that vision, even with a good light, is restricted. In the outer part fairly large scallops indicate former flow outwards.

Kilcorney 2, 3 and 4 all belong to an older system it seems than Kilcorney 1. Kilcorney 1 is itself only active under flood conditions and is thus either on the way to becoming completely fossil or it is just possibly undergoing a process of rejuvenation. If the first interpretation is correct then here as at Vigo Cave (Hobbs and Nicholson 1963) we have parts of cave systems probably older than the last glaciation and as such they warrant further investigation.

The limestone plateau above Kilcorney 4 has a morphologically interesting series of minor depressions (dolines), all arranged along the N–S jointing. There is another doline above Kilcorney 2 and a depression above the Aven Chamber of Kilcorney 1.

The Cave of the Wild Horses. Kilcorney, Co. Clare, Ireland

By
F. K. Hanna, B.Sc.

(O.S. 6 in. to 1 mile, Clare, sheet 9)

Entrance: E. 22.6 in., N. 19.1 in.

Td. Kilcorney.

Total length: 1700 ft.

Tackle required:

40 ft. ladder	Pitch Chamber
30 ft. tether	
60 ft. ladder	60 ft. Pitch
30 ft. tether	
Hand line	15 ft. Pitch

The legend of this cave is that from time to time a number of wild horses emerge, usually in flood time, and they are very fine horses. Many attempts were made to capture them and eventually one was captured and put to stud, and improved the stock of Clare horses very much.

DESCRIPTION

The entrance to the cave lies at the base of a 100 ft. high limestone cliff (*Fig.* 75, 1), which bounds part of the Kilcorney depression, or turlough. The survey (*Plate* 38) shows that the cave may be conveniently considered as having an Upper Series and a Lower Series. The total surveyed length is 1,700 ft. covering a vertical range of some 160 ft. The cave overall gives the impression of being an ancient phreatic system, which has had

a complex history and is, at the moment, undergoing paraphreatic development.

The prime survey point was taken as the corner of a prominent boulder just outside the entrance, the accuracy is C.R.G. 4C–5C in both line accuracy and passage detail.

The entrance, which is level with the local ground level [337 ft. O.D.] leads into the Entrance Gallery. At first it is rather constricted, but the floor slowly drops away to allow one to walk upright. The roof of this passage, which appears to follow a joint, has a couple of blind avens in it. Main Junction is quickly reached, this being a slight widening of the passage where the Eastern Series branches off from the Main Series.

The Eastern Series, which is entered through a low crawl, is an irregular passage. In places it has washed pebbles on the floor, in others it has layers of mud. At its northern extremity it finally peters out in a small chamber with several fissures leading from it. At this point it is only about 40 ft. from the cliff face, and, apparently, quite often has a stream down it. The southern end is more interesting having an aven some 20 ft. high. The passage for the most part is small, only a couple of feet high and wide. There are many irregular openings leading off, though all are choked after a couple of feet. Most of the walls and floor are covered with a light-coloured mud. After a hundred feet or so the passage narrows down to a bedding plane, 2 ft. high and 15 ft. long. This leads into a small chamber, 7 ft. high by 8 ft. across. There is a number of badly eroded formations in it. Off from this chamber leads a separate bedding plane, only about 15 in. high. Squeezing along this a deep cross rift is met, the head of the 60 ft. pitch. This rift which runs N.E.–S.W. is thickly encrusted with calcite, so much so in fact that it is quite difficult to descend and more so to ascend. From the bottom of this rift runs another, in the same line, involving a further drop of 15 ft. A small passage runs from the bottom of this but it is not shown on the survey.

On the southern route from Main Junction there is an immediate ascent of 8 ft. through a boulder ruckle into Aven Chamber. It is quite evident that the floor of this chamber is composed totally of rocks, which have fallen from the roof of this chamber, it is presumed, as the result of solution. One of these rocks is interesting in that it contains a prolific deposit of the brochiopod, *Productus giganteus*, which is only found in quantity in one bed of the N.W. Clare Carboniferous Limestone. Also found in this chamber was what appeared to be—it was unreachable—a piece of drift wood some 15 ft. up the side of the Aven. This is an interesting marker in that it implies that the cave floods totally. [The entrance can be completely submerged E.K.T.].

