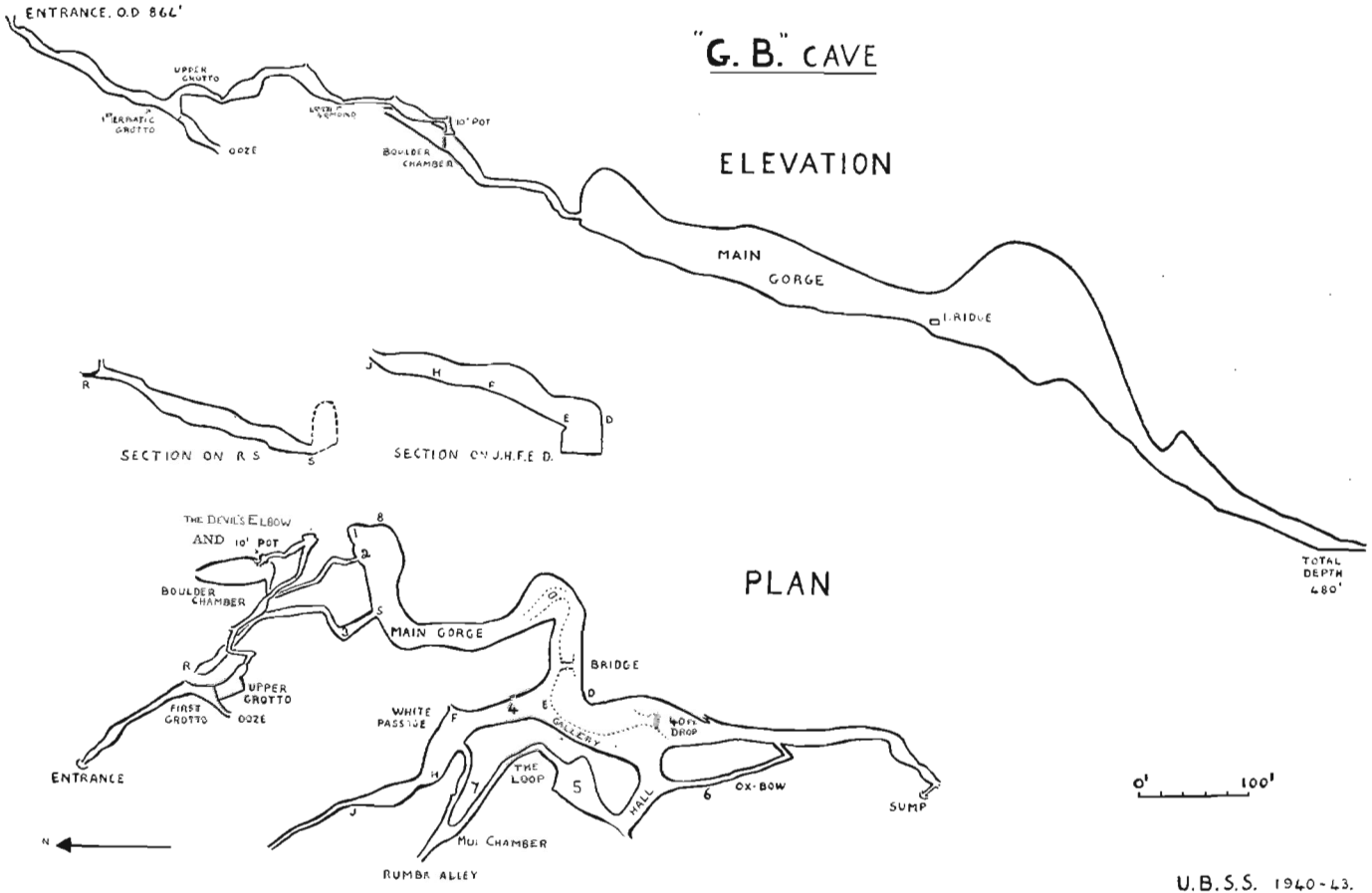


FIG. 1.—Survey of G.B. Cave.

G.B. Cave, Charterhouse on Mendip.

By F. J. GODDARD, M.R.C.S., L.R.C.P.

The site of G.B. Cave has been known to the Society, and much work has been done on the area, right from its foundation. Members have made small finds in the area, and have reported them in *Proceedings.*

The active swallet known as Tyning's Swallet has been investigated, but work had to be discontinued because of the great difficulties involved. In more than twenty years of work, only one small cave, Read's Grotto, had been discovered, while work on other swallets had been carried out with much expenditure of energy but little success. The area which G.B. Cave drains is an important one, and little was known of the hydrology of the slopes North of Cheddar Gorge. The discovery of this immense system throws some light on the problem, and shows that there is yet much to be discovered on the South side of Blackdown.

DESCRIPTION OF THE SITE

The entrance to the cave lies in a small, almost conical, depression in a rough field known as Gruffy Field, which is an irregular patch represented as a fir-wood, although it is now barren, on the 6 in. O.S. map (Sheet XVIII S.W.).

The field lies 200 yards South of the Roman Road from Priddy to the coast, and 500 yards East of Tyning's Farm. A small stream enters the field at its Northern end and disappears into Tyning's Swallet (see n, *Fig.* 2) after cutting out a miniature gorge for itself for about 100 yards. The entrance to the system (I) lies about 100 yards to the West, close to tlle boundary wall of the field. To the Eastern side of the Wet Swallet (ll), 200 yards away, is the entrance to Read's Grotto, which takes a small stream from Blackdown. Almost due South there is a large depression with precipitous sides and 40 ft. deep: In the South wall of this there are two fissures which were worked upon for some time but proved too small to penetrate. This is the Great Swallet (IV) and is situated directly above the second arm of the Gorge in G.B. Cave. There are other depressions in the area, most of which are mine workings or ochre pits. A few, however, are worth mentioning at this point, There is a large conical depression or Swallet Hole (Ill) immediately South-east of the wet swallet just behind the rock-face where the water disappears. This depression is obviously above a collapsed chamber, and probably accounts for the fact that attempts on the wet swallet were attended with failure. There are three sink

holes (V, VI, and VII) outside the boundary of the field which are apparently old swallets. There is also an old choked-up mine shaft 100 ft. South-east of the cave, and as far as we know it does not communicate with any part of the cave, although it is probably only a few

