G/20/69

Report of the University College London, Geology Department Cruise on the R.R.S. John Murray 26 February 1969 to 25 March 1969
English Channel

Purpose of Cruise: To investigate, by sampling and collection of geophysical data, the distribution of surface sediments and the solid geology of the eastern part of the English Channel.

Areas of Study: The English Channel with particular reference to:-

1. The Dover Strait and adjacent areas of the English Channel and Southern North Sea.
2. The area between the Isle of Wight and the Cherbourg Peninsula.
3. Lyme Bay.

Duration of the Cruise: The cruise was divided into two parts:-

Part 1: 26 February to 10 March 1969. Most of this part of the cruise was spent in and around the Dover Strait.

Part 2: 12 March to 25 March 1969. Most of this part of the cruise was spent in the English Channel west of the Dover Strait.

Scientific Personnel:

Part 1 Dr. A. J. Smith (Senior Scientist)
R. G. Dingwall (Scientist)
J. H. Redding (Scientist)
J. Bulled (N.E.R.C. Technician)
K. W. Stephens (U.C.L. Technician)
G. Warren (Assistant, U.C.L.)
S. Milligan (Assistant, U.C.L.)

Part 2 Dr. J. E. Robinson (Chief Scientist)
R. G. Dingwall (Scientist)
J. H. Redding (Scientist)
J. Bulled (N.E.R.C. Technician)
K. W. Stephens (U.C.L. Technician)
F. Geralds (U.C.L. Technican)
A. Bacon (U.C.L. Technician)

Equipment Used: N.E.R.C. Sparker and Magnetometer, Shipek grab, U.C.L. Corer, van Veen grab and Side scan Transit Sonar.

General Log of Cruise

25 February.

In Shoreham. Scientific personnel joined ship and signed ships articles. Scientific gear made fast and general preparations for cruise in hand.

26 February.

Preparations continued. R. Dingwall, assisted for some time by K. Stephens, using sub-aqua gear fitted transducer for Transit Sonar to starboard side of ship. Conditions very severe and Dingwall deserves much credit for the work he accomplished. Cast off at 1640, cleared breakwater at 1705 and carried out engine trials. Sparker streamed at 1830 hours and commenced recording (N.E.R.C. station 1137). Sparker working at 150 joules power. 2130, Magnetometer streamed. Proceded up Channel for Dover Strait. Transit sonar does not appear to be working.

27 February.

0557. Trouble with port engine - all gear hauled in and we proceeded to anchor in Rye Bay, off Dungeness. Anchored at 0645. Took grab samples (U.C. 141) and manned camera station while at anchor (N.E.R.C. 1138). Weighed anchor at 1430 and during remainder of day took grab samples (U.C. 142-151/N.E.R.C. 1139-1147) to south and south-east of Dungeness. Samples of unconsolidated sediment ranging from pebbles to silt were recovered.

The Sparker was streamed at 2000, but records were poor, worked on hydrophone until after midnight.

28 February.

Continued work on sparker. At 0030 some success and resumed course with sparker and magnetometer working. Made traverse from off Dungeness to near Dover, then returned on parallel course. Geophysical equipment hauled in at 0830 and commenced work with Shipek grab and camera. Samples collected and photographs of the sea floor taken at 2½ mile intervals on longitude 1° 05' E. from 50° 52½' N. to 50° 47½' N., on longitude 1° 10' E. from 50° 45' N. to 51° 02½' N. and on longitude 1° 15' E. from 51° 05' N. to 51° 00 N. (Stations: U.C. 152-167/N.E.R.C. 1149-1162).

Geophysical work with sparker and magnetometer resumed at 200. Trouble with ships's power.

1 March.

Considerable trouble with E.G. & G. recorder of the Sparker - clutch broken. Made temporary clutch and resumed work at 0355. New clutch worked well until sparker hauled in at 0945. Resumed grab sampling and camera station work. Main area of work south of Hastings across Channel to Bassurelle Bank (U.C. 168-177/ N.E.R.C. 1164-1173). Resumed sparking at 1915 and proceeded along northwest-southeast tracks: northwest from 50° 30' N. 1° 05' E. to 3 miles off Hastings then southeast from off Royal Sovereign Light vessel to 50° 25' E. Good records.

