, but as crude oil was used, it proved quite satisfactory. Fuel injection was carried out with a Copperclad Piston Oiler, manually operated by the manual operator, as was explained in the operator's manual. Exhaust valving rather took care of itself—through a gap in the Dutchbucket left when the initial piston left during initial tests.

Without additional testing, because good quality hammers were expensive in Kansas in those days, the completed powerplant was mounted in the frame.

The frame itself had been developed simultaneously by one Kris Krossler of nearby East Teepee, Kan., who was respected by local residents for his ability to carve a fine whiffletree. This previous training may have influenced Krossler's design for the frame, as the completed product appeared to be four whiffletrees stoutly bound together with hand-beaten strap iron.

The front wheel suspension provided plenty of caster angle because Krossler had angled around and obtained a caster from his mother's horsehair sofa. The rear wheel was obtained from the buckboard of a local church deacon—the night of Oct. 31, 1916.

Krossler chose belt drive and afterward used a bit of rope to maintain the proper position for his trousers, though many thought his suspenders would have been adequate.

The fairing of the machine was fabricated from Ondatra Zibethicus (mushrat) hide stretched over a light willow frame—a wigwam design drawn from that used by original Kansans.

Krossler then added three outboard fins on either side of the enclosure to provide high-speed stability—a technique reapplied many years later at Bonneville Salt Flats, Utah. However, the three fins gave the machine an appearance remarkably similar to that of the Fokker triplane of the same era—and the amphibious motorcycle soon became known as the Pepper Tri-Paster, as Kansas farmers of that day were wont to pepper, with No. 5 shot, anything that passed through underbrush near chickenhouses or watermelon patches and three handy-men were kept busy pasting new hide over numerous tiny holes.

The engine, as yet unnamed, was mounted in the Tri-Paster frame. However, due to lack of blueprint clarity, the engine was affixed to the frame horizontally, rather than vertically. Misalignment of bolt-holes caused the crankshaft to be fitted to the main whiffletree at the lower attachment point of the three fins, rather than at the primary belt drive pulley.

CHOSSEN TO test drive the new Amphib was Buddy Eatenwrecker—known not for his driving ability, but for bravery which he earlier had demonstrated by climbing the South Prairiehole watertower all the way to the lightning rod. Eatenwrecker also was program chairman for the South Prairiehole Rotary Club and agreed to test drive the machine in order to provide subject matter for a speech.

Site for the test run was a lonely stretch of beach, unusual in Kansas because there is no ocean for 1500 miles in any direction. This test course was known as Dotayna.

The test morning arrived bright and clear, with a 3-knot wind from north-northwest. Perfect! Draft horses reared and snorted as the odd machine was rolled from the dray onto the yellow

sands of Dotayna. Barnfield and Krossler pushed the amphibian to the starting point of the measured mile. Eatenwrecker tugged nervously at his yellow calfskin gauntlets, then placed his bicycling cap on backward.

At a signal from Barnfield, Eatenwrecker vaulted into the wicker driving chair and grasped the steering bars, which were of unusually high configuration to facilitate the fording of creeks, etc. "Ah feel like a durn ape a-hangin' up here," said Eatenwrecker, and thus was born the appellation, "ape-hangers." Using the piston oiler, he injected a blend of coal oil and swamp root into the touch-hole of the Dutchbucket. Striking a lucifer on the sole of his lightweight patent leather driving shoe, Eatenwrecker awaited an indication to start the test.

Barnfield dropped his handkerchief—because he was a clumsy nose blower—not because he wished Eatenwrecker to depart. The obedient, intrepid driver touched the match to the ignition port and let out the clutch.

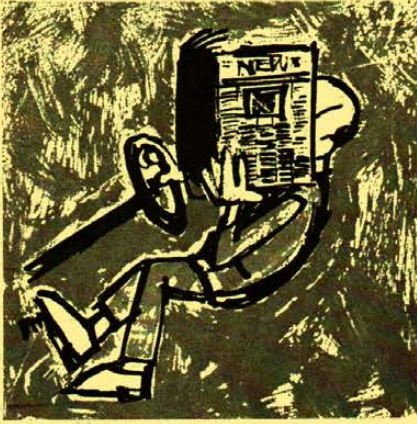
WHAT OCCURRED was totally unexpected by designers Barnfield and Krossler and driver Eatenwrecker. Because the crankshaft had been inadvertently bolted to the main whiffletree instead of the primary pulley, the three stabilizing fins of the amphibian rotated while the frame and wheels remained stationary. Shuddering, popping and creaking, the Tri-Paster rose vertically into the air. "That's a new wrinkle," shouted Rotarian Eatenwrecker. Hence the name USN Wrinkle Rotarian—and the birth of the latterday work-horse of aviation, the helicopter.