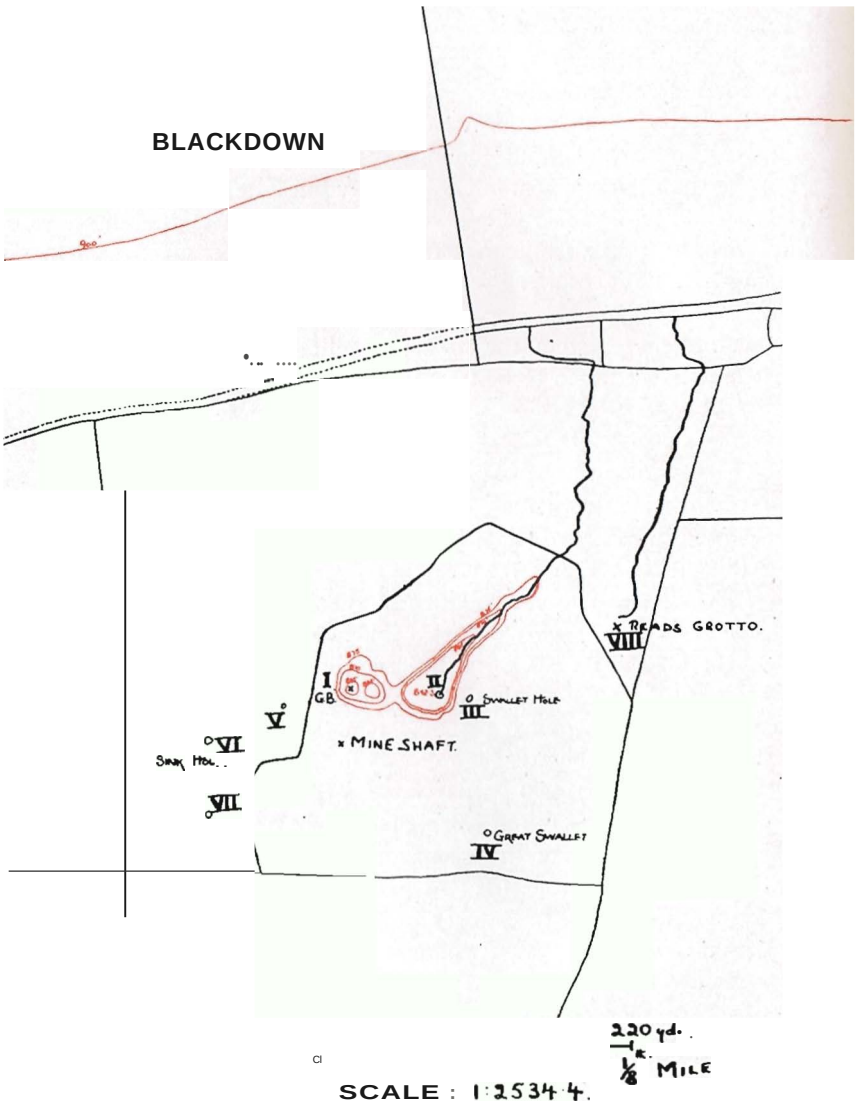
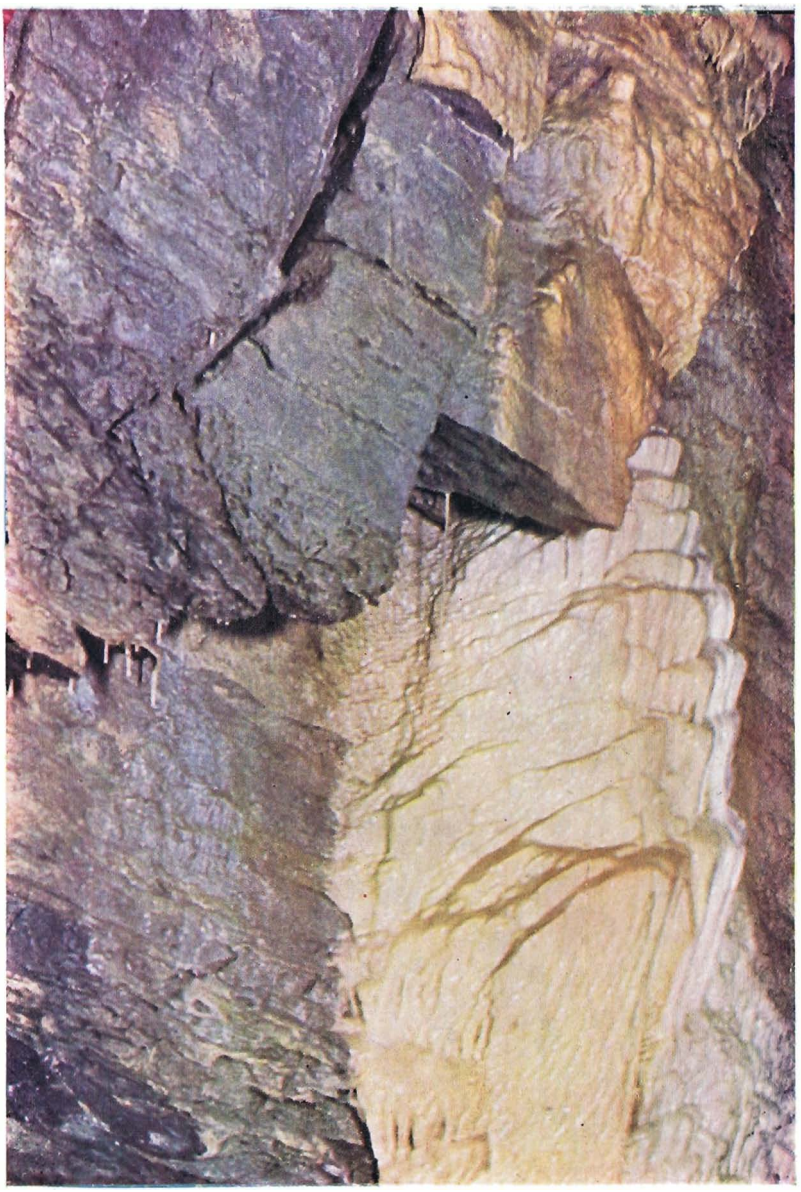


FIG. 2.-Gruffy Field. Sketch map of the area immediately surrounding the entrance of G.B. Cave, showing surface features.

PLATE 2.



Large stalagmite boss in thc Main Corge: G.B. Cave.

