

The last term arises from the pitching moment equation in which one substitutes for tail lift as the difference between aerodynamic lift forces (wing and rotor) and the weight. It is this term which produces the odd result since it is of opposite sign to the remainder of the denominator.

Mr Payne's closing remark is rather less naive than would appear at first glance. We can certainly predict performance providing we have the correct data to start with, correct powers available, accurate drag estimates, etc. The extent to which one gets the correct answer is the extent to which one's basic information is accurate. Given a free hand so that the best available information can be obtained, I am pretty confident that performance is accurately predictable, and indeed have found it so.

The same cannot be said of stability analysis since our experience on stability testing is far too limited. We cannot even say at the present in this country, that we know how to test for stability of helicopters. On this basis we certainly are not able to say the agreement between analysis and test is acceptable—other than in a purely limited qualitative sense.

The Eleventh Annual General Meeting of The Helicopter Association of Great Britain

The Eleventh Annual General Meeting of the Helicopter Association was held at the Royal Aeronautical Society, 4 Hamilton Place, London, W 1, on Tuesday, 12th June, 1956, at 5.30 p.m. The Chair was taken by Dr G. S. HISLOP, Chairman of the Executive Council.

The routine business of the Meeting was conducted and the result of the ballot for election of members to the Executive Council was announced. The constitution of the new Council for the year 1956/57 is as follows:

B. H. Arkell	R. Hafner
J. A. J. Bennett	J. E. Harper
R. A. C. Brie	G. S. Hislop
A. E. Bristow	A. McClements
J. A. Cameron	F. T. Meacock
L. G. Frise	J. W. Richardson
W. R. Gellatly	H. Roberts
D. L. Hollis Williams	

Following the Chairman's address, which is fully reported below, and the conclusion of the business of the Meeting, an informal discussion took place on the affairs of the Association.

The Chairman's Address

On the occasion of these Annual General Meetings it is customary for the Chairman to give a brief review of the British helicopter world and to take the opportunity of appraising its achievements, its prospects and its general state of health.

My own conclusions on this the 11th Annual General Meeting are that the most striking events which have taken place are in the operational and Government policy fields.

Taking the operational side first, the Royal Navy and the Royal Air Force have continued their sterling work in dealing with emergencies which arise from time to time, particularly around the coasts of our country. Daring exploits have been performed and the crews of merchant ships have been plucked from the decks of their ships in the most hazardous sea and weather conditions, when the prospect

of rescue by surface vessel was extremely remote. Great credit is due to the pilots, aircraft and organisation which enables such effective rescue operations to be mounted so successfully and so speedily.

British built helicopters have been used with great success in the Antarctic, in off-shore drilling in the Persian Gulf, for hydro-electric schemes in Scotland and so on.

The use of helicopters for scheduled passenger services still proceeds at a most modest rate compared with applications in other countries, *e.g.*, Belgium. Whilst there is no doubt about the enthusiasm and zeal of the operational groups most closely associated with such services, the slow rate of expansion surely indicates a much more cautious, even luke-warm, attitude in higher quarters. One feels that a real belief in the future of the vehicle for passenger carrying would result in a much more intensive and rapid development of multi-engined helicopters without which a real beginning on this task cannot be made.

This leads to the second most striking event which I referred to in my opening remarks, namely, the Government policy towards helicopters.

At this time last year the helicopter industry (in its widest sense) had reason to believe that at last real recognition of the importance of the vehicle was being accorded. Substantial orders had been placed for British designed and built helicopters. There was a systematic research programme in being and a number of promising new helicopters including the first British machine to be flown with a gas turbine power plant were under active development. However, I am afraid the situation to-day is not at all so promising. As we all know, the result of the Macmillan cuts has fallen on the Cinderella of the aircraft industry in the shape of a severe cut-back in the orders for certain helicopters and in the curtailment of many of the research and development projects with which we stood a chance to regain much of the ground lost during the war and in the post war years. A continuation of this erratic policy could go a long way towards completely strangling the helicopter manufacturing industry in this country before it is really thoroughly established.

