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America's man-powered prizewinner

By MIKE HIRST

British industrialist Henry Kremer set the aeronautical world on fire with enthusiasm in 1959 when he announced a cash prize for successful demonstration of man-powered flight. It has taken eighteen years and a challenge by an American who disobeyed convention to see the prize won

w ORTH £50,000, the most valuable of the Kremer

Prizes specified that a man-powered aircraft should
fly a figure of eight around two pylons at least
h mile apart, passing over the start and finish line at a
minimum 10ft altitude. On August 23 this year it was won
by Gossamer Condor, an aircraft built and flown in California. Two smaller prizes are still to be won, plus two additional prizes announced as we went to press (see box on page 1256).

Winning the main Kremer Prize is the most significant achievement to date in man-powered aircraft development. It is not the first high-point however, and there should be no shortage of future landmarks. Even so, Gossamer Condor takes special place on two counts: as well as being the first successful Kremer challenger it is the first aircraft embodying features that are likely to become commonplace on future man-powered flying machines. It is worth looking at what some other man-powered aircraft designers con-ceived before seeing how designer Dr Paul MacCready overcame the most daunting problems with an aircraft that, in its own way, is revolutionary.
Man-powered flight was first tackled in the 1930s by the tow-launched Haessler-Villinger and Rossi-Bonomi. Interest was only spasmodic until 1959, when a man-powered air-craft group was incorporated in the Royal Aeronautical Society, and British industrialist Henry Kremer outlined the requirements for winning a £5,000 prize. With its criteria still unchanged, the prize was increased to £50,000 in 1973, and £6,000 of additional money has since been announced for other goals.
First Kremer challenger was the Southampton University man-powered aircraft (Sumpac), which made its maiden

flight on November 9, 1961. Just one week later the HatfieMrbuilt Puffin 1 took off on its first flight. By the end of 1962 Sumpac had made a 650yd flight, including a turn through 80°, in the hands of Derek Piggott at the Lasham Gliding Centre. Puffin 1 was flown by three pilots and in May 1962 John Wimpenny pedalled a straight flight of 993yds, a feat recognised by a special award of £50 from the RAeS. Puffin 1 was damaged the following year, as was Sumpac in 1964. The latter was put on display by the Shuttleworth Trust at Old Warden, where it can still be seen. There have been plenty of other attempts in Britain: Dumbo, a 120ft-span machine built at BAC Weybridge (since renamed Mercury and transferred to RAF Cranwell); Jupiter, in which Sqn Ldr John Potter flew for 1,171yd before running out of airspace at Benson in 1972; and Toucan, a two-seater built by the Hertfordshire Pedal Aeronauts group which flew at Radlett in 1972.
There have been many overseas challengers too. One of the most promising was a small aircraft built by Josef Malliga in Austria which flew 220yd in 1967 and made several longer flights subsequently. From Nihon University in Japan, Prof Kimura has produced no fewer than ten man-powered aircr-aft. Linnet 1 made several flights in 1965-66, achieving one of 48yd in March 1966. With a modified cockpit and drive system the aircraft became Linnet II and made a 100yd flight, rising to a maximum height of 5ft in late 1966. The aircraft was eventually developed into the Linnet IV, which first flew in 1971. Prof Kimura's later work concentrated on three designs called Egret and led to the most successful aircraft to date, called the Stork. This aircraft first flew in 1976 and after being taken to the Shimofusa naval air base near Tokyo flew for