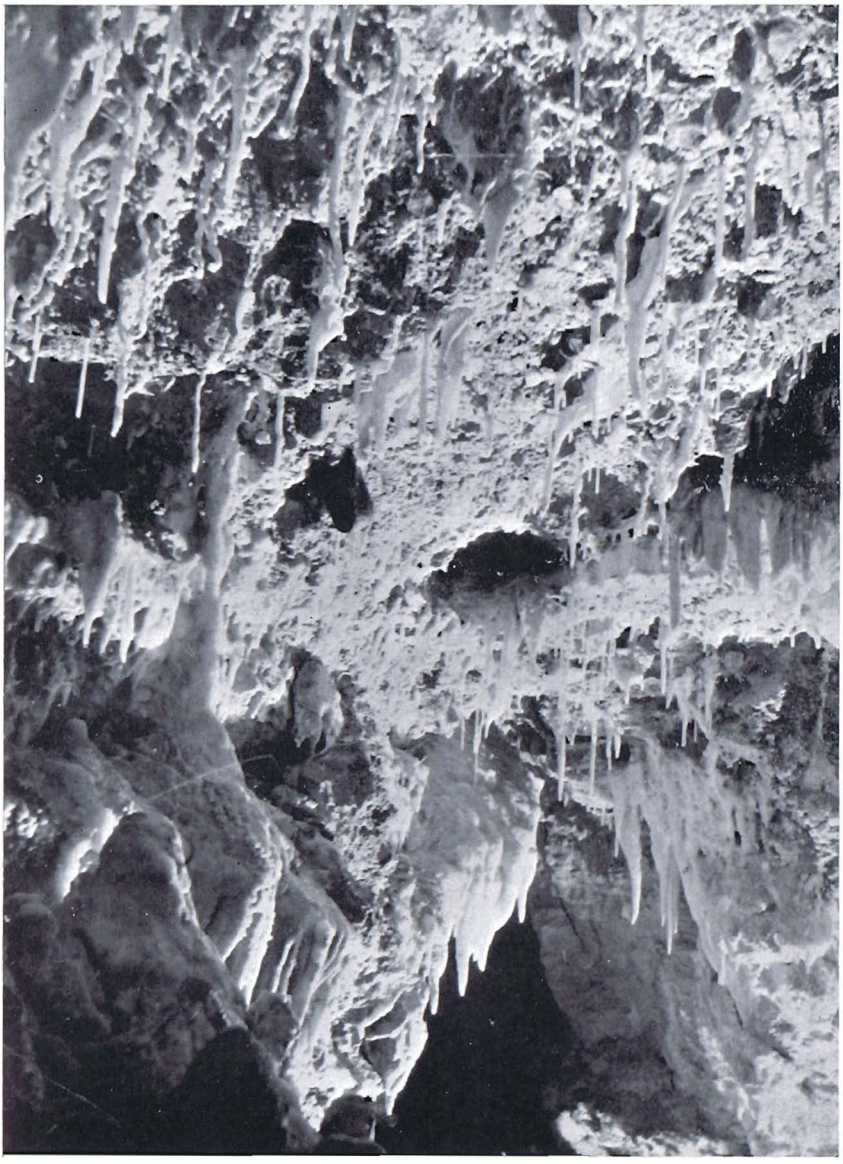
PLATE 3.

The Main Chamber of G.B. Cave. Its size can be judged by comparison with the figure seated below the stalagmite boss on the left. The white tapestries on the far wall are about 50 ft. high.

PLATE 4.

Stalactite curtain and stalagmite boss in the Main Chamber.
Both are about 15 ft. high.

PLATE 5.

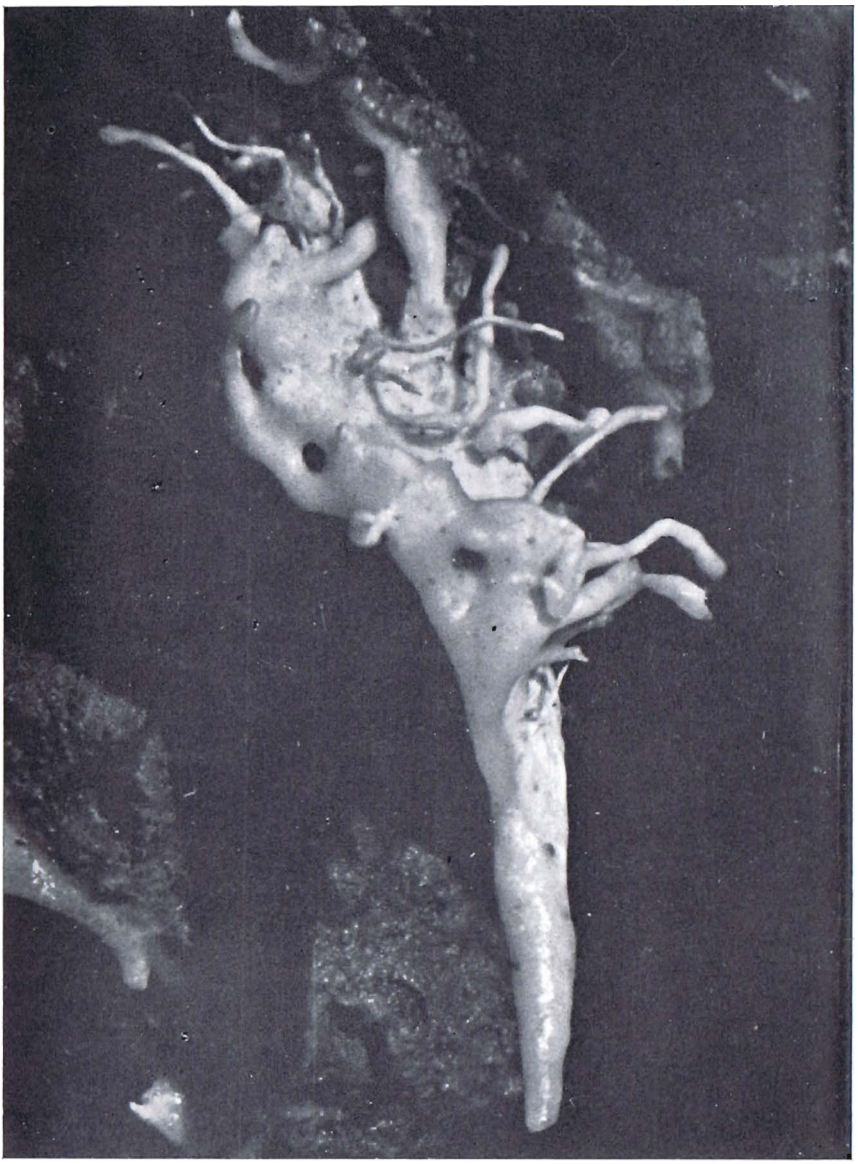


Looking into the First Grotto : G.B. Cave.

