AAIB Bulletin No: 1/95	**Ref: EW/G94/10/07**	**Category: 1.3**
Aircraft Type and Registration:	Piper PA-28-161 Cherokee Warrior II, G-BUFY	
No & Type of Engines:	1 Lycoming O-320-D3G piston engine	
Year of Manufacture:	1980	
Date & Time (UTC):	10 October 1994 at 1454 hrs	
Location:	Near Denham Aerodrome, Middlesex	
Type of Flight:	Private (Training)	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - Minor	Passengers - N/A
Nature of Damage:	Extensive damage to all three landing gears and their airframe mounting points, engine mounting frame and propeller; minor damage to the fuselage and wings	
Commander's Licence:	Student Pilot	
Commander's Age:	40 years	
Commander's Flying Experience:	24 hours (all of which were on type) Last 28 days - 3 hours	
Information Source:	AAIB enquiries and examination plus an Aircraft Accident Report Form submitted by the pilot and his instructor	

History of the flight

At Denham the day had begun with early morning radiation fog which dissipated leaving clear skies, a light easterly wind and visibility greater than 10 km in slight haze. By afternoon the paved areas and the runway were dry but the grass parking areas and taxiways were still wet with dew.

The student pilot had flown 24.4 hours under instruction during the preceding 13 months and the accident occurred during his first solo flight. After about one hour's dual circuit flying, which included a simulated engine failure after takeoff and six well-flown circuits, the instructor briefed his student for the solo flight. He was briefed to fly one circuit and land with the proviso that if he was unhappy with any approach to go-around and fly another circuit(s).

The student, watched by his instructor, took off and climbed out quite normally from Runway 06. The crosswind and downwind legs were also uneventful and the student carried out his pre-landing checks. After turning onto base leg, he selected the carburettor heat to 'Hot', reduced power to around

1,500 RPM and selected two stages of flap. He stabilised the airspeed at 75 kt and then realised that the aircraft was slightly too low. He tried adjusting the power but the engine failed to respond and he noticed the RPM had decayed to between 600 and 700 RPM. After unsuccessfully adjusting throttle and mixture settings in an attempt to restore power, the student realised that a forced landing off the airfield was inevitable. He transmitted a 'MAYDAY' call which was heard by ATC and by his instructor who was monitoring the frequency on a portable handset. The student aimed for what he described as the only available space which was a field adjacent to the M25 motorway. The aircraft touched down on all three wheels simultaneously whereupon all three gear legs collapsed as the aircraft decelerated on soft ground in about 40 feet of travel. After coming to a halt the pilot closed down the aircraft's electrical and fuel systems before vacating through the normal exit door.

The engineers that arrived on the accident site to recover the aircraft noted that the selections in the cockpit were consistent with an aircraft that had been prepared for a forced landing. They also noted that both fuel tanks contained a reasonable quantity of fuel that appeared to be uncontaminated and of the correct specification. An external examination of the engine and its operating systems by AAIB did not reveal any reason for its failure although the throttle, mixture, carburettor heat and fuel pipe connections at the engine could not be checked because the engine had been removed from the airframe prior to the arrival of the AAIB Inspector. The engine will be test run at a later date and the results may be published in a later bulletin.

It was noted that three days prior to the accident, the aircraft had undergone a maintenance check during which the carburettor was changed due to a history of poor engine starting. Following the carburettor change the maintenance organisation satisfactorily carried out a comprehensive set of engine runs. Between the carburettor change and the accident flight the aircraft had completed nine flights over six flying hours during which the engine performed very well. It was noted by the pilots who flew these flights that the engine starting problem had been rectified. The carburettor that had been removed from the aircraft was taken to an approved overhaul agency and fitted to a similar engine that had just been overhauled and test run on an engine test bed. The carburettor performed satisfactorily except that the fuel/air mixture was adjusted to an extremely lean setting to the extent that the mixture lever could not be moved towards the lean position from fully rich without the engine losing power.