The shape of things to come

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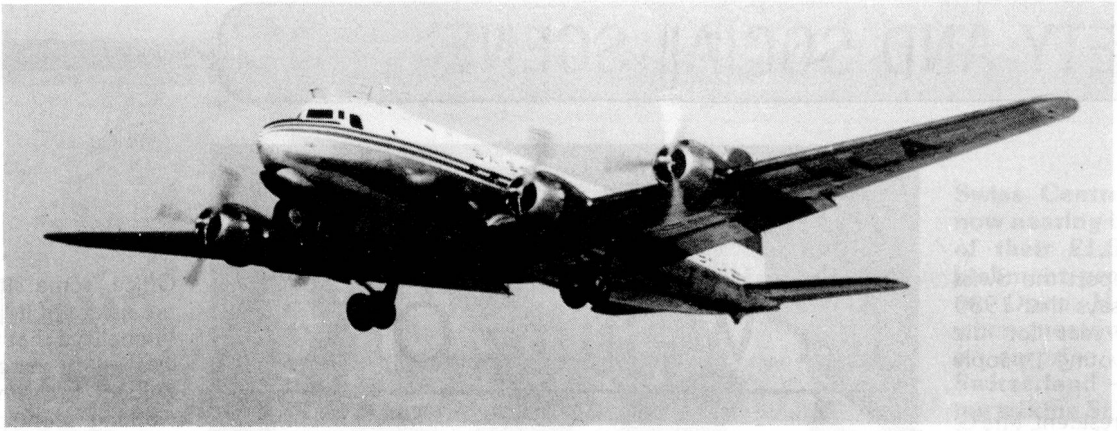

The shape of things to come

Swissair captain ALFRED MUSER concludes his story of aviation's pioneering days

THE two-pilot cockpit for the DC-3 was not introduced until 1954.

This technological transition was considerably smoother in the case of new aircraft. As a matter of course the DC-4, Swissair's first long-haul aircraft, was given a crew complement of at least two pilots and one flight engineer. An additional radio operator and navigator were assigned when needed on particularly long flights.

Around this time, too, Swissair was forced to begin hiring non-Swiss pilots and navigators in order to fill the growing number of crew vacancies caused by its expansion.

Soon afterwards certain crew member functions began to be combined on a more efficient basis. The third pilot travelling on long-haul flights at times took over the navigator's job (after receiving the necessary training), radio operators who had been retrained as navigators were employed in a double function as NAVRO (Navigator/Radio Officer) and pilots who had been retrained as radio operators were assigned a double function as PIRO (Pilot/Radio Officer).

Right up to recent times, with the DC-8, navigators were needed above all for long flights over water. Their job, having recourse to the traditional instrument of the navigator – the sextant – was to confirm the position of the aircraft and to determine its course at regular intervals with reference to special radio signals and by observation of the sun by day and the stars at night.

Soon pilots were able to fly over land by keeping to a system of airways, marked by a series of interlocking directional and non-directional radio transmissions beamed from several ground stations. All this came to Europe from America and was steadily refined and improved as time progressed.

The relatively straightforward, non-directional radio beacon transmissions have remained until today, and are received by aircraft with the help of the radio compass.

The medium wave frequency range with its four localizer beams has, however, been supplanted by an ultra-high frequency omnidirectional radio range, complete with automatic distance measurement equipment.

One problem that, fortunately enough, was spotted in time was the fact that grass runways were bound to be inadequate to cope with the new, heavier generation of aircraft which inevitably emerged in the post-war period.

In Switzerland, too, there were far-sighted politicians and experts, who, in conjunction with the Federal Air Office, saw to it that preparations were made, even while the Second World War was still going on, for the construction of civil airfields with hard-surfaced runways. The previous procedures were not precise enough for approaches in poor weather conditions on runways of this kind, however.

Luckily a new procedure was developed during the war called the Ground Controlled Approach (GCA), which was also used in peacetime. Radar screens on the ground kept precise track of the aircraft's flight path, and also enabled air traffic controllers to "talk down" the aircraft concerned by constant transmission of oral data to the pilot.

While GCA is still very often met today in military aviation, the system now used almost everywhere in commercial air transport is the Instrument Landing System (ILS), a more sophisticated offshoot of the SBA.

In 1949 Swissair acquired its first aircraft with pressurized cabins, the Convair CV-240. The operational implications of this aircraft were substantial – higher cruising altitudes (approximately 6,000 metres above sea level) – and thus less turbulence, together wih the capability of making a quicker descent at the end of the flight, since the pilot no longer had to worry about passengers' accommodating rapid changes of pressure back in the cabin.

Around this time, too, a second pilot was added to the cockpit crew, and the two-man team has remained the standard complement on the flight deck of all Swissair short-haul transports ever since.

With the purchase of the DC-6B between 1951 and 1953, Swissair was able to build-up a competitive long-haul fleet. Besides having a pressurized cabin, the DC-6B was also markedly faster than the DC-4 (460 kph against 330 kph) and was also able to fly over the North Atlantic with only one intermediate stop.

Interestingly enough the DC-6B was the last Swissair aircraft to be equipped with parachute landing flares. These were stowed away between the wing and the fuselage and were designed above all for use in the event of an emergency ditching at night.

Legend has it that they did in fact prove effective in two ditch-landings that took place before the war. Unfortunately the precise circumstances of the incidents are no longer known.

They were used after the war on only one occasion, when a DC-6 had to land at an airfield near Brindisi which was shrouded in darkness due to a power cut. Eventually these flares were removed since they were deemed, not unreasonably, to constitute a fire risk.

Weather radar became increasingly widespread at the end of the fifties, especially after it had proved to be such a success in the Convair CV-440 Metropolitans, purchased in 1956. With the exception of the DC-3, all of Swissair's aircraft were equipped with a weather radar system.

Among its great advantages was that it allowed the pilot to circumnavigate potentially dangerous storm clouds. Naturally, this was a huge plus in terms of both passenger safety and comfort.

The last piston-engined aircraft to join Swissair's fleet was the DC-7C between 1956 and 1958. With it the non-stop transatlantic run became a reality. It was also planned to fly non-stop to Rio with the new aircraft, though this proved to be a slightly over-optimistic proposition.

By this time, however, the threshold of the jet-age was looming, and with it the beginning of a far-reaching upheavel which was to effect the whole fabric of commercial air transport.