AAIB Bulletin No: 10/94 **Ref: EW/G94/08/08** **Category: 1.3**

Aircraft Type and Registration:	Piper PA-38-112 Tomahawk, G-BGBX
No & Type of Engines:	1 Lycoming O-235-L2C piston engine
Year of Manufacture:	1978
Date & Time (UTC):	15 August 1994 at 1250 hrs
Location:	Nottingham Airport
Type of Flight:	Private (Training)
Persons on Board:	Crew - 2 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Airframe damaged beyond economic repair
Commander's Licence:	Basic Commercial Pilot's Licence with Instructor Rating
Commander's Age:	57 years
Commander's Flying Experience:	9,595 hours (of which 40 were on type) Last 90 days - 60 hours Last 28 days - 33 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

The student pilot was undergoing a dual check prior to his second solo. Runway 27 was being used; the surface wind was calm and the temperature was 22°C. After a normal landing by the student, the instructor took control when the aircraft had slowed and the flap had been retracted. The student recalled that the instructor said he would demonstrate a short field takeoff and the aircraft was brought to a halt, however, the instructor reported that the aircraft was still moving slowly when he applied full power. The aircraft was rotated into the take-off attitude and the student was immediately aware of the stall warning device sounding; he noted that the indicated airspeed remained steady at about 55 kt. The instructor reported that he saw the engine RPM dropping and immediately carried out the engine failure on take-off drill. The student noticed the left wing go down; the instructor said that he had initiated a slight left turn as there was a house ahead on the runway centreline. The aircraft touched down firmly at the end of the runway and subsequently came to rest in a hedge; both occupants were wearing lap and diagonal upper torso restraint and escaped through the normal exits without injury.

An approaching stall condition is indicated, on the Tomahawk, by an audible alarm which activates between 5 and 10 kt above the stall speed; the power off stall speed with 0° flap at maximum weight is about 48 kt. The student reported that the aircraft did not appear to him, at any time, to be in a stalled condition. He also observed that, on two previous touch-and-go landings, the aircraft had seemed 'sluggish' and appeared to take longer than normal to reach 60 kt.

The managing director of the operating company, an experienced instructor himself, watched the takeoff and noted the point at which power was applied. He later paced the distance from this point to the end of the runway as 360 metres. He reported that the aircraft had a high nose attitude after takeoff and that the engine sounded normal. It then appeared to him to stall and drop the left wing before landing heavily in an approximately level attitude. It then veered to the left and came to rest in the hedge.

A report by the chief flying instructor (CFI) indicated that the company chief engineer had inspected the aircraft shortly after the accident. He reported that, although the airframe had suffered considerable damage, the engine and propeller appeared to be undamaged. The aircraft was removed from the hedge and the CFI started the engine; as all indications were normal he opened the throttle fully and the engine achieved 2,300 RPM.