

## CORRESPONDENCE.

### THE WRIGHT TRILOGY.

*To the Editor of the* JOURNAL OF THE ROYAL AERONAUTICAL SOCIETY.

DEAR SIR,—Forty years ago Wilbur and Orville Wright accomplished the demonstration of their invention of the aeroplane, the result of their scientific work in their wind tunnel, combined with their experiments on gravity driven controlled glides down Kill Devil Hill at Kitty Hawk on the great sand barrier which skirts the North Carolina coast and protects it from the Atlantic.

At that time one could only reach Kitty Hawk and the slowly travelling Kill Devil Hill by crossing to that lengthy natural breakwater by boat from Elizabeth City or from one of the fishing ports on the mainland. To-day there is a causeway which runs across the shallow intervening water to where the National Lighthouse Monument has since been built on Kill Devil Hill, now permanently fixed by anchoring the hill against the erosion of the sand by wire stays in the ground and vegetation planted on its surface.

Fred Kelly, who has recently written the authorised biography of “The Wright Brothers,” has with his great journalistic ability recounted some of Orville Wright’s observations in the New York *Herald Tribune* of 2nd November, 1943, and has brought out features of the great discovery in a form which should be permanently recorded. THE JOURNAL OF THE ROYAL AERONAUTICAL SOCIETY has already placed on record so much of the work of these pioneers in flying, that the history of flying would be enriched by the addition of these observations. I am therefore taking the opportunity of quoting below some of Orville Wright’s answers to Kelly’s questions, for although I have known these facts for many years, I have not had the journalistic wit to record them in such clear fashion, and I would take this opportunity of thanking Mr. Kelly for his ingenuity in clarifying the history in the American press. One of the questions Kelly put to Orville Wright was—which did he consider the greatest single contribution of the Wright brothers towards successful flight? Was it devising a mechanism to present the right and left wings at different angles to the wind to get sideways balance? Orville’s reply was characteristic of the man:—

“First of all it was necessary to have a machine that would lift itself. There was no need of a system of control until one was able to get a machine into the air. Indeed, it would have been possible in 1903 for us to build a machine and fly it in calm air without our system of control—though of course such a machine could not have had any practical use. But without knowledge of how to build wings of the right shape—that is, of a shape to give more lift for the amount of power expended than had been possible before—we could not have flown at all. Except for what we learned from our wind tunnel experiments in 1901 we never could have built wings that would lift the machine and a pilot, with the amount of motor power then available. So, answering your question, for the first flight the system of control was less important than the knowledge of how to build wings of the right shape. But to-day, for the practical aeroplane, the two are about equally important. To try to distinguish between the value of these two features now would be like trying to determine whether the chicken or the egg should have precedence.”

Kelly then asked him whether there was any time during their experiments when they felt greatly discouraged, to which Orville replied:—

“When we discovered in 1901 that tables of air pressures prepared by our predecessors were not accurate or dependable, that was discouraging, in a way,

and disappointing. For it meant that instead of starting from where others had left off, we must start from scratch. But, on the other hand, the fact that these data which others had considered accurate now turned out to be inaccurate, was interesting. One gets 'a certain thrill from discovering something others have not known. From one way of looking at it, you might even have called it encouraging, that the data others had used could not be relied upon. It suggested that maybe the reason others had failed to fly was not because the thing couldn't be done."

This is the finest explanation I have ever seen of the clear reasoning which guided the Wrights in achieving flight. Readers of the *JOURNAL OF THE ROYAL AERONAUTICAL SOCIETY* all know how the balance of the machine was attained by differential adjustment of the angles of the ends of the wings, combined with the use of a vertical rudder. This method of control was the second stage of the invention in gliding down Kill Devil Hill, but which would never have been required had the first step of wind tunnel experiments not been carried through so precisely, in truly scientific manner, in their hundreds of miniature wing tests.

Up to this point they knew that they could fly and balance, if they could push the machine through the air, and so the third step in the production of the successful flying machine was the design of propellers which would utilise the power of the engine to produce efficient propulsion.

So here we have the Wright Trilogy, each step separate but so inter-related as to form one great achievement.