Fortunately, Eatenwrecker, in his excitement, forgot to pump the piston oiler and thereupon the Wrinkle Rotarian engine died of fuel starvation. Back on the ground, modifications were quickly made. The engine was adjusted to its proper position and the correct drive belt connections made. The fins were replaced by a pair of side-wheels, later to be employed as a training device for sidewalk bicycle riders. This made the USNWRPTP into an automobile, rather than a motorcycle as specified in the USN contract. However, the Navy had \$23.98 invested and admirals are well known for getting their money's worth.

But, the question is, "How did the USN Wrinkle Rotarian fall into German hands?"

The Wrinkle Rotarian-Tri-Paster combination was rushed through a crash—and there were many—program

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310 bhp

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Valiant Barracuda, 180 July '64
bhp V-8

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Barracuda S, 235 bhp V-8 June '65
Fury Station Wagon, 330 bhp August '65
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Bonneville, 325 bhp August '65
Catalina 2+2, 338 bhp V-8 December '64
Catalina 2+2, 375 bhp V-8 April '65
Tempest GTO, 365 bhp V-8 May '65

1964 RAMBLER

American sedan, 138 bhp 6-cyl. January '64
Classic hardtop, 198 bhp V-8 March '64
Classic Typhoon, 155 bhp October '64

1965 RAMBLER

American 440-H, 155 bhp February '65

1964 STUDEBAKER

Daytona hardtop, 280 bhp V-8 February '64

USN WRINKLE

of development in 1917 and 1918. The refined model was delivered through BuFib to the U.S. Marine Corps Undersea Courier Service on Nov. 10, 1918, antedating the signing of the Armistice by only one day. Despite its tardy arrival, the USN Wrinkle Rotarian was to make one historic run.

LAUNCHED AT periscope depth from the USS Cuttysnark, the Wrinkle-Rotarian/Tri-Paster flashed ashore in France and proceeded at top speed on a scouting mission along the trenches with Lance Cpl. Eatenwrecker once again at the controls. However, because designers Barnfield and Krossler, during the crash program, had neglected to fit brakes, the machine overran the American lines and continued at top speed over German trenches. Obergruppenfuhrer Fritz von Lederhosen put down his messkit of kraut and poked his head over the sand-bagged lip of his trench to see what in *himmel* was making that infernal *donner und blitzen*.

At that moment Cpl. Eatenwrecker sped over the trench. The spike atop von Lederhosen's Prussian helmet pierced the thin, lightweight mushrat hide fairing and the wicker driver's seat. With a surprised shout, Eatenwrecker leaped clear and was forthwith captured.

The USN Wrinkle Rotarian/Pepper Tri-Paster continued on its course toward Germany.

For many years thereafter, the Wrinkle Rotarian engine design was believed lost to science. However, following World War II, a lady machinist, named Mercedes Bernz and employed by the NSU works, noticed the strange configuration of a rusty manhole cover in one of the quaint cobblestone streets of Neckarsulm, Germany. Unable to translate English, Miss Bernz misinterpreted the cast USN on the strange bit of metal to mean it was the property of NSU.

The humble lady took the object to the plant engineering and design laboratory. Intrigued, engineers and designers delved into the inner workings of the strange piece of machinery. The remainder of the story is well-known. An NSU Wankel Rotary engine, not in an amphibious 4-wheeled motorcycle or an accidental helicopter, but in a small, sprightly sports car, is soon to be available in the United States.

Somehow, it would be fitting if NSU could see its way clear to make South Prairiehole, Kan., the main service center for the Rotary Roadsters—employing the offspring of those hardy pioneers, Barnfield, Krossler and Eatenwrecker. ■



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