These events have had their repercussions to some extent in the engine field, though it was a great pleasure to note that the first British free turbine engine the "Gazelle" expressly designed for helicopters is under development by Napier, one of our leading engine builders. There is no doubt that the gas turbine power plant is very attractive for helicopters, from the smallest to the largest. In fact aircraft covering this spectrum are already under construction in this country, each powered with a gas turbine engine in one form or another. Its lightness, flexibility of operation, freedom from vibration, are three cardinal features which commend use of turbines to manufacturers and operators alike. This is not to say, however, that the piston engine is dead. Far from it, its fuel economy is still far and away better than that of a gas turbine and as such this is undoubtedly the strongest card in the hands of the piston engine manufacturer. By the same token it represents a challenge to the gas turbine designer.

I cannot help but reiterate that in the field of passenger carrying operations—in which we in this country once led—our status has slipped steadily in the past few years and that this largely stems from the failure of authority to appreciate the potential contributions of helicopters in air transport.

One of the major problems of passenger carrying operation, that is, that of flying by night in all weathers, was tackled with success as far back as 1949 by B.E.A. in their Experimental Unit at Peterborough, but since then it has languished. The work, I am glad to say, has been picked up once more not only by B.E.A., but by A. & A.E.E., Boscombe Down, and if only even modest effort and facilities had sustained the earlier approach, then many of the problems still being tackled would have been cleared long ago.

The choice of heliports in cities in this country seems to have languished. Some years ago Birmingham, Liverpool, Manchester, to name only three, displayed most active interest in the question of selection of sites, and even London, the capital, did a bit of looking around. Now I am afraid the situation is rather gloomy. There are a number of academic studies for heliports in cities but London, which ought to set the lead, is about to close the only helicopter site which has been open for general operations, *viz.*, the South Bank site. She is not only closing this site but no alternative is being offered, at least so far as I am aware. It is indeed a sad reflection on the lack of progress in the passenger carrying sphere in this country, and contrasts in a most direct fashion with the attitude on the Continent and in the United States. We in the Association have a duty to perform here, and must never cease pressure on

those responsible for directing policy to make immediate provision for adequate sites in our cities so that at least the beginnings of helicopter operations, whether scheduled passenger, charter, or private, can be made

So much for the general helicopter picture as it strikes the Chairman. On domestic matters I am most happy to announce the first award of the Alan Marsh Medal. This medal forms part of the outward expression of the Alan Marsh Memorial Trust which was set up a year or so ago in memory of the first Chairman of the Council, a very great pioneer, pilot and teacher in the art of the helicopter. The medal is to be awarded annually to a British pilot for recognition of outstanding helicopter pilotage achievement.

The Council has decided to make the first award to Squadron Leader W. R. Gellatly, A.F.C., in recognition of his sterling work as Senior Helicopter Test Pilot at A & A.E.E. for a number of years prior to leaving the Service. I am sure you will all join with me in offering our most sincere congratulations to Squadron Leader Gellatly.

The other aspect of the Alan Marsh Trust is the Award. This is to be made from time to time to a British student who has shown outstanding ability in the rotary wing field.

The affairs of the Association have been set down in the Annual Report and I would draw your attention to three features only. One is that the membership has risen by only 5 per cent in the last year and I think it important that we should each try to obtain at least one new member. A total membership of 465 is scarcely a true reflection of the proportion of effort engaged in helicopters in the British aircraft field.

The second concerns the Journal. Whereas last year there was a net credit balance of almost £550, this year it is just under £70. The Journal is one of our principal shop windows and a healthy financial state with a really first class Journal is an object of which the Council must not lose sight.

We have analysed the reasons for the change in the situation and whilst much of the drop is due to reproducing back numbers to meet future demand, we are planning such corrective steps as are necessary to redress the situation before the Journal itself goes into the red. We believe that all this can be done without affecting the technical quality and presentation which the Journal has achieved.

You will see that financially overall we are showing a modest net surplus. This is due to receipt of generous donations, whereas last year we practically made ends meet without the need for such donations. Obviously we must strengthen our finances if at all possible, and thus the Council are preparing to do. Increase of membership is an obvious first line of attack and this I would like to emphasise.

Finally, I would like to pay tribute to our retiring President, Lord Douglas of Kirtleside, who has given us the benefit of his wise advice during his year of office, and on behalf of the Council and Members I would like to extend to him our grateful thanks and our sincere good wishes for the future in his task at the head of one of our great corporations.

We are most honoured to have Lord Brabazon of Tara, a most illustrious figure in British aviation, accept our invitation to the Presidency, and I am very happy to welcome him to our Association. Under his guidance the affairs of the Association will surely continue to flourish.