CORRESPONDENCE.

**** *The name and address of the writer (not necessarily for publication)* MUST *in all cases accompany letters intended for insertion, or containing queries.*

Correspondents communicating with regard to letters which they have read in FLIGHT, would much facilitate ready reference by quoting the number of each such letter.

NOTE.—*Owing to the great mass of valuable and interesting correspondence which we receive, immediate publication is impossible, but each letter will appear practically in sequence and at the earliest possible moment.*

Flight of Birds.

[1204] *Re* flight of birds, much has been written on the gull's flight, and I think the flight of other birds is worthy of notice. Pigeons glide with a large dihedral angle, and are very steady. Swifts with a large negative dihedral angle, and are very unsteady. Swallows and starlings glide with a slight negative dihedral angle.

The negative angle gives less stability but a greater lift, and therefore birds, which do not need stability so much, being used to flying, use the negative angle. Birds' wings differ greatly. Here are sketches of a few :—

1, Swallows; 2, Swifts; 3, Lapwings; 4, Larks; 5, Rooks.

Most birds' wings seem to have a negative angle of incidence at the tip.

Headingley. R. WOOD.

The Hendon Demonstration and its Lessons.

[1205] The recent demonstation which took place at Hendon and also various other events which have been recorded in your paper, provoke me to write to you words which, though perhaps at first sight disparaging and pessimistic, are, I can assure you, written solely with the object of yet further advancing the progress of flight. It appeared to me that your description of the Hendon demonstration was rather vague and possibly not quite accurate. I had read so many accounts of it in the various papers that one could not be sure whether it was a highly successful and fashionable private meeting, an excellent advertisement for certain firms, or a genuine display of the capabilities of the military aeroplane. I admit its undoubted value in stirring up the official world because that body has apparently so much to learn in a very short time, but I read, for instance, that the bomb dropping, however effective at first sight, was entirely unconvincing as the aeroplane was during these tests well within range of rifle or Maxim gun, and also that the quick assembly tests were slightly marred by the fact that the machine could not be induced to fly.

These small details and an inspection of the various types of machine used, lead me to suggest that Major Sir Alexander Bannerman was not so far from the truth in his speech at the Royal Aero Club dinner when he remarked that he did not consider that the aeroplane had advanced much since the time when Wilbur Wright first flew in France. These words caused a good deal of comment in all the papers, but I venture to submit that practically all the wonderful progress that has been effected since that time has been due almost entirely to the aeroplane engines, and particularly to the skill of the pilots. Putting aside the improvements to the Wright machine as a small step in the right direction, it is clear that except for a few minor improvements in constructional details, the single-seater Blériot and the Farman biplane are almost identical with those that were flying successfully in the hands of novices very soon after Wright's experiments in France. I believe that Mr. Grahame-White could safely carry Mr. Balfour, and also perform his exhibition flights on one of Farman's earliest machines if it was fitted with a Gnome engine, and a similar remark applies to Mr. Hamel's skilful flight to Aldershot. I am not speaking of other machines which may be put in a higher class owing to their later development, but nevertheless I would insist that the aeroplane *per se* is very much in its infancy, and that we have at this present moment suggestions available for its immediate improvement. The photo of the latest Farman biplane chances to appear as an example of what I mean. Here we see that this well-known designer is at last beginning to realise the importance of several points in aeroplane design which as well as many others may be to-day obtained from the works of F. W. Lanchester. I refer to the need of high aspect ratio of all controlling members, and the tail to act purely as a directive organ, &c. Do the designers in England, for instance, who have copied this design realise that a greater part of what is so often passed over as "theory" can be applied *now* in a practical manner to existing designs. There are indeed very few machines which could not be improved upon, as far as longitudinal and lateral stability is concerned, by means of the equations set forth in Mr. Lanchester's books. I fear that some of our leading firms will shortly either lose business or be compelled once more to be led. Mr. Lanchester's books teem with suggestions, and I trust that when soon many of them are embodied in improved aeroplanes, the praise due to him, at least in England, will be forthcoming. It is instructive to note how designers are almost weekly falling more into line with his theories, when they might have been adopted at least three months ago. I shall be told that this is the method by which reliable designs are slowly evolved, to which I will agree, but I will conclude by suggesting that the eulogies of the leading flight paper may be when necessary directed to the engines, and in particular to the pilots, and not as yet so much to the aeroplanes themselves. Aviation has progressed, and is progressing wonderfully, but we can even now make better machines than those that, for instance, perform at Hendon.

Barrow-in-Furness. HAROLD D. BOULTBEE, B.A.

Aeronautical Books at Public Libraries.

[1206] Thinking that perhaps some other persons at Southsea, without very long purses, may be interested in aviation, I enclose a list of aeronautical books which can be obtained at the public libraries in or near Southsea.

You will notice that there are twelve different books, with a total value of about £5, not much to a rich man, but a good deal to a working man or a schoolboy.

CENTRAL. TOWN HALL SQUARE.

36626 "Aerial Navigation." Valentine and Tomlinson.
46188 "Art of Aviation." R. W. A. Brewer.
46176 "Flying Machines." Rankin Kennedy.
46163 "How to build an Aeroplane." R. Petit.
46197 "Model Balloons and Flying Machines." J. H. Alexander.
46249 "The Theory and Practice of Model Aeroplaning.' V. E. Johnson.
37222 "The Dominion of the Air." Rev. J. M. Bacon.

And in the Reference Department :—

6375 "All the World's Airships" (1909). F. T. Jane.
1801 "Astra Castra." Hatton Turnor.
6360 "Highway of the Air."

VICTORIA ROAD BRANCH.

10546 "The Dominion of the Air." Rev. J. M. Bacon.
59 "Flying Machines." Rankin Kennedy.
11827 "My Airships." A. Santos-Dumont.

CARNEGIE LIBRARY.

122 "The Dominion of the Air." Rev. J. M. Bacon.
11007 "The Art of Aviation." R. W. A. Brewer.

NORTH END BRANCH.

9319 "Aerial Navigation of To-day." C. C. Turner.

A large number of specifications of patents can also be obtained at the Central Library, on applying for Class IV.

Southsea. "SEALARK."

Gliding Descents.

[1207]. I would like to point out a source of danger in the design of many aeroplanes.

If an aviator indulges in a steep *vol plané* at high speed, and when nearing the earth puts his elevating planes hard up to bring the machine into a horizontal position, the machine will not follow the curved path as indicated by the disposition of the plane surfaces, but, owing to its momentum, will continue for some time to follow its original direction. The effect of this action is to alter the application of pressure on its surfaces, and the supporting planes, instead of meeting the air with a small angle of incidence, will meet the air in an underside-on position, so to speak, drifting forcibly downwards away from its normal axis of flight. It is easy to see that under these circumstances the wing warping, or other like stabilising device, which may be quite effective while the machine is meeting the air with its angle of incidence normal, will be quite ineffective, in fact, in exaggerated cases their action may be actually reversed,