2 March.

Continued southeast run to 50° 25' N. 1° 05' E., then southwest to 50° 19' N. 1° 00 E. then northwest to 50° 22' N. 0° 55' E. Good records with sparker throughout. Magnetometer not used because of shoals. Hauled in sparker 0820 and resumed grab sampling and camera work at 0840. Twelve stations worked (U.C. 178-189/N.E.R.C. 1175-1186) northwest from Mid-Channel to off Beachy Head. Sparker and magnetometer work resumed at 2000, course from 50° 37' N. 0° 25' E. to 50° 57' N. 0° 45' E. and thence to 51° 05' N. 1° 25' E.

3 March.

Arrived at 51° 05' N. 1° 25' E. at 0600. Fog very thick and moved into Dover Harbour, tied up on Eastern Arm of Dover Harbour. Engineers cleared faults in ship's power and divers fitted port and starboard Transit Sonars. Left Dover Harbour at 1630. Fog still thick so we steamed slowly to Folkestone where we anchored close-in west of Folkestone Harbour.

4 March.

Weighed anchor at first light and started sampling at 2½ mile interval on line due south of Dover starting at 51° 05' N. 1° 20' E. ending at 50° 45' N. 1° 20' E. On completion of this line proceeded west to 50° 45' N. 1° 15' E. and then north to 50° 52½ N. 1° 15' E. taking samples at 2½ mile intervals.

Last two stations for the day at 50° 47½ N. 1° 10' E. and 50° 45' N. 1° 10' E. Fifteen stations worked (U.C. 190-204/N.E.R.C. 1189-1203). Transit Sonars failed to give records in spite of all attention given to them. Sparker put out at 1900 and proceeded northeast from 50° 44' N. 1° 14' E. along French coast, turning, north of Dunkirk, to cross the sand banks which parallel the coast hereabouts. The sea became rough and the records were not of a high quality.

5 March.

Sparker recording continued to about 0800, records poor all the time, then proceeded to east side of South Falls bouy sampling by Shipek grab at 2½ miles interval on 1° 45' E. from 51° 15' N. to 51° 00' N. and along 1° 40' E. from 50° 58' N to 51° 17½' N. Good samples of unconsolidated material of a variety of sizes (UC 205-221/NERC 1205-1222). Ceased work at 2100 and proceeded to Dover. Weather poor, anchored in Dover Harbour at 2320. It is thought that the Transducer of the Transit sonar was lost in the process of anchoring.

6 March.

Left Dover Harbour 0910 and proceeded eastwards taking samples and then sampled at close interval on and around the sand banks to the north of Calais and Dunkirk between 51° 02½' N. 51° 07½' N. and 1° 50' E. and 2° 05' E. 15 stations manned and unconsolidated samples recovered at nearly every station (UC 222-236/NERC 1223-1237). The camera was used at a number of the stations. Most samples were of clean sand and pebbly sand. Commenced sparking at 2210 after picking up Dr. Smith at Dover Harbour. Records taken around East Goodwins and across adjacent channels.

7 March.

Sparking to east of the Goodwins and in adjacent channels continued until 0900, then in excellent weather continued grab and camera stations to south east of Dover and between Cap Gris Nez and Boulogne. The camera gave trouble but grab yielded excellent samples (UC 237-250/NERC 1239-1252). Stations on 1° 30' E. and 1° 35' E. between 50° 52½' N. and 51° 05' N. Decided to leave the Dover Strait and move to south of Isle of Wight. Used sparker as we sailed westwards; excellent records.

Commenced sparking at 1915 as we left the Strait and continued through night.

8 March.

Continued sparking until 2000. Excellent records made of this run in the eastern part of the English Channel. Prepared crew for 3 man 6 hour shift working and made up smaller corer. Attempted to take a series of cores on 00° 30' W. at 2½ miles intervals between 50° 20' N. and 50° 30' N. (UC 251-255/NERC 1254-1258). No samples obtained in spite of three attempts at each stations. Bottom seems to have flint pebble cover.