PLATE 6.

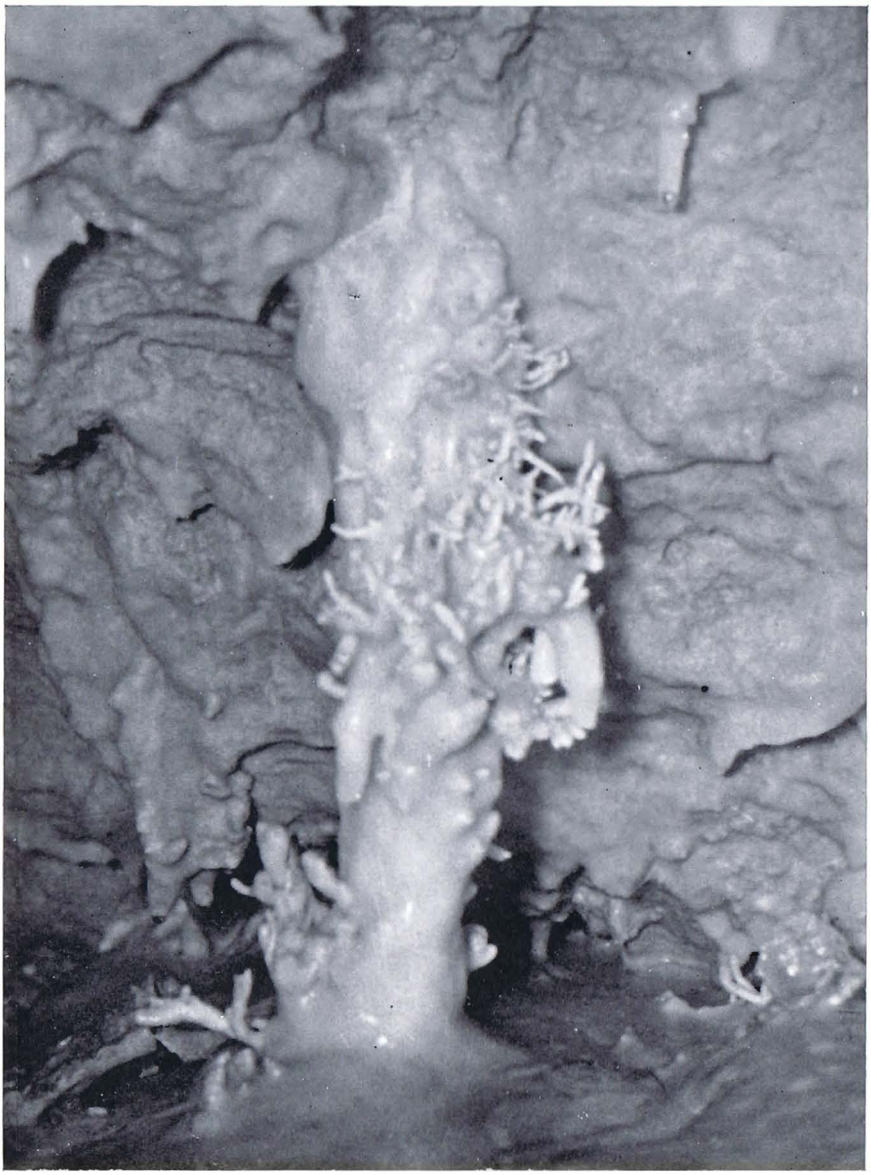
A view of the roof and walls of the First Grotto, showing the great profusion of erratic stalactites, or helictites.

PLATE 7.



Close-up of a helictite.

PLATE 8.



Erratic formation in the Second Grotto.

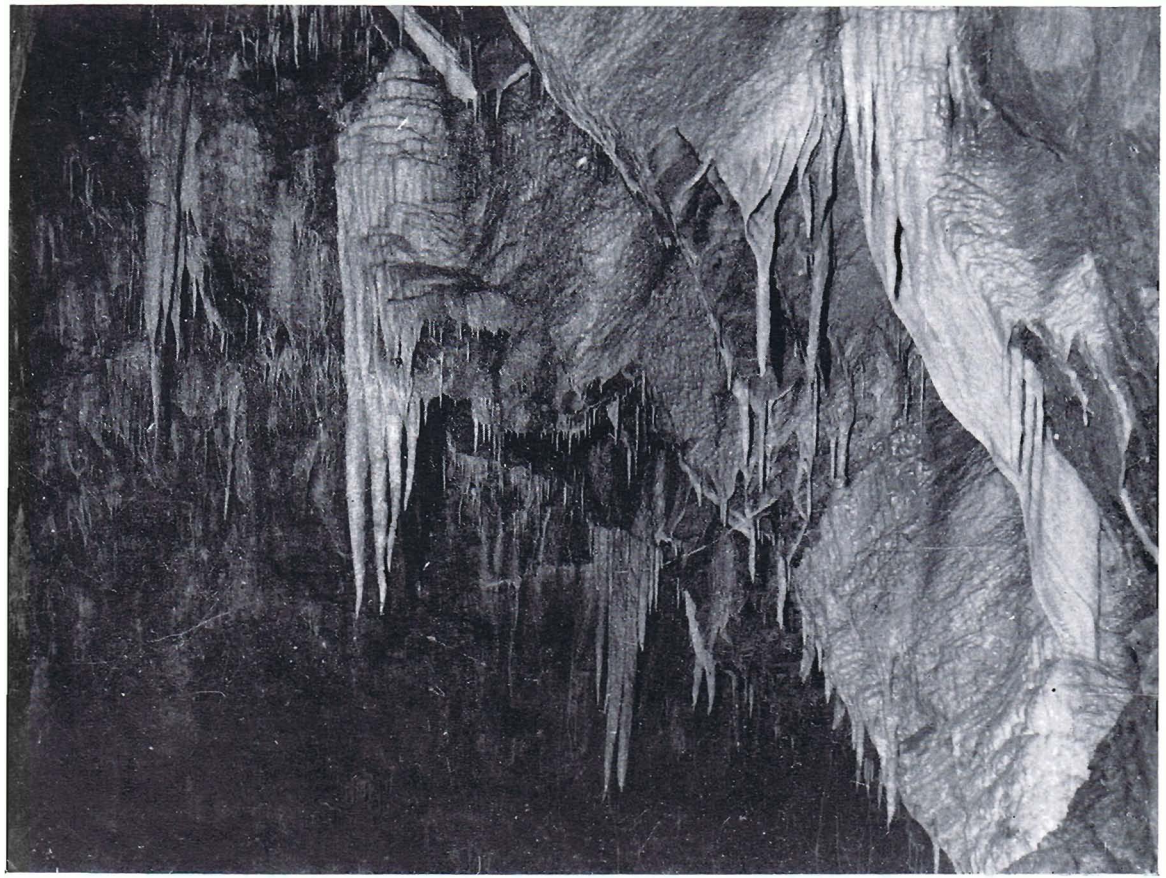
PLATE 9.