The question that Kelly naturally asks Orville, is what he thinks of the use that man has put his invention to, in the world of war, and he enquires what are Orville's feelings about the use of the aeroplane as an instrument of destruction and human slaughter. "Do you ever wish you had never invented it?" says Kelly. "No," Mr. Wright replies promptly. "I don't have any regrets about my part in the invention of the aeroplane, though no one could deplore more than I do the destruction it has caused. I feel about the aeroplane much the same as I do in regard to fire. That is, I regret all the terrible damage caused by fire. But I think it is good for the human race that someone discovered how to start fires and that we have learned how to put fire to thousands of important uses. At the time we flew our power-plane at Kitty Hawk, we were not thinking of any practical uses for it at all. We just wanted to show that it was possible to fly. But we saw that the machine could be useful for military purposes, especially for scouting. As early as January, 1905, we had enough faith in its military uses to offer it to the United States Government, but our War Department did not then show any interest in it. We thought observations from scouting planes could prevent surprise attack by an enemy. We saw, too, that it would be possible to drop bombs on enemy territory. And we hoped that no government would want to risk starting a war and subjecting its people to the kind of devastation the aeroplane could inflict. One thing we particularly believed might prevent wars was the opportunity the aeroplane provided promptly to drop bombs on the buildings occupied by the members of parliament and highest government officials, or rulers, of the country that declared war. We thought the plane might thus make war so inadvisable that no government would dare to start one."

Kelly follows up his question by enquiring whether Orville thought that the plane would create the world revolution it has, or that there would be night bombings from bases hundreds or even thousands of miles away, to which Orville replied:—

"No, we didn't even suppose anyone would ever fly or make landings at night. Nor did we reckon with the amount of punishment human beings seem able to endure. It never occurred to us that if a fanatical leader, for purposes of personal aggrandisement, should start a war, his people would put up with

terrible suffering year after year without mass protest. Of course, the German people were doubtless led to accept the assurance of their leaders that the war would be fought on foreign soil with no bombings on their own cities. Perhaps the danger of bombings may cause even Germans to think twice before getting into another war."

May I add to Kelly's question by enquiring from Orville Wright, "What steps should be taken to prevent the aeroplane being used for human destruction in the future?" I am sure the Royal Aeronautical Society would welcome his reply with gratitude.

GRIFFITH BREWER.

15th March, 1944.

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## REVIEWS.

### THE FLIGHT TESTING OF PRODUCTION AIRCRAFT.

J. A. Crosby Warren. Sir Isaac Pitman and Sons, Ltd. 1943. 8/6.

This book, appropriately dedicated to the late "Gerry" Sayer, is particularly welcome, in view of the small amount of literature on the subject and the increasing number of pilots who are engaged in testing production aircraft. The author, himself a test pilot, has a thoroughly workmanlike attitude towards his job. He starts by pointing out that the production test pilot, far from being the emotional and erratic aerobatic genius so often presented to us by film producers, is merely an "average or better" pilot with an analytical mind and a capacity for small detail. His job is not so much to prove the safety of an aeroplane—which nowadays is rarely in doubt—as to apply a large number of detail tests, analyse and report any faults that come to light, and finally to prove that they have been cured. In wartime, a reasonable compromise must be made between the highest practical standard and an adequate rate of production. The tests are classified under the following headings:—Airframe and controls; engine and airscrew; ancillary equipment (including retractable undercarriages and hydraulic, electric and pneumatic services); instruments; general tests for condition of aircraft after storage or shipment; suitable tests for civilian aircraft (flying clubs, schools, etc.). A table in the Appendix gives a quick method of reducing observed performance figures to corrected results in standard atmosphere. No doubt when the war is over there will be a fresh edition of this book, more lavishly illustrated and with additional details that cannot be released at present, but this first edition will undoubtedly be appreciated both by the pilots themselves and by factory managements.

### CIVIL AVIATION.

Michael Young. ("Target for To-morrow" Series, No. 7.) The Pilot Press. 1944. 4/6.

In their excellent "Target for To-morrow" series, dealing with post-war planning, the Pilot Press are demonstrating that a book may be "popular"—*i.e.*, pleasant reading for the general public—and at the same time intelligently written and well presented. The present volume, after a brief historical survey and some guesses as to the probable future trends of aviation, is mainly devoted to a discussion of British post-war policy, as expressed in the S.B.A.C. memorandum: "The Future of British Air Transport," the Lamplugh Committee Report, etc. The "Target," succinctly set out at the end of the book, certainly offers matter for discussion; it may be resumed as follows: Establishment of World Airways to operate all European and Far Eastern air lines, and the main international trunk routes; an International Board to lay down common standards for those routes not covered by World Airways; B.O.A. to continue to operate British overseas air services; Civil Aviation to be transferred from the Air Ministry to the Ministry of Transport.