9 March.

Continued coring, first at 50° 30' N. 00° 35' W., then on a line westwards from 00° 50' W. to 1° 05' W. at 5' intervals on 50° 32½' N. and lastly at 50° 35' N. 01° 05' W. (U.C. 256-261/ N.E.R.C. 1259-1264). Four stations yielded good samples of Chalk. At 0518 ship shrouded in very thick fog. Decided to proceed to Sandown Bay. Anchored at 0612 and spent rest of day anchored until anchor weighed at 1708. Resumed coring at 1750 on 50° 35' N. and cored at 5' intervals from 1° 05' W. to 00° 45' W. (U.C. 262-267/N.E.R.C. 1265-1270). Two Lower Greensand and two Chalk samples recovered. Sea became rough and coring had to be abandoned. Proceeded towards Shoreham.

10 March.

Continued towards Shoreham and alongside at 0606. Dr. Smith and Messrs. Warren and Milligan left the ship.

12 March.

Dr. Robinson and Messrs. Bacon and Geralds joined the ship. Set sail at 1812 and streamed sparker gear at 2000. Course due south to Baie de Seine on 0° 30' W.

13 March.

Continued sparking and magnetometer work in Bay de Seine while new people became adjusted to shipboard life. Corer rigged for coring programme.

14 March.

Continued sparking until 0800. During day coring attempted at eighteen stations (U.C. 268-285/N.E.R.C. 1272-1289) all in the northern part of the Baie de Seine between 49° 50' N. and 50° 00 N. and 0° 20' W. and 0° 50' W. No solid rock samples were recovered, some chalky smears on two cores (272, 279), all the others brought up only unconsolidated sands and pebbles with a fair amount of shell. Sparking and magnetometer work resumed at 2300. North - south lines east of Cherbourg Peninsula.

15 March.

Sparker work continued throughout day in good weather north of Cherbourg Peninsula. Good records obtained, though quality of records deteriorated towards evening as sea became choppy. Continued geophysical work throughout the night.

16 March.

Sparker work continued until 1100 when bad visibility made it necessary to move into lee of Cap Levi, east of Cherbourg. Ship at anchor untill 2300. Grab sample taken with van-Veen grab while at anchor - good sample of ostracod and foraminifera silt on slate bedrock. Resumed sparking and magnetometer work at 2300. Worked on boxes north of Cherbourg. Good records.

17 March.

Continued magnetometer and sparker work until 1350 when gear was hauled in prior to entering St. Peter Port, Guernsey.

18 March.

Sailed from St. Peter at 0700. Some samples recovered with van Veen grab soon after leaving harbour. Sparking and magnetometer work resumed at 0845 on south-north line across Hurd Deep, then north east along Hurd Deep and to east.

19 March.

Continued sparker work eastwards until 0730. Commenced coring 0800. 0800. Cored at 2½ mile interval from 50° 10' N. to 49° 45' N. on 0° 45' W. Twelve stations worked (last at 49° 45' 1° 00'W.) (U.C. 286-297/N.E.R.C. 1296-1307) but no samples of solid rock were recovered. Doubts were expressed about ability of corer

to gain enough momentum to take core. Sparker and magnetometer streamed at 2000 hours and record made across channel towards Christchurch Bay.

20 March.

Sparking continued on line towards Christchurch Bay. Run terminated southwest of Isle of Wight at 0745. Put into Freshwater Bay at 0830, anchored in thick fog. Fogbound all day. Lost U.C.L. van Veen grab when sampling while ship at anchor.

21 March.

Coring continued at 1050. Line of stations south of St. Catherine's point and westwards at 50° 30' N. 2° 00' W. (U.C.L. 298-316/ N.E.R.C. 1309-1327). Good samples during most of day, many were of blue clay or varigated clay. Coring stopped at 2115. Sparking commenced at 2130 but heavy seas caused this work to stop and gear hauled in at 2200. Anchored off Chesil Beach.

22 March.

Sea rough so decided to sample in Lyme Bay at close interval. Thirty one stations manned in area bounded by 50° 32½' N. and 50° 40' N. on 2° 50' W. and 50° 32½' N. and 50° 37½' N. on 2° 35' W. (U.C. 317-347/N.E.R.C. 1329-1359). Coring near to shore gave best results, those further offshore were less good. Coring was completed at 2020. Sparking was commenced at 2030 but sea too rough and sparking had to be abandoned because of rough seas. Spent night anchored off Chesil Beach.