Erratic stalagmites on the wall of the First Grotto. The extraordinary way in which thc formation of these structures defies the laws of gravity is here clearly shown.

PLATE 10.

Stalactites in the roof of the Main Chamber. Some of these are over 12 ft. in length.

PLATE 11.



Formations in the roof of the Main Chamber. These are best seen from the Gallery, which runs round its wall.

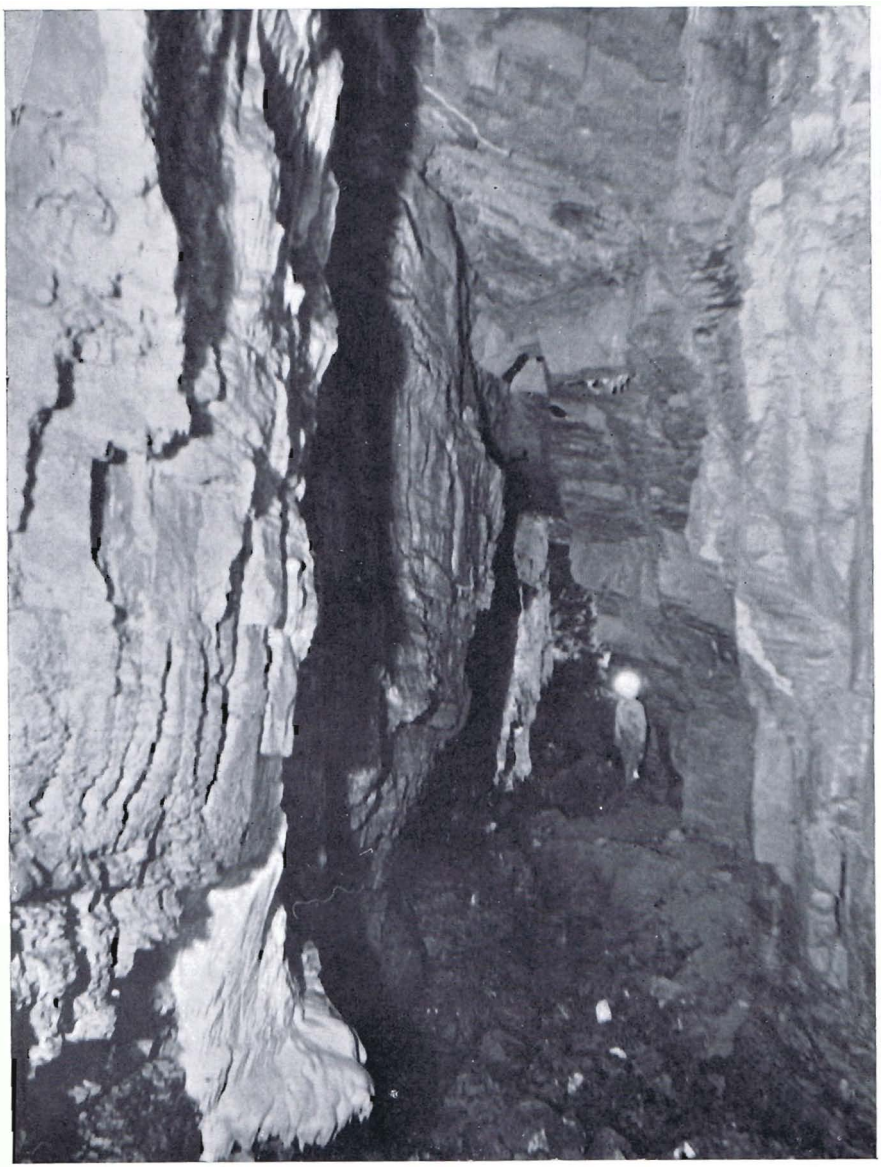
PLATE 12.

Stalactite curtains: Main Chamber.

PLATE 13.

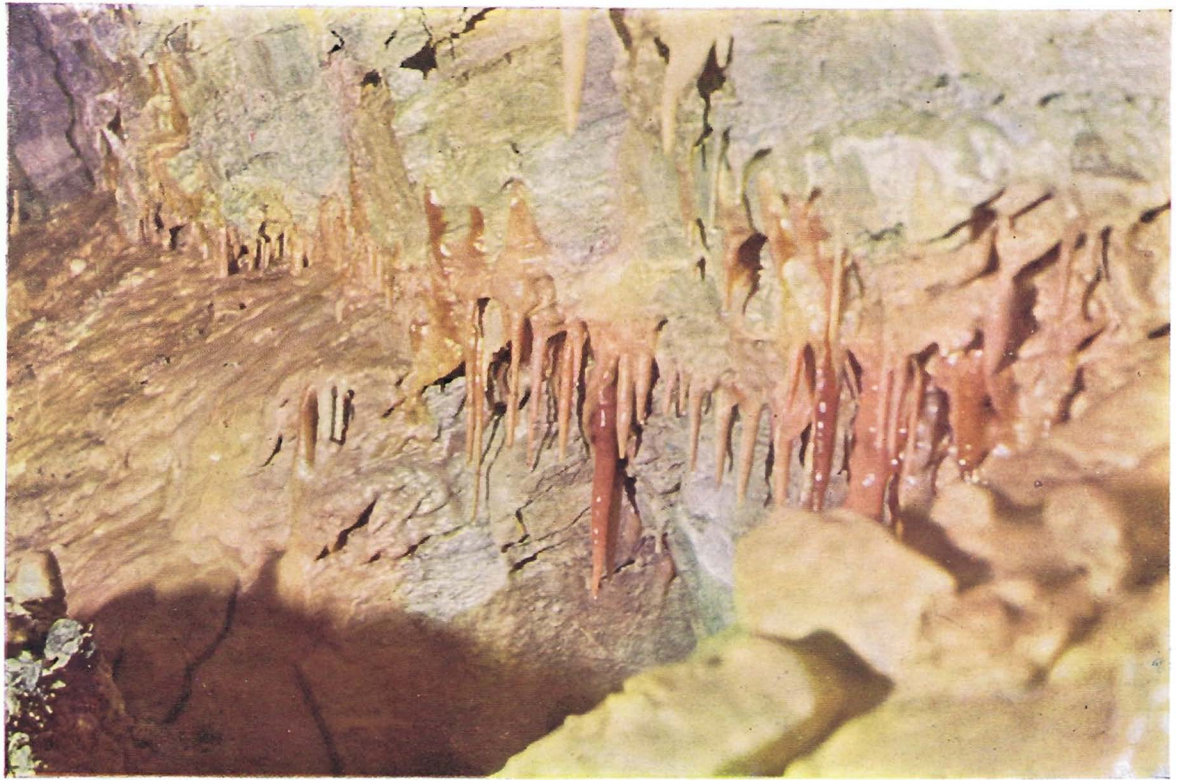
A fault, and folding of the stratum layers in the wall of the Main Gorge.

