Commercial Aviation

Q.E.D. by C.D.C.

Two Special Problems Which May be Solved by Means of the C.D.C. : Course and Air Speed Corrections Simplified

MANY are the "short methods" devised by various people for the solution of different navigational problems. In this second article dealing with practical navigation, two of the many uses to which the C.D.C. may be put are described. We do not claim that they are necessarily original or that the problems cannot be solved by other means, but we have not previously seen these particular methods in any book or article on the subject.

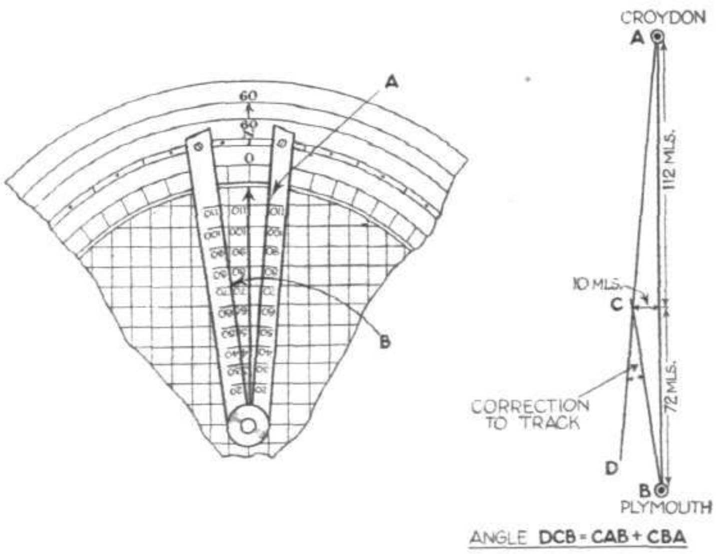
A PROBLEM which often arises in air navigation is that concerned with the amount of correction to apply to an estimated true course in order to counteract the effect of a change in the direction or force of the wind, which has caused the aircraft to make a wrong track.

A very close approximation to the required correction can easily and quickly be found by means of the C.D.C. The correction made by this method is really a correction to the track—which is not quite the same as a correction to the course—but a large number of examples have been worked out, and the difference between the two has been found to be less than one degree in most cases. When the estimated wind and the observed wind are within 40 degrees and 20 m.p.h. of each other, the correction found by this particular method is quite accurate enough for practical purposes.

As an example, take a machine which has to fly from Croydon to Plymouth, a distance of 184 miles. The pilot decides to fly above the clouds, and estimates his ground speed as 120 m.p.h. After flying for 55 minutes, he sees through a break in the clouds that he is over Yeovil—10 miles to the right of his track. What correction to his course must he apply in order to reach Plymouth? The machine has travelled 112 miles, and has 72 still to travel.

To solve by means of the C.D.C., set the arrow on the squared part of the inner scale at 0 degrees. Measure along the arrow to 112, this being the distance travelled, and at right angles measure off 10, this being the machine's distance off the track. Set one of the movable arms over the point thus found, and the angle between the arrow and the arm is the angle of increased drift. In some cases it will be decreased drift. Without moving anything more, measure 72 along the arrow (distance still to go), and at right angles to this measure off 10 on the opposite side of the arrow to that already used. Set the other arm over the point so found, and the angle between the two arms is the necessary correction to the track. The sketches will make the operations a little clearer.

The *difference* between the correction to the true course and the correction to the track at this distance is less than one degree and for all practical purposes this difference is negligible, for very few pilots can steer a course to within one degree.



The simplified method of course correction.

In cases where the observation is taken shortly after the machine has left, and is found to have drifted very considerably from its track, the correction found by the above method will be too small. Where the observation is made at a point about half way on the journey, and the drift is within reasonable limits, then a very satisfactory result is given. This method does away with the necessity for calculating the true wind and then calculating the course from the result.

Another use to which the C.D.C. may be put is to correct the indicated air speed by means of the Appleyard scale. An example will best show the method adopted, which was, I am informed, devised by Flt. Lt. Major.

To convert an indicated air speed of 135 m.p.h. at 4,000 feet to true air speed, set the arrow on the movable scale (60), opposite 135 on the outer scale. Then opposite 64 on the inner scale read the corrected air speed—144½ m.p.h. in this case, on the outer scale.

Each division above 60 on the inner scale represents 1,000 feet height. At the same air speed, the corrected air speed at 7,000 feet would be 151 m.p.h. By calculation, it is, in fact, 151.3, so the difference is again negligible.

J. A. McGillivray.

Langstone Harbour

LAST week the Portsmouth Docks and Airport Committee agreed to recommend the City Council to adopt a scheme for an Empire base which will cost the corporation about £590,000 after allowance has been made for the Air Ministry grant of £160,000.

In this scheme there will be no tidal barrage, but a fairway will be dredged and the present airport will be used as the landplane base for the time being.

Changes at Rynanna

IT is understood that alterations have been made in the original plans in connection with the Transatlantic base at Rynanna, County Clare. The work now proceeding is confined to the preparation of an aerodrome, and it is stated that the original proposal to link up Dernish Island with the mainland has been deferred. Following the inspection of Rynanna by Col. Lindbergh some time ago, it was decided not to proceed for the present with the building of a pier between the island and the shore.

The radio and meteorological stations and control tower are now in the last stages of construction, and the ground is being surveyed for the purpose of planning the aerodrome. It is not expected that the airport site and equipment will be completed for about eighteen months.

K.N.I.L.M. Extension

ON January 9 the K.N.I.L.M. service from Batavia to Sourabaya, Bandjermasin and Balikpapan was extended to Tarakan, the oil-port on the east coast of Borneo. The service is run weekly, as before, with Douglas D.C.2 machines. As soon as the Philippine authorities grant the necessary permit the company will start a service from Batavia to Manila.

The Lioré 47

THE new seventeen-ton Lioré et Olivier 47 boat (four 800 h.p. Hispano-Suiza engines) is now being tested at Antibes with representatives of Air France observing the trials. Latest reports state that Bourdin, the Lioré test pilot, has been experimenting with up to two tons overload. The following results were recorded:—

Weight.	Take-off Time.	Wing loading.
39,683 lb.	20 seconds	27 lb./sq. ft.
41,887 lb.	27 ,,	28.7 lb./sq. ft.
44,092 lb.	39 ,,	30.3 lb./sq. ft.

These remarkable results are largely due to the reduction of frontal resistance and the use of supercharged engines, variable pitch airscrews and slotted flaps.

As may be recalled, the LeO 47 will accommodate four passengers with mail and freight and a crew of five on the South Atlantic crossing.