This sprag-slip motion can be demonstrated in several ways. If a strut OP pivoted in a rigid mount at O' is slid against a surface AB, $F=\mu L/(1-\mu\tan\theta)$ for values of $\cot\theta > \mu$; at $\cot\theta = \mu$ the strut breaks. If there are two pivot points $O'O''$, stick slip occurs at $\cot\theta = \mu$ and the oscillations of $O'P$ and $O'O''$ can be demonstrated with dial gauges or by moving smoked glass plates against probes attached to the struts. A very simple demonstration is to move a pencil held lightly at its extreme end and at its spragging angle across a sheet of paper.

The manner in which the exciter can set up vibrations in the opposing body can be demonstrated by holding a thin sheet of material edgewise against a rotating telephone bell. If the sheet is held at the spragging angle it is set in vibration and the bell emits a loud screeching sound. This sound contains a large number of harmonics, the vibrations are non-linear and their frequency is determined by the natural frequency of the vibrator as well as that of the bell. In certain circumstances elastic deflexions in the bell itself reduce the friction force; the vibrations are then confined to the bell, which emits a loud relatively pure note. The frequency of this sound is almost the same as that of the sound emitted when the bell is struck.

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Excitation Functions of (d,α)- and (d,αn)-Reactions on Natural Tungsten

By irradiation in the Amsterdam cyclotron of natural tungsten with 22-MeV. deuterons, three species of radioactive tantalum were observed due to the following reactions: $^{184}W(d,\alpha)^{182}Ta$, $^{186}W(d,\alpha)^{184}Ta$ and $^{186}W(d,\alpha n)^{183}Ta$.

The chemical separation of these nuclides was performed by selective liquid–liquid extraction with di-*iso*butylketone in hydrofluoric – hydrochloric acid medium in the presence of tantalum carrier[1].

Absolute tantalum activities were determined by means of a calibrated end-window Geiger tube. The results appeared to be in excellent agreement with those obtained with a 4π proportional counter.

The maximum deuteron energy of the cyclotron was computed by fitting an experimental relative excitation function of the $^{27}Al(d,\alpha p)^{24}Na$ reaction with those obtained by Batzel *et al.*[2] and Moeken[3]. The maximum energy appeared to be 22 MeV.

The beam intensity was computed from the same reaction at the maximum deuteron energy, as absolute cross-sections for this reaction are also accurately known.

The cross-sections for the three reactions under consideration as a function of deuteron energy were computed from the measured tantalum activities, after adequate corrections for chemical yield, decay and counting efficiency of stacked tungsten foils irradiated in the internal beam of the Amsterdam synchro-cyclotron. The deuteron energy in each foil was calculated from the range–energy curve of tungsten computed from the Bethe–Livingstone equation[4]. The results are summarized in Table 1.

Table 1. Cross-sections in Millibarns as a Function of Deuteron Energy

Deuteron energy	$^{186}W(d,\alpha)^{184}Ta$	$^{184}W(d,\alpha)^{182}Ta$	$^{186}W(d,\alpha n)^{183}Ta$
21	3·05	1·25	1·15
20	2·90	1·22	0·97
19	2·65	1·08	0·67
18	2·30	0·85	0·52
17	2·10	0·70	0·35
16	1·70	0·57	0·22
15	1·30	0·46	0·13
14	1·08	0·32	0·075
13	0·90	0·21	—
12	0·62	0·13	—
11	0·29	—	—
10	0·16	—	—
9	0·05	—	—

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GEOLOGY

Geology of the Floor of the Bristol Channel

A geological survey of the floor of the Bristol Channel was made from R.R.S. *Discovery II* between April 22 and May 2, 1960, using asdic[1–3] and bottom sampling equipment. Preliminary results are summarized in the accompanying map (Fig. 1). The northern part of the Channel is floored with superficial deposits except around Caldy Island. In the southern part there are extensive areas of exposed rock.

Upper Palæozoic rocks outcrop continuously from Hartland Point to Lundy Island. They include slates and quartzites, and the asdic records show a strong lineation orientated a few degrees north of west, which in some places appears to be bedding. The granite of Lundy Island does not extend more than a mile to the north, or half a mile to the south of the Island. We could not approach close to the east or west coasts on account of the sand banks, but believe that the outline of the Island corresponds closely to the boundary of the granite: no dykes were recognized near the Island.

Many west-north-west to north-west lineations were recorded by the asdic from the Upper Palæozoic rocks west of Ilfracombe, while eastward for 3 miles north-easterly lineations were found. At the Horse-shoe Rocks, a shoal surrounded by Upper Palæozoics about 4 miles north-west of Ilfracombe, we dredged dark green basic igneous rock comparable to a metamorphosed spilite. Skin divers have not yet established whether the spilite outcrops here, or whether it is derived from a superficial deposit.