23 March.

Weighed anchor at 0700. Started coring in north west part of Lyme Bay between 2° 55' W. and 3° 20' W. Twenty eight stations manned (U.C. 348-375/N.E.R.C. 1360-1387). Good samples of solid rock recovered in many places with good collections of superficial sediment. Solid samples were of Jurassic and Triassic sediments. Put sparker overside for recording off Torbay and westwards to Start Point. Gear hauled in at midnight.

24 March.

On passage for Barry.

25 March.

Docked Barry at 0054. Scientific personnel left ship.

General remarks.

This was a highly successful cruise considering the time of year. A fair amount of time was lost due to bad weather (gales and poor visibility) and some time was lost due to shipboard troubles (power failures in particular), nevertheless our rather ambitious programme was very nearly fully achieved. This was due, in no small measure, to the assistance rendered by Captain Perry and the officers and men of R.R.S. John Murray. We were fortunate that excellent relations were quickly established between the University College group and the Ship's complement. It is impossible to over emphasise the importance of these relationships towards the success and scientific achievement of any cruise.

Some criticism must still be made of the arrangements for taking cores on the R.R.S. John Murray. The existing system does not allow the corer to gain sufficient momentum for good gravity coring. Furthermore the system of communication between deck and winchroom still leaves much to be desired - on this cruise considerable trouble was experienced in passing information between deck and winchroom and finally we were reduced to one set of microphone/earphones. My personal opinion is that a coring winch, with independent power, should be mounted on the afterdeck when any cruise is to be concerned with bottom sampling. Such a simplified system will save time and avoid frustration and the possibility of accidents because of slow reactions. On this cruise the U.C.L. corer was very nearly successful in taking a core of the deck plates on one occasion due entirely to a misunderstanding between the deck operator and the man in the winchroom.

The side-scan sonar system, fitted with so much trouble by R. Dingwall and two divers of the Medway Conservation Board, failed to produce any results. This was a great pity because side-scan sonar is a most useful tool for those interested in sediment patterns. I hope that a reliable system will be achieved before very long. One of the transducers was lost in Dover Harbour when it was fouled by this ship's anchor. This suggests that the position chosen to affix the transducers is not ideal and some consideration should be given to finding an alternative positions amidships. Such a location would avoid fouling problems and reduce some of the up and down motion of the transducers as the vessel pitches.

We were fortunate than the ingenuity of J. Bulled and J. Redding avoided a great loss of information in our sparker work. The clutch between the motor which drives the recorder and the record paper broke up quite early in the cruise. No spare of this essential item was available but Bulled and Redding succeeding in manufacturing an excellent replacement which worked perfectly to the end of the cruise.

A drying oven, suitable for drying out washed samples, would have been of great value. Much more sediment work could have been carried out on board had one been available. A Gallenkamp oven, maximum temperature 110° C would be most useful (Gallenkamp catalogue no. OV-980).