PLATE 14.



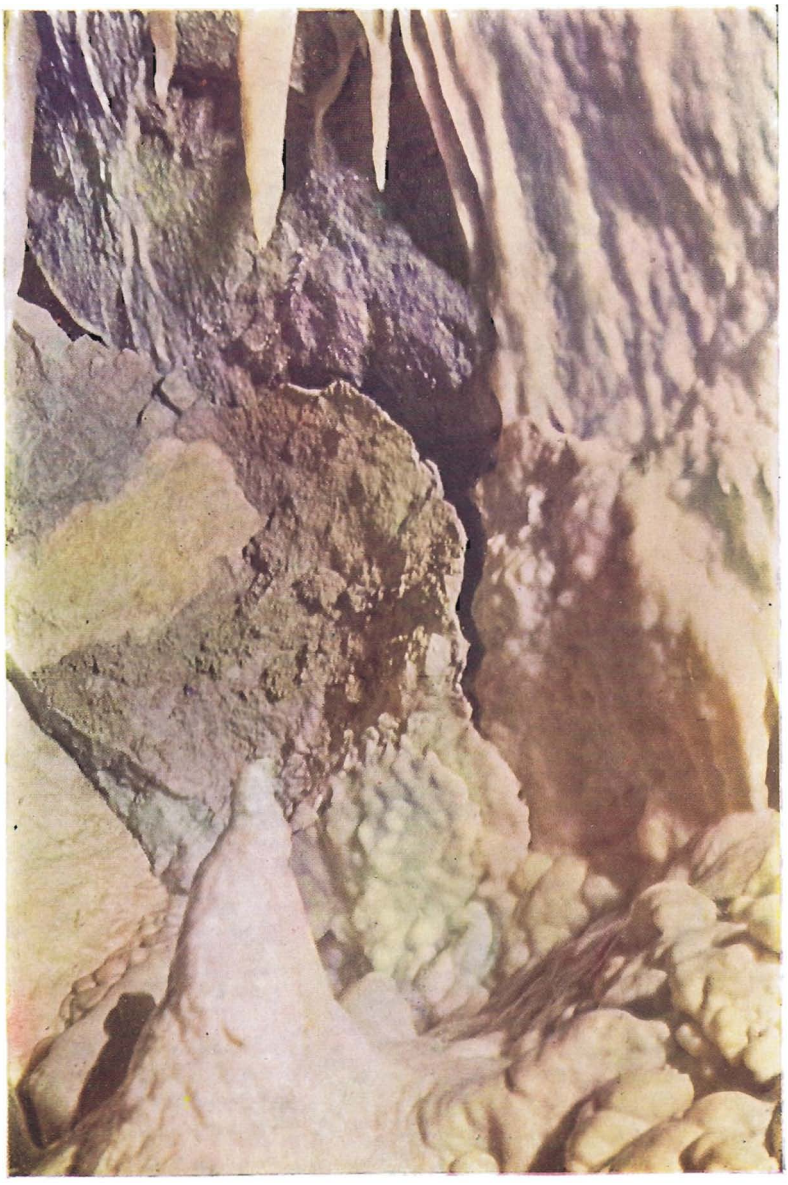
Looking down the Main Gorge towards the sump in G.B.

PLATE 15.



Stalactites in G,B, Cave: The red coloration is due to the iron in the deposit. This is a common finding in Mendip Caves,

PLATE [6.



Formations in G.B. Cave.

feet away from the entrance passage. This shaft may be worth explor ing at some future date.

The G.B. Cave-system drains the area immediately North of it on the South side of Blackdown, and in wet seasons a large stream is seen disappearing under the rock face at Tyning's Swallet. In dry weather the stream filters into the rock some way before it reaches the base of the cliff. It sometimes dries up completely leaving small pools at intervals under its banks.

The depression from which the system is now entered is situated to the West of the wet swallet in a rounded depression 30 ft. across and 20 ft. deep. At the bottom of the hollow there is a slab of rock under which water originally flowed in a South-easterly direction, and on the right bank of the swallet, close to the entrance under the rock, there is a dry stone wall, similar to the boundary wall of the field, which was probably built there to stop erosion of the bank. The water-way under the rock was choked with clay and sandstone boulders, and it was here that the excavation was commenced. The general direction of the cave is South-east, that is towards the head of the Western arm of Long Bottom which joins Velvet Bottom near its entry into Cheddar Gorge.

We should like here to place on record our indebtedness to student members of the Geography Department, who surveyed the area for us, and made the publication of the map (*Fig.* 2) possible.

