No: 1/90 **Ref: EW/G89/06/35** **Category: 1c**

Aircraft Type and Registration:	Bellanca 7GCBC Citabria, G-BAYZ
No & Type of Engines:	1 Lycoming O-320-A2B piston engine
Year of Manufacture:	1973
Date and Time (UTC):	23 June 1989 at 1230 hrs
Location:	Duxford Airfield, near Cambridge, Cambridgeshire
Type of Flight:	Glider-towing
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Right main landing gear damaged
Commander's Licence:	Private Pilot's Licence
Commander's Age:	38 years
Commander's Total Flying Experience:	106 hours (of which 21 were on type)
Information Source:	Aircraft Accident Report Form submitted by the pilot and AAIB telephone inquiries.

The aircraft was engaged in glider towing from Duxford Airfield. The weather was good, with no cloud, good visibility and a light and variable wind. Grass Runway 24 was in use, 787 metres long. The surface was reportedly reasonably smooth, but hard after dry weather. As the aircraft lifted off on take-off for the fifteenth aero-tow of the day, a grating noise from the area of the right main landing gear was heard. It was then noted that the wheel spat of this landing gear was vibrating abnormally in the airflow. A normal approach and landing was carried out and, after touchdown, the grating noise was again heard. Loss of braking was experienced when the aircraft had almost come to a halt, and it was seen that the right mainwheel was at an abnormal angle. The pilot evacuated the aircraft without difficulty.

The aircraft is a high-winged monoplane with tail wheel landing gear. A main landing gear is strut-mounted from each side of the forward lower fuselage. The lower end of the strut carries a stub axle on which a single wheel rotates on a pair of tapered-roller bearings. A tubular wheel nut screwed onto the end of the axle and retained by a split-pin locates the bearings axially. The thread direction on the axle and nut is conventional right-handed. A spat covering the wheel is supported at its outboard side by a bolt screwed into the end of the tubular nut , and at its inboard side by attachment to the lower end of the landing gear strut. The Bellanca Service Manual specifies main wheel bearing lubrication at 100 flying hour intervals.

Investigation reportedly showed that the outer tapered-roller bearing for the right main wheel had suffered extensive break-up, allowing the wheel to migrate outwards and contact the tubular nut, causing the split-pin to shear and the nut to unscrew. The wheel remained located by the spat only. No signs of bearing corrosion were found.

Investigation revealed no reports of previous failures of this type.