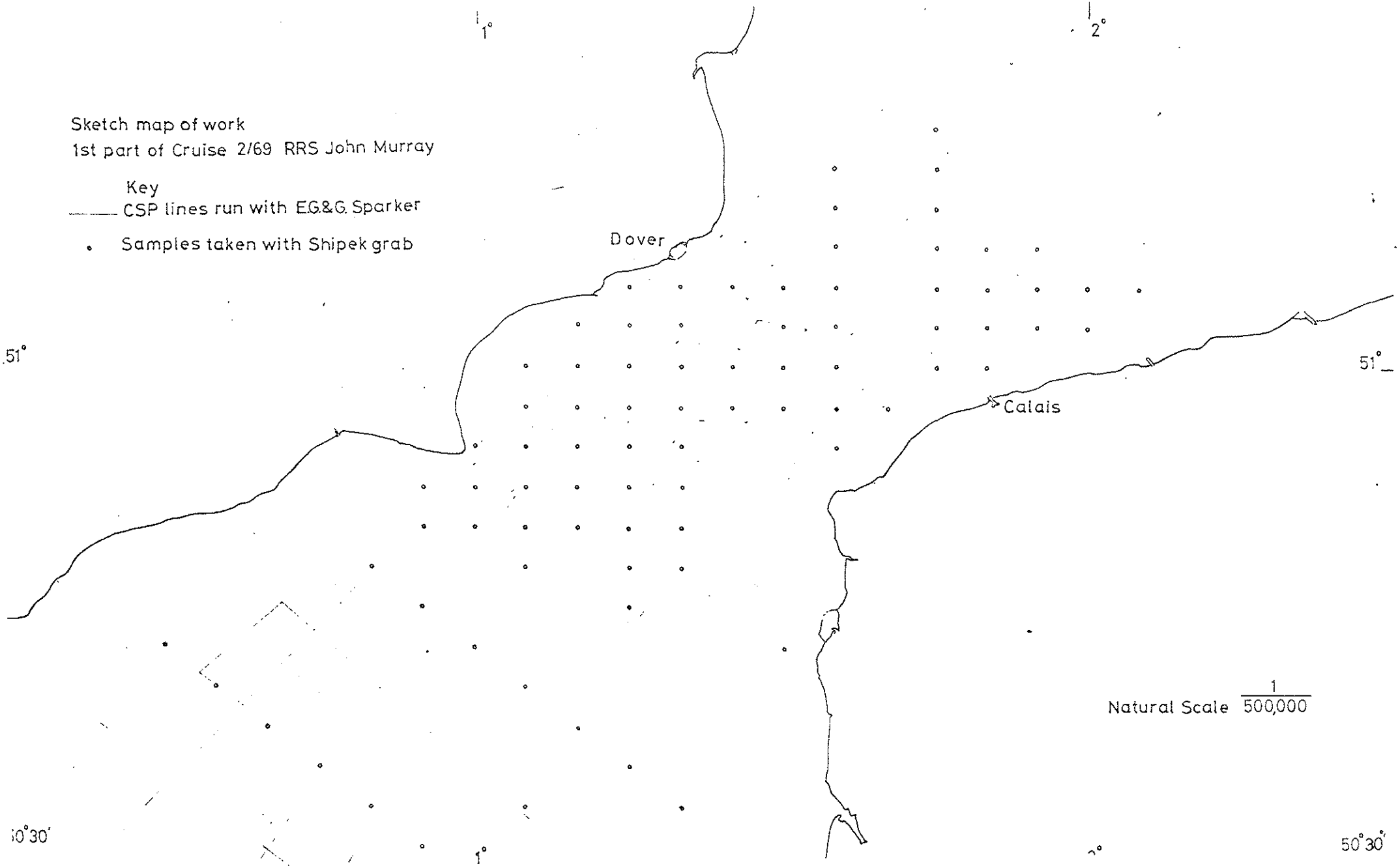
Unfortunately it is still necessary to report that the vibration on the ship makes microscope work on living micro-organisms impossible - a point which should be borne in mind when designing any new research vessel.

