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direction of bird movements. Fortunately these are seasonal,
but it is an immense task to cover the air routes of the world
with such studies. When the forecasts become accurate and
large flocks are expected, pilots may treat them as they do «
thunderstorms.

The third category concerns large solitary birds such as vultures which hover at great heights watching for carrion below. It was such a bird which caused the death of a Kenya Police pilot whilst on air patrol over the Aberdares, some ten or 11 years ago, in a Cessna. He evidently took avoiding action when he sighted the bird but his leading edge hit it and collapsed on to the aileron controls running along the front of the spar. The controls were locked in an extreme position and he crashed.

More recently a Turbulent aircraft hit a seagull whilst coming in to land in Northern Ireland. The bird hit the wind-screen, the pilot lost control, and the aircraft dived into the ground. The bird's body was found some distance away with the aid of tracker dogs. Mr Eric Newton, chief Accident Investigator (BoT) took the broken windscreen and the bird to the patho-logical laboratory of the London Zoo where they were able to isolate the blood smears of the bird, thus identifying the cause. The method can even be used in analysing blood smears on hot engine parts, and the greatest danger remains in the air intakes of jet engines where large risks and costly repairs are entailed.

What more can be done to prevent further accidents? Airports may be made uncomfortable habitats and expected migratory tracks defined, but the big lone bird flying high still remains a problem. One system which is being explored in Canada uses a microwave radiation repellent. The aircraft projects a radio beam of high intensity up to a mile ahead. This might disorientate birds within its field and cause them to fall away clear. It is already known that domestic fowls are discouraged from dipping into a feeder which is subjected to wavelengths of 1.9cm and 3om.
Much work has been done in stiffening the aircraft structure, windscreen and engines against bird strikes. These are simulated by firing a 41b synthetic "bird" from a ten-inch bore com-pressed-air gun at speeds up to about 600kt. The gun is aimed at a representative windscreen or leading edege. The Air Registration Board's BCAR (Chap D4-2) and the RAE Tech Note, Mech Eng 106, form a working basis for sound practice within the limits of the 41b bird hitting the aircraft at 8,000ft altitude whilst it is flying at its maximum airspeed. Simulated tests are similarly carried out on engines. But what happens if the bird is a 251b swan, or a flock of smaller birds is ingested into four engines simultaneously?
We only know the statistics and inquiry results from civil aircraft incidents. But the military people must have the same problem about which we are not told. It obviously must affect the tactics of low-altitude attack.

COS T OF PROGRES S

CLAIMS paid for damage or injury caused by the 11 sonic booms produced during public acceptance tests by Lightning fighters last year have totalled £4,119—or £374 per bang. This was disclosed by Mr Wedgwood Benn, Minister of Technology, in the House of Commons on December 17. Three claims were then still outstanding, 515 had been paid and 270 had been rejected. The biggest totals were for damage to glass (246 payments totalling £1,101), ceilings (93, £1,395) and roofs and chimneys (58, £526). Five of the booms were produced over the Bristol Channel area (116 claims met), four over the London area (395) and two over Dorset (4). About 12,000 com-plaints were received by Mintech, 9,600 of them from people in the London area; in addition, 215 complaints were made by people outside the areas affected and 115 by those who heard other noises and thought they were booms.

period March 18-31, 1968. Of these. 32 per cent were bound for or originating in Central London. The proportion of passengers using rail services to or from Gatwick was 45 per cent, compared with 51 per cent in 1966: just over 30 per cent in 1968 were travelling to or from Victoria Station.
In 1966, 72 per cent of all passengers were travelling on business; in 1968, 76 per cent had their fares paid for them by their company or some other organisation. The Edinburgh route, says BUA, has, since 1966, become more business orientated, and the Belfast route less business orientated. If first-class accommodation had been provided, 11 per cent of the passengers said that they would have used it.

INTERJE T PASSENGER S SURVEYE D

THE geographical location of Gatwick is the main factor in persuading passengers to use British United Airways' Interjet domestic services rather than similar services from Heathrow, according to a survey of passengers which the airline has just completed. Interjet services operate between Gatwick and Bel-fast, Edinburgh and Glasgow. It emerged from answers to a questionnaire that 52 per cent gave the location of Gatwick as a reason for using the services. "The standard of cabin service and the appeal of the One-Eleven jet retain their importance," says the airline, which conducted a similar survey in 1966, "but the Interjet function remains as a regional service for those south of the Thames." This catchment area was unchanged since the 1966 survey; both the surveys reported that a third of the passengers originated in, or were destined for. Central London. The main increase in traffic between 1966 and 1968 was for originations and destinations in the area lying 10-20 miles from Gatwick, especially in the southern suburbs of London.

BUA says that the number of passengers carried on the three routes was 92,700 in 1966, with an estimated 143,000 in 1968. The number of flights a week has been increased' in frequency from 40 in 1966 to 83 at present. The survey was based on a sample of the 5,225 passengers travelling during the

Mr Alastair Pugh, who has been appointed
a special director of British United Air-
ways and takes the new title of director
of planning. Mr Pugh has been concerned
with planning and commercial matters
in the BUA group for the past seven
years. In 1966 he was appointed com-
mercial planning manager of BUA and
earlier this year he became general
manager, planning. He is based at
Gatwick Airport, London

BAC School Retirement Mr J. H. (Jock) Sinclair is retiring from his post as manager of the British Aircraft Corporation's aircraft servicing schools at Weyhridge and Hum. He started the first of these at Brooklands 22 years ago and they have since been attended by more than 7,000 civil and military pilots and engineers from 40 or so countries. Mr Sinclair joined Vickers in 1931 and started familiarisation courses for pilots and engineers when the Viking project was under way in 1946. Mr Wallace Collard, the chief instructor, who joined the school in 1954, will succeed Mr Sinclair as manager.