

# FLIGHT SIMULATION IN THE RAeS

## SOME EARLY MEMORIES

Dr John Rolfe

The ad hoc Flight Simulation Committee was formed before 1970, the year of the first RAeS Flight Simulator Symposium. I would put its formation to around 1967.

Norman Hill was the driving force in getting the RAeS to formally recognise Flight Simulation as an acceptable subject for study and interest. Hill was an aviator engineer who had specialist knowledge of flying and designing rotary wing aircraft. He was an early member of the RAeS Rotorcraft Section and this gave him an insight into the mind and politics of the Society.

However, by the 1960's, he was in a key position with General Precision Systems\* at Aylesbury, an early flight simulator manufacturer in the UK. Hill wanted to form a group within the Society dedicated to the subject of Flight Simulation and he sought the backing of other like-minded members. From memory I recall he was supported by David Perry (Later Sir David) from the RAE, Owen Mathews from Cranfield and Phil Brentnall of BOAC. I did not join the group until the late 1960's when Owen Mathews suggested that human factors representation was needed.

However, the Society at that time was much more stuffy and sought to be learned rather than commercially successful. There was a two tier structure of "superior" Sections and Groups. Hill encountered very strong resistance towards the creation of a new group. Ad hoc status was allowed until 1976 when the attitude of the Society towards the formation of new groups had changed and the FSG had proven its worth.

Despite its 'below the salt' position the ad hoc group organised lectures and meetings. There were the first two flight simulation symposia held in 1970 and 1973 at which 12 papers were presented at each meeting. In 1976 a conference was held on the theme of theory and practice in flight simulation at which 7 papers were presented.

In addition to the conference/symposium programme the ad hoc group also arranged a programme of evening lectures at Hamilton Place and at the Branches. These were more popular at that time and no thought was given to their cost or making charges to attend - they were the life blood of a learned society. Some, but not all, of these were published in the Journal of the RAeS and from my records I can only refer to those which were.

The first published lecture I can find that given by Ringham and Cutler of Redifon\* in 1953 with the title Flight Simulation. It was presented to the Belfast Branch and recorded as the 893rd Lecture given before the RAeS. The next to be published was the 1025th lecture given by Makinson and Hellings of Air Trainers Link Ltd\* with the title Synthetic Aids to Flying Training. The lecture was given to the Halton Branch in 1957. Other papers from lectures appeared in the RAeS Journal in 1958, 1964, 1967 and 1968. I can recall the lecture by David Perry and Mike Naish from the RAE in London in 1964 on the subject of Flight Simulation for Research and would place it as the event which brought together the parties which began to think about the formation of an FSG. It might be possible to check this by reference to the published paper and subsequent recorded discussion.



Norman Hill



John Rolfe Maurice Hickmott Brian Laven Helen Hill\* Brian Hampson Arthur Barnes  
(\* wife of the late Norman Hill)

\* for more detail, see the references at the end

Another significant lecture arranged by the ad hoc group took place in 1975. Dave Davis Chief Test Pilot of the CAA and author of 'Handling the Big Jets' gave a lecture with the title The Approval of Flight Simulator Flying qualities. This paper set out proposals for standardised methods of assessing the handling of flight simulators and was published in the Journal. I recall the idea of inviting Dave Davis to give the lecture was not thought to be wholly wise. Davis had attended previous meetings arranged by the group and had a reputation as a critic of flight simulation. However, his paper was a balanced and objective presentation which set in train thinking about standardised assessment methods. Moreover, he gave his opinion that he considered working with flight simulators to be more demanding than working with real aeroplanes.



**Founder members of the RAeS FSG Committee**  
**Back Row: Arthur Barnes, Gordon Cumming, John Rolfe, Brian Hampson, Ken Staples, Roy King, Joe Grant**  
**Front Row: Norman Hill (started the ad hoc FSG), Ray Jones, Maurice Hickmott**

From then on, with the formation of the FSG, more formal records exist which will be more reliable than my memory.

John Rolfe

\* Other references: [www.gracesguide.co.uk/General\\_Precision\\_Systems](http://www.gracesguide.co.uk/General_Precision_Systems)  
 & <https://discovery.nationalarchives.gov.uk/details/r/dab1eeda-d786-480b-8302-1d8b1b799e80>

The references include the following: In 1946, Air Trainers Ltd of Aylesbury was licensee for the U.S. design of Link Trainer. In 1956 Link USA acquired a controlling interest and the name changed to Air Trainers Link. In 1959 the Link interest was transferred to the General Precision Equipment Corporation of Tarrytown, New York State, and the name of the Aylesbury company changed to General Precision Systems Ltd (GPS Aylesbury), which by 1963 had 950 employees. In 1967 the company became a subsidiary of Redifon Ltd and was renamed Redifon Air Trainers. In 1972 production was transferred to the Redifon Flight Simulator Division at Crawley, near Gatwick airport, and the Aylesbury facility was closed. Later, the Redifon name was changed to Rediffusion.

**From Ian Strachan:** The Chief Engineer at Redifon Aylesbury in the 1960s was Ron Dodds, a fellow glider pilot who I knew at the London Gliding Club at Dunstable. I also met Ron at Redifon when I was a flying instructor at RAF Syerston and Link Trainer officer for RAF 23 Group. The Link trainer was used in RAF pilot training until the late 1960s and I trained on it during my RAF Wings course from 1957-9. In 1969 I was on the ETPS course and during a visit to Redifon at Aylesbury we were shown a DC10 Full Flight Simulator with the cab suspended underneath a large gantry, giving 6 degree motion with larger throws than the conventional hexapod design, pictures of this unique design are on the web.