

led to difficulties when the travellers settled down upon the Centaurian planet; and eventually the party returned to the earth again to find that it had not been annihilated, the new star having passed outside our system.

There is, of course, a love story to give human interest to the adventures; and some amusing and exciting episodes lighten the monotony of a tiresome journey. As an attempt to combine fact with fiction, the story is not without merit; but the style is commonplace, and such a split infinitive as "to quietly and unostentatiously do" is enough to make any lover of good literature shudder.

R. A. G.

*Catalogue of the Periodical Publications in the Library of the Royal Society of London.* Pp. viii+455 (London: Printed for the Royal Society at the Oxford University Press and sold by Henry Frowde, 1912.)

*Catalogue of the Periodical Publications, including the Serial Publications of Societies and Governments, in the Library of University College, London.* By L. Newcombe. Pp. vii+269. (Oxford: Printed for University College, London, by Horace Hart, 1912.)

THE general plan of both these catalogues is similar, and this is natural, since the Royal Society catalogue has been compiled by Mr. Newcombe, sub-librarian of University College, London, and Mr. L. Ellston.

A catalogue of periodical publications in the library of the Royal Society was last printed in 1881, and the large number of accessions to this section of the library in the succeeding thirty years rendered a new catalogue imperative. Instead of adopting the plan of the old catalogue, with its classification under eight separate alphabets, the present has been arranged under one alphabet and restricted as closely as possible to periodical works.

The catalogues will prove invaluable to scientific workers who make use of either library, for the task of discovering a volume has certainly been made as light as possible.

*Bacon's New Globe with Contour Colouring.*

Natural Scale 1/37,000,000. Price 25s.

THE globe is nearly fifteen inches in diameter, weighs about four and a half pounds, and is consequently easily portable. It is provided with a brass graduated semi-meridian and a conveniently-arranged compass. The colour scheme is based on that of the International Map Committee, and the relative land levels and sea depths are both indicated.

The large number of names included has made the size of type very small, and few places can be read even at a short distance. This will interfere with the use of the globe for class purposes. For individual study the globe will prove useful, and its use may be recommended to correct the wrong impressions formed by an exclusive examination of flat maps.

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## LETTERS TO THE EDITOR.

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### Sailing Flight of Birds.

COMING out from Queenstown on September 10 on her way toward Boston, the ss. *Arabic* was accompanied for some hours by a large flock of gulls. For the most part these birds were visibly working, flapping their wings, but occasionally a few would cease flapping and merely sail along for considerable distances, keeping up with the ship or even gaining upon it, sometimes descending, sometimes ascending, apparently at will, with no perceptible action of their wings except, now and then, a slight effort which seemed to be needed for preserving equilibrium, not for support or for propulsion. The wind was of such direction and velocity that the smoke from the ship's funnel went astern in a trail making an angle of, perhaps, 30° with the keel.

Having at first no reasonable theory of the sailing which the gulls practised, I watched them intently for some time, and made the following observations:—

(1) The sailing occurred almost wholly, if not quite so, over or near the windward side (the starboard) of the ship, at moderate heights, 20 to 40 ft. perhaps, above the level of the uppermost deck, and not very near the bow.

(2) When a bird was sailing parallel to the course of the ship, the line from beak to tail was very nearly, if not quite, parallel to the trail of smoke from the funnel. If the gull turned so as to make his own axis more nearly parallel to the keel of the ship, he drifted to leeward; if his axis was turned somewhat farther from the direction of the keel than at first, he went to windward.

Apparently the head and neck served as a bow rudder for small changes of direction, the whole body soon following the course indicated and initiated by this part.

(3) When a bird was sailing along with the ship his head was held rather low. If he raised his head and lowered his tail, he was carried to leeward or astern with great velocity; this frequently happened, for it was evident that most of the food was discovered by the gulls behind the sailing ones, and the greater part of the flock was usually there.

(4) When, through a shift in the wind or in the course of the ship, the smoke began to trail out nearly astern, a change which occupied a few minutes only, the sailing of the birds ceased, each one being then obliged to make visible effort to keep up with the ship.

An explanation of the ability of the birds to sail, under the conditions described above, is, I believe, found in the upward course of the wind which has struck the weather side of the ship and must rise in order to pass over it. Given a brisk, steady, upward current of air, a gull, with its highly practical knowledge of mechanics, can, of course, sail in any direction. Thus, in the figure here given, if  $w$  represents a wing-plane,  $D$  the direction of the current of

