

CORRESPONDENCE

FLOOR OF THE ENGLISH CHANNEL

SIR,—During the last three years a programme of research has been carried out to obtain further data regarding the solid rocks forming the floor of the English Channel. At the present time three areas have been investigated and further work is being planned. The research is being carried out in conjunction with the Department of Geophysics of Cambridge University, which has been responsible for the construction of the necessary apparatus under the direction of Mr. M. N. Hill. A corer modified from that used in the United States under the name of the Stetson corer has been used. The research vessel *Sabella*, of the Marine Biological Association at Plymouth, has been used for this work and I should like to express my thanks to the Director for the generous aid he has given by allowing us the use of the ship, and to the Captain and crew for the way they have manipulated the apparatus. The work is still in progress, but it is felt that a preliminary note on the main facts disclosed to date would be of interest.

Area 1.—Samples were taken along a line south of Plymouth to 18 miles south of the Eddystone. New Red Sandstone deposits (red sands and rubbly marls) were proved from $50^{\circ} 15' 3''$ N.— $4^{\circ} 9' 9''$ W. (8 m. south of Plymouth) to $50^{\circ} 6' 7''$ N.— $4^{\circ} 15' 5''$ W. ($5\frac{1}{2}$ m. south of the Eddystone), showing that the outcrops of the Eddystone—Rutts—Start Point are peaks of the Pre-Cambrian ridge jutting through an infilling of New Red Sandstone deposits. At $50^{\circ} 0' 8''$ N.— $4^{\circ} 16' 6''$ W. ($12\frac{1}{2}$ m. south of the Eddystone) a sample of chocolate-brown marl of the appearance of Keuper Marl was obtained and at $49^{\circ} 55' 9''$ N.— $4^{\circ} 15' 6''$ W. (about 18 m. south of the Eddystone) a sample of hard white chalk, black flint, and a pebble of glauconitic chalk was obtained.

Area 2.—Mid-Channel between the Isle of Wight and Cherbourg. The majority of the cores obtained are of Recent muddy sands or fine white clayey sands and sandy clays which have as yet not been identified with certainty, but the majority of these samples yield fragments of carbonaceous material on washing. It is thought that these are probably Wealden, since they occur between proved Upper Jurassic and Chalk outcrops. Of sites about which definite statements can be made, the following are the most important:—

- (a) Chalk at $50^{\circ} 14\frac{1}{2}'$ N.— $1^{\circ} 24'$ W.
 $50^{\circ} 26'$ N.— $1^{\circ} 22'$ W.
 $50^{\circ} 09'$ N.— $1^{\circ} 36\frac{1}{2}'$ W.
 $50^{\circ} 20'$ N.— $1^{\circ} 57'$ W.

- (b) Shales with ostracods, Purbeck or Wealden
 $50^{\circ} 14'$ N.— $1^{\circ} 11'$ W.

Purbeckian-Portlandian. The dredge brought up lithographic limestone of "shrimp bed" type, cherty fresh-water limestone with Chara and shale with ostracods

$50^{\circ} 18'$ N.— $1^{\circ} 25\frac{1}{2}'$ W.

Upper Kimmeridge Clay with ammonite fragments

$50^{\circ} 17\frac{1}{2}'$ N.— $1^{\circ} 25'$ W.

(these latter two have been checked by Dr. W. J. Arkell).

Dark shale with *Lingula* fragment $50^{\circ} 15\frac{1}{2}'$ N.— $1^{\circ} 21'$ W.

Dark jet-like shale $50^{\circ} 14\frac{1}{2}'$ N.— $1^{\circ} 15'$ W.

Shaley clay with shell fragments $50^{\circ} 16'$ N.— $1^{\circ} 22'$ W.

These three are also probably Kimmeridge Clay.

The fine white clay sands and clays noted above occur north and north-east of the sites (b) and south of the main chalk areas noted on the Admiralty charts and confirmed by the corer. It should be noted that in all the good cores obtained the dip of the strata was horizontal or of a value of only a few degrees.

Area 3.—A series of samples were obtained on a line between $40^{\circ} 34\frac{1}{2}'$ N.— $3^{\circ} 05'$ W. to $49^{\circ} 47'$ N.— $3^{\circ} 19'$ W., that is from a point about 20 miles W.N.W. of Guernsey to half-way across the Channel on a course to Plymouth.

Chalk was proved at a number of points. At 49° 47' N.–3° 06' W. in 41 fathoms a core of brick-red marl with a few tea-green streaks was obtained. The age of this deposit has not yet been determined but its appearance is similar to some of the New Red Sandstone deposits in the Eddystone neighbourhood.

W. B. R. KING.

SEDGWICK MUSEUM,
CAMBRIDGE.
20th August, 1950.

DIORITES AND APPINITES

SIR,—I was interested in the article entitled “The diorites and associated rocks of the Glen Tilt Complex, Perthshire—II. Diorites and appinites”, by W. A. Deer, in your issue for May–June of this year. In Southern Rhodesia typical appinites are fairly common and their field relations support the author’s conclusion that they are essentially hybrids. They are found in areas of migmatites and composite gneisses in the marginal zones of many of our “schist belts” and also as lenticular masses enveloped in the granitic rocks of the batholiths, often some miles from the nearest schist belt. There seems every indication that they are the result of a “soaking” of basic members of the Basement Complex (epidiorites and hornblende-schists) by granitic material, and the common occurrence of diopside in the finer-grained portions between the hornblende phenocrysts (which themselves sometimes have pyroxenic cores) suggests plutonic metamorphism at very great depths. Oligoclase, microcline, and quartz are usually associated with the pyroxene in the groundmass, while apatite is normally an abundant accessory mineral. At one locality a variety of striking appearance shows ovoids of sodic plagioclase up to an inch or more across, frequently with a kernel of black hornblende. As in the case of the Glen Tilt occurrences, the rocks are heterogeneous and there are no sharp contacts with adjacent granite or hornblending gneisses. They provide some of the most handsome rock types in this country.

R. TYNDALE-BISCOE.

GEOLOGICAL SURVEY OFFICE,
P.O. BOX 39, CAUSEWAY,
SALISBURY,
SOUTHERN RHODESIA.
10th July, 1950.