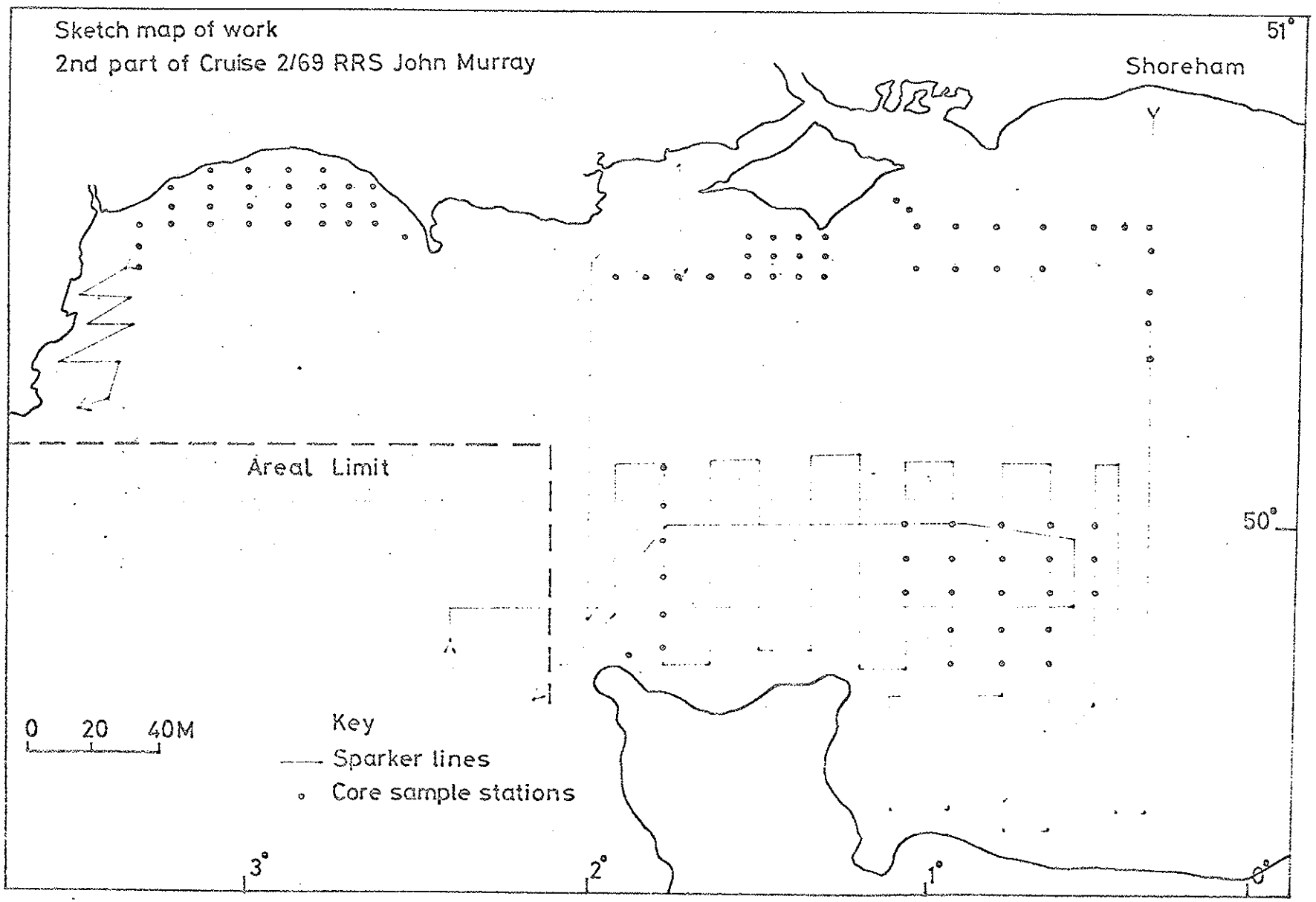
A list of equipment and stores for scientific use which are kept on board would be of considerable value to the Senior Scientist both in the planning stage and during any cruise.

One final small criticism relates to the number of logs required to be made during the cruise. In addition to the General Scientific Log, (which was not kept for the first part of the cruise due to an impression that it had been superceded), it was necessary to keep a Station Log and a Geophysical log for N.E.R.C. records. A Scientific Bridge log was kept by the navigating officers. These logs were extra to the logs necessary for scientific purposes upon our return to College. Besides these logs we are now requested to prepare further details for I.C.E.S. I feel sure that this paper work could be reduced considerably - perhaps some thought should be given to this matter which can be rather irritating when one is trying to carry out some work.

In conclusion I would like to express the thanks of the entire University College Group to Captain Perry, the officers and men of R.R.S. John Murray for their help and assistance throughout the cruise and to the personnel of the R.V.U. establishment who worked so hard at Barry, Shoreham and Dover to ensure the success of the cruise. Special mention must be made of the assistance rendered by Mr. J. Bulled, of the R.V.U., who accompanied us throughout the cruise and who, by his technical know-how and general willingness and good humour, greatly facilitated our entire operation.

Dr. A.J. Smith.


Sketch map of work
1st part of Cruise 2/69 RRS John Murray
Key
CSP lines run with E.G.&G. Sparker
Samples taken with Shipek grab
1°
2°
Dover
Calais
51°
51°
50°30'
50°30'
Natural Scale 1/500,000


Sketch map of work
2nd part of Cruise 2/69 RRS John Murray
51°
Shoreham
Y
Areal Limit
A
50°
0 20 40M
Key
Sparker lines
Core sample stations
3°
2°
1°
0°