

Reflections on the Manchester/Lancaster period at Avro Manchester.

The following is the way that I remember that period. Memories play tricks after over fifty years, but I think that my recollections are pretty accurate.

When I returned to Newton Heath in 1937, after my spat down at Hawkers, I was in the D.O. working on some revisions of the Anson tail plane under Ernie Brett and later went on to the Manchester tail plane and fin. Chadwick didn't like the fin and rudder that I had drawn to his area and aspect ratio instructions, so he told me to 'make it the shape of an egg', but with the correct aspect ratio. The Manchester/Lanc. fin and rudder remained that shape on all future versions, although becoming greatly elongated on the later Lancs. and the Lincolns.

I later went on to laying out a special slotted flap scheme for Chadwick, which I believe was patented (that would be around 1938). You then arrived as Assistant Chief Designer and I was assigned as your 'slave' in the little office at the top end of the D.O. When you had finished with me I went into the Stress Office with Harold Rogerson, working on various parts of the Manchester structure.

I did a special report for Chadwick on replacing the pressed wing ribs, with a lighter truss arrangement, as part of his weight saving exercise. I can't remember if that was at Newton Heath or at Chadderton, since I believe that we moved there in late 1938, but in any event the scheme was never used.

At Chadderton I was working with 'Rogie' on the wing stressing and the undercarriage for the Manchester. The first P13/36- Avro type 679 prototype first flew in July 1939 and I remember vaguely working

with Donald Wood on the central fin to improve directional stability, Donald doing the aerodynamic calculations and I did the initial layout, although I believe that Percy Brooks did the actual drawings of the central fin in the D.O. After WW2 had broken out, I believe that this would take us to early in 1940, when problems began to show up with the Vultures. Chadwick set up a small 'maximum security' project office adjacent to the stress office (the door was locked at all times) and I was assigned to drawing up three-views of the Manchester with Napier Sabres and another version with Bristol Centaurus, to replace the Vultures.

I think that Donald Wood was also working in the project office at that time, doing the performance calculations on the various alternatives, and there was a third person, but I can't for the life of me remember who it was!, perhaps Donald remembers. We were also looking at ten feet or so increased wing span to improve the altitude capability and a five feet increase in the tail span and higher aspect ratio fins and rudders, to get rid of the central fin. I can't put exact dates to these studies.

During this period, Bob Lindley, then a junior draughtsman working for Atkin, approached me to see if I would put in a good word with Chadwick for him to join me in the project office. Since Chadwick drove Bob to work almost every day (Bob's parents were neighbours of the Chadwicks) I thought that this was a strange way to go about things, but we needed some help in laying out the various versions and details of the individual engine installations, etc. so I spoke to Chadwick on Bob's behalf and he finally came into the project office.

It was around that time that Chadwick decided to have us draw up a version with four Merlin XXs at around 1145 HP each. Donald Wood came up with some excellent performance results on the Merlin version and I remember Dobbie, Chadwick, Bill Andrews and Harold Rogerson holding a 'conference' in the project office and Dobbie almost doing a dance when Chadwick told him the results. I think that version was

tagged the Manchester 3 or type 683 and ,as you say, it first flew on Jan. 9th. 1941. You know more about the rest of that story than I do, because after that I returned to the stress office to work on the wing-tip extensions and other items.

I went back into the project office in late 1941, to lay out the York and did the fuselage stressing on that aircraft in the project office, because Chadwick didn't want too many people to know about what was going on at that time. Although the York fuselage was a very simple concept of a box with rounded corners, it was in fact a stressman's nightmare, with the flat sides and that big cargo door. The two box beams that we designed to take the loads across the door opening in differential bending was a real exercise in strain energy calculations, in order to maintain and calculate the torsional stiffness of the fuselage as a whole.

I well remember that when Chadwick first saw the fuselage that you had built in the shops, he nearly had kittens and decided that it was about to break under its own weight, because of the wrinkles in the flat skin. No amount of reassurance from Rogie and myself could convince him that it had been properly stressed, or could convince Atkin for that matter, he at that time being in charge of the overall York project. In fact Atkin told Rogie that 'Floyd obviously had it wrong' and Rogie asked me to go through all of my calculations with him, so that he could understand the assumptions and conclusions at least to his own satisfaction.

You probably remember the 'final solution' as well as anyone. We phoned around to every Avery weight warehouse in the North of England and I marked up the prototype fuselage to simulate the factored weights and loads at each station. We then had your guys carry the weights into the fuselage until it was loaded to represent the maximum loads and the wrinkles had not increased appreciably, so Chadwick went away puzzled but reasonably happy. Neither he or Atkin ever came back to me to apologise for their lack of confidence and I

remember going into the D.O. the day after and giving Atkin a piece of my mind in no uncertain terms. He was at Eddie Dean's board when I launched the blast and Eddie remembered that incident for a long time. I guess that my reaction was the result of being a quarter Irish! I often wondered after that incident why Atkin agreed to my joining him in Canada. It must have taken a lot of persuasion from my old friend 'Dave' to accomplish that one! Incidentally, the in-flight proving of my cargo door stressing is covered on page 26 of the Jetliner book.

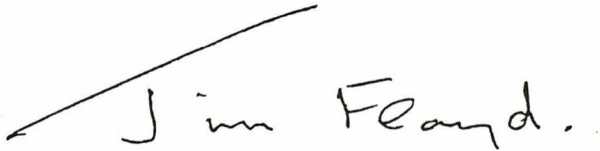
I can't remember ever going back into the project office after the York flew and I believe that Bob laid out the Tudor three-view and also the Lincoln and subsequent designs. I was put in charge of the fuselage stressing section and did the stressing on the Tudor, which was, of course, of considerable benefit on the Jetliner, where we used the same basic construction.

In the latter part of 1944, you asked me to join you at Yeadon and you know the rest of the story better than anyone. Any missing links can probably be found in the Jetliner book.

In looking back over that period I can't help wondering how the hell everything got done with so few people, but that might have been the secret! Bill Andrews and Donald Wood did practically all of the aerodynamics and performance calculations on all of the projects. Imagine an aerodynamics department of two in this day and age!

At one point, in my fuselage stressing section I had Sydney Gill and a young junior stressman, I can't even remember his name. John Taylor only had a couple of helpers on the wing stressing and ~~Frank~~ ^{Tom} ~~Howarth~~ ^{Howarth} ran a weights department of one ! We did interchange and help each other out when there was a panic on any particular component, but it still amazes me that everything got done as well as it did. Perhaps Churchill's famous words on 'the few' might have been applied also to the 'boys in the back room', at that time.

Well, Stuart, that is about how I remember those days, for what it is worth. I hope that it is of some help to you. Don't hesitate to let me know if there is anything else that you wish to confirm. In the meantime, look after yourself, there aren't too many of us left to 'spill the beans' on that period.

A handwritten signature in cursive script that reads "Jim Floyd." The signature is written in dark ink and is positioned below the main body of the letter.

Jim Floyd

May 22nd 1990.

ps. Please give my regards to Donald Wood when you talk to him again. Writing this epistle has brought back many memories!