THE EXCAVATION

The decision to excavate at the present entrance was made in 1939 when a small party of members were exploring Read's Grotto. A number of us were investigating holes in the neighbourhood, when we discovered this depression which had been unnoticed hitherto. During the Easter Camp of that year an excavation was commenced in the hollow under the slab of rock which is about 8 ft. wide and about 2 ft. 6 in. thick. There was a small fissure, only a few inches wide, the rest being choked with rubble. However, a powerful draught encouraged us and we penetrated in a narrow rift a distance of 12 ft. The rift extended beyond, but it was too small to work, and we decided to sink a shaft above the end of the passage and so connect with the rift and work downwards. The material removed from the fissure was a mixture of sand and mud and contained many quite large rounded sandstone pebbles and boulders, and the rock face showed evidence of water erosion. We also discovered a sheep's ulna in the wet choke. It was very soft and crumbled rather easily, which indicated that water had flowed in the rift. The size of the boulders indicated that a large stream

had once flowed there, the nearest source of sandstone being quite 200 yards away. We had been digging in the bed of the stream-way, and progress was barred by large rocks. Encouraged, however, by the existence of a strong draught and by the nature of the choke, we decided to sink another shaft and so have more room in which to work. We began to dig in the South side of the swallet, aiming to meet our original working at about 12 ft. below the surface. Much rock was removed, and some large boulders wedged across the rift, which was here 2 to 3 ft. wide, were demolished by explosives. The rock removed from the rift was mainly limestone, and we struck a seam of calcite containing a large proportion of galena crystals. We discovered the mouth of the original passage at a depth of 12 ft., after demolishing a large cubical block of limestone which was wedged crossways in the rift. This was the cause of our failure to penetrate in our first attempt. Farther down at a depth of 10 ft. from the surface we came to a small fissure which was seen to widen beyond and turn to the left at a distance of about 15 ft. At this point a large boulder lying in the floor of the passage was demolished, thus allowing us to penetrate into the first part of the Upper Series.

An entry was made into the Upper Series on November 19th, 1939. The rift soon widened into a passage of considerable size which we followed into the First Grotto (see Survey, *Fig.* 1), where we found the most remarkable collection of helictites we had ever seen. On that first day the party negotiated the drop at the end of the first chamber and penetrated to a distance of some 300 ft., passing through an unpleasant mud and water crawl, which was immediately named the "Ooze." We were forced to return because of lack of light, though we discovered subsequently that we had penetrated almost to the end of this passage. The mud in the first chamber was dry and cracked, and it was pitted by drips from the roof above. There is a rift leading to the left in the first chamber which is filled with wet mud and extends some 15 ft. Further penetration is made by ascending into the Second Grotto through a hole in the end wall of the first chamber about 10 ft. above the floor. This is directly over the 10ft. drop to the passage leading to the Ooze. There is thus a possibility of a nasty 20 ft. drop here, but we had no casualties, although we recalled with mirth the Hon. Treasurer's first ascent with a wedged knotted rope which was left untethered by another member who had gone on ahead. From this chamber, which contains a wonderful collection of helictites, we soon penetrated upwards by means of a chimney to a chamber, and then on past Loch Lomond, a muddy pool in a bend in the cave which soaks all but the thinnest and most agile explorer. Eventually, after

passing downwards and turning abruptly left we crawled up to the 10 ft. Pot, in which there was a large waterfall. From the bottom of this, lying full length in the water, we followed a winding passage and eventually came out upon a small ledge 12 ft. above the floor of the Boulder Chamber. From this ledge the waterfall joined a large stream running down the floor of the chamber. The passage leading to the ledge was named The Devil's Elbow because of its crookedness and unpleasantness.

During the wet months in the beginning of 1940, no further progress was made, and we contented ourselves with surveying and photographing the Upper Series. Later on, in March, 1940, when the flow of water in the Devil's Elbow had lessened, a party penetrated into the Boulder Chamber by means of a rope and found their way to the bottom of the cave with little additional difficulty. They descended the series of pot-holes and eventually came out through a small fissure into the Main Gorge.

The following is a quotation from the Camp Log, dated March 10th, 1940, and I think it will illustrate the impressions it made upon the explorers : "A series of chambers was now entered of a loftiness rivalling that of the Great Chamber of Lamb Leer. The floor was covered with loose boulders and descended at an angle of 30 degrees with drops at intervals. We were now in a huge rift, a roofed gorge, of dimensions unprecedented in Mendip. The series of caverns continues for a distance of nearly $\frac{1}{4}$ mile with a vertical descent of approximately 300 ft."

After the discovery of this cave, other passages were explored, the work of photography and survey was commenced, and many wonderful and unique formations were discovered. In spite of war-time conditions we now have comprehensive records of the cave as it is known to exist at present.

THE MAIN GORGE

The Main Gorge is entered by means of a rift in its North wall and its direction at that point is downwards towards the West. The floor at this point is about 180 ft. below the surface. On the left is a large pile of boulders at the base of a steep slope in the North wall of the cave (1) (see *Fig.* 1). On the far side of the boulders a stream larger than the one which comes from the entrance slit enters from a small rift in the top wall of the cavc. This is right at the head of the cave and is the main water supply of the system. Just a little below the point of entry into the Main Gorge (tributary 2) on the right side going down there is another passage (3). The height of the cave at this part is about 60 ft., and it is 30 ft. wide. About 80 ft. below the cave turns

sharply to the South for about 200 ft. and the cave narrows slightly to under 20 ft. in width. The limestone shales are well seen here, and there is a small upward fold in the strata at this point *(Plate 13)*.

At the end of the second arm, where the cave turns abruptly West and the roof becomes comparatively low, the stream has cut through a mass of stalagmite and boulders leaving at the far end a bridge 13 ft. long and 6 to 8 ft. wide. After fJowing under the bridge the stream turns sharply left into the iVlain Chamber and passes under the "Gallery" and the entrance of the largest tributary (4). The floor of the Main Chamber slopes sharply down and then rises towards the top of the 40 ft. drop which is negotiated by means of a rope. The stream flows to the East wall of the Main Chamber and is lost among the boulders to reappear farther down below the drop. At this point the Main Chamber is 120 ft. high and from the roof hang many fine stalactite's of great length. On the East wall of the Main Cave just above the drop is a huge stalagmite boss 15 ft. high with a long curtain above it *(Plate* 4). On the right hand wall of the chamber near the drop there are three magnificent tapestries of white stalagmite, and their size is well shown in the photograph of the Main Chamber (*Plate* 3). The roof of the chamber slopes sharply down to about 50 ft. above the floor of the continuation of the cave below the drop. Beyond the end of the Main Chamber the "Gorge" narrows down until 300 ft. farther on it is barely 6 ft. high and 4 ft. wide. The stream then disappears down a small fissure to the right and passes to a small sump or siphon which has not yet been penetrated. The depth at this point is 480 ft. below the surface and the total length of the cave is about 500 yards from the surface to the sump;

At point (8) right at the top of the Main Gorge there are two fissures one above the other. The upper one is 10 ft. above the floor; it is very narrow and only permits of access for a short distance. It is quite dry. The lower one carries a large stream. It is too small to permit exploration, but its stream with that from (2) provides most of the water which courses down the Main Gorge.

At the very bottom of the cave pieces of brushwood and bracken stem may be found in some fissures in the roof at a height of 6 to 8 ft. which indicates that the bottom of the cave may be filled completely in times of flood.

TRIBUTARIES

The tributaries (1) to (6) are marked on the plan. They all enter the cave from the North-west and no large tributaries enter the Eastern side of the cave.

(1) is a steep slide strewn with loose boulders at the top of which there is a boulder choke. This is estimated to be about 90 ft. below the surface, and many communicate with the small chamber at the end of the Double Passage.

The passage (2) takes a large quantity of water during the wet season. It is by means of this passage that access is at present gained into the cave. It carries the water from the wet swallet (II on the map, *Fig.* 2) and is joined by a small stream flowing through the Devil's Elbow, over the lip into the Boulder Chamber. This passage descends by a series of potholes from the Boulder Chamber to a depth of about 180 ft. where it enters the Main Chamber.

The passage (3) leads first into a small triangular chamber and then passes upwards in a vVesterly direction. The survey showed that its termination comes very near to the small muddy fissure on the East side of the First Grotto.

From the Bridge one can gain access to the Gallery and scramble round the West wall and roof of the Main Chamber and enter the Hall. At the near end of this a large passage (4), The White Passage, enters the cave (see section].H.F.E.D., *Fig.* L). This is the largest and most impressive of the tributaries in G.B.

The roof, floor, and walls are white with glistening formations. In the pools in its floor cave pearls can be found, including some specimens nearly 1 in. in diameter, and in places there are wonderful examples of coral formations. This passage can be followed upwards to a point 90 ft. below the surface, where it ends in a boulder-choke.

Tributary (5) is also a large passage which leaves the Hall over the drop in the Main Chamber by a 20 ft. climb.

The Loop (7), connecting (4) and (5) leaves (4) by a small fissure in the floor, and passes South towards a Mud Chamber out of which runs passage (5).

In this complicated system of passages and chambers (see plan, *Fig.* 1) a number of interesting features are found, including some deep red stalagmites, and a number of stalactites from which a very fine chime can be obtained when they are tapped. In one of the passages the water has washed away the loose rock from beneath the stalagmite covering the wall leaving only a resonant crust. The water dropping on this from the roof beats out a loud tattoo, which can be heard some way off, and has an extraordinary resemblance to the rhythm of a rhumba, hence the name which has been given to this passage.

Passage (6), a vertical rift known as Oxbow, curves round from the Hall to enter the main streamway just below the bottom of the drop, through a fissure 30 ft. above the floor of the cave. In it are to

be found some of the most beautiful stalactite formations in the cave, including some erratics over 2 ft. in length.

THE UPPER SERIES

The configuration of the upper system is extremely interesting. The first waterway by means of which one enters the cave is a narrow vertical fissure which soon widens and opens into a bedding plane in which the stream has cut a large groove, which gradually deepens and then carries on below this plane as a passage towards the First Grotto. There is a small muddy fissure on the left here which is believed to connect with tributary (3) of the Main Gorge. There is also a passage of some size which continues to the Ooze and then diminishes beyond, and finally closes at a point where the roof meets the surface of a small shallow pool. From the First Grotto into the second one ascends 10 ft. directly over the drop which leads on to the Ooze. Here there is a bedding chamber which slopes at an angle of about 15 degrees to the South. At the end of this there is a small round hole opening out into a high rift which leads up to a small passage which continues into a chamber some 30 to 40 ft. long. From this chamber there is a small fissure leading up towards the surface, and a passage at the end which leads to Loch Lomond and the Double Passage. At the end of the Double Passage there is a small bedding plane chamber which is choked with boulder debris. From here the passage turns abruptly left and upwards until a small stream enters which disappears down the 10 ft. Pot, thence through the Devil's Elbow and out into the Boulder Chamber. All these passages, the first 400 ft. of the cave, are less than 100 ft. below the surface.

THE FORMATION OF THE CAVE

There are at least four separate waterways which have linked up in such a way that one is able to penetrate the cave.

In my opinion, the first entry of the water into the cave was by one of the sink holes (V, VI, and VII) in the field to the West of Gruffy Field. Later, the present entrance became an active swallet, the sink holes dried up and the entrances caved in. The water then flowed down the first passage as we now know it into the Ooze and found its way beyond into the main cave system. At one period also, water found its way into passage (3) by means of the rift in the First Grotto. Later, the water found some other sink-hole, and made for itself another channel further East, leaving the first passage dry, but joining it lower down by way of the second chamber. This explains why one has to ascend in this part of the cave. After that, the water found its way

Eastwards in another joint of the limestone and disappeared into a bedding plane at the end of the Double Passage. Later again, the water entered further East, leaving these passages dry and again passed into the last mentioned chamber. Subsequent to that, it found its way down the] 0 ft. Pot into the Boulder Chamber where it now enters. The surface features tend to confirm this view. The present active swallet is at the base of a small cliff and above it there is a choked dry swallet. Towards the West there is a sloping bank leading to a small elevated col behind which there is a shallow depression, and further on there is the depression in which the cave is now entered. The stream receded as it dropped into successively lower strata, leaving elevated cols between them (see *Fig.* 2). The swallet hole to the East of the stream is a chamber which has fallen in since the formation of the active swallet, and accounts for the jumble of boulders at the upper end of the Boulder Chamber. Thus it appears that it is by a mere hydrological fluke that one is able to pass through four water-courses and entcr the cave.

Therc is evidence that the Main Chamber was once filled to a large extent by a large stalagmited mass of boulders which has been partially eroded by the present stream, leaving the Bridge and also the Gallery above the floor of the Main Chamber. There is no evidence to show that the large tributary (4) originally entered the cave at such a high level in the chamber. The tributary (4) must therefore be a very old water course.

Survey and photography have been carried out under great difficulties. The survey was mainly carried out with a prismatic compass and a dip-indicator working on the plumb-bob principle. The lower and more commodious parts of the cave were surveyed with a Miner's Dial where long sights could be used. Survey in the upper passages was most uncomfortable and members were often forced to be in pools with water dripping down the neck in order to sight the stations.

In conclusion, I should like to mention one person in particular who has always had an interest in this cave. That is Professor Tratman, now a prisoner in Japanese hands. We have always remembered the work he did in this area, and we know how happy he would have been to discover this cave himself.

We acknowledge with gratitude the help given by Mr. Young, of Lower Farm, Charterhouse, and the Axbridge Rural District Council, who gave permission and facilities for the excavation of the site.

The cave was named" G.B." in recognition of the work done by two members of the Society, F.]. Goddard and C. C. Barker, as it was chiefly due to their efforts that the system was opened up.