A descent of 8 ft. from the floor of Aven Chamber and another short drop leads to the head of a very fine, regular, phreatic tube. This appears to have been cut into, rather than followed, the old continuation ending in a glutinous mud choke. The tube itself is about 4 ft. in diameter and, although sloping steeply downwards at first, levels out. A vadose trench is clearly distinguishable, again of regular cross section 12 in. across by 15 in. deep. The trench is filled with rounded stones and mud. It is deeper in places being as much as 3 ft. There is a variable depth of water in the trench, depending, it seems, on the amount of seepages present. The water does not flow rapidly.

After 160 ft. a most interesting feature is reached. The tube intersects with another in the manner shown (Sec 5). Because their common continuation is blocked after this point with mud it is impossible to tell whether the second tube represents a separate entity or is merely the continuation of the first tube. However the second tube has a greater cross section, has no vadose trench and so is probably a separate entity. A critical look at the junction area suggests that union took place under entirely phreatic conditions. The vadose trench is later and the mud later still.

The passage leading from the intersection runs for some 50 ft. before meeting Pitch Chamber. Along the roof of this part of the passage is a classical Bretzian half tube, about 6 in. across. This continues across the roof of Pitch Chamber, gradually losing definition, suggesting a mud choked continuation of the passage.

Pitch Chamber has an irregular shape and has been formed along a vertical rift. It is about 20 ft. across, and has several passages leading off at the upper level, though all except one are mud choked. The open one leads off the northern side. Again this passage is irregularly shaped, in places being only a couple of feet high, in others 30 ft. It has a false calcite floor in parts, and has numerous blind avens. A vadose trench cuts across the floor several times. In one spot it cuts straight into the limestone face and back again into the passage a few feet further along in a most surprising manner. The passage widens out near its end, and becomes ill-defined, and there are sometimes large amounts of waterborne debris and living flies, which indicate that the passage is near to the surface at this point. This is confirmed by the survey and by aural contact being established with people on the surface.

THE LOWER MAIN SERIES

The series is reached by descending the rift from Pitch Chamber. Half way down this pitch one swings round into another rift running N.E.–S.W. To the west the rift leads downwards, over some particularly sticky mud to a small pile of waterwashed stones. This suggests that water drains through this point.

If the rift is followed east instead one soon reaches a T junction, where the rift meets another perpendicular to it. This rift runs both north and south for a couple of hundred feet. The southern leg leads along over some pools of water, which can be crossed by chimneying, to the head of a 15 ft. pitch. The average height of this part of the rift is 20 ft. and its width varies from 2 to 20 ft. Every 30 ft. or so it is intersected by poorly developed cross rifts, the product of solution along joints. Most of these end after a few feet in mud chokes. In general, where there is a cross rift, the roof height is greater, in fact in many places there is an aven with a steady drip of water.

The descent of the pitch, which is in a small chamber, leads to a small passage at the bottom. There is a shingle floor in places. The passage continues for about 200 ft. to end in a maze of descending tubes and small boulder ruckles. Near the end is an aven, which is more than 20 ft. high but only 3 ft. across. The average size of the tubes at the end is 3 ft. square. The bottom of the second boulder ruckle is the deepest part of the cave, about 140 ft. below the entrance.

The northern limb of the main rift is similar in most respects to the southern, having, perhaps, more washed shingle and less mud on the floor. The roof height also varies more irregularly, going from 3 ft. to 30 ft. in a few feet horizontally. After 200 ft. it meets Gour Passage, so called because of the proliferation of gour pools along the floor. The north end of Gour Passage terminates in a loose boulder choke which was followed upwards for about 30 ft. and down which falls a small trickle of water. This flows over the gour pools and along the passage. In places the roof descends virtually to the water level, indeed the first time the passage was visited it was impassable. The water level appears to vary in this passage by up to 10 ft. yet there is no evidence of a piezometric surface as just to the side of the passage the water level is lower some 10 ft. In dry weather the passage could possibly be followed further.

COMMENTARY

That this cave has a complex history is obvious: it is also a cave which in many respects is unique in N.W. Clare. It is a cave which, although subject to water action, still manages to preserve and display an amazing variety of passage forms and it would well repay a detailed study. The following ideas are no more than initial hypotheses.

The oldest part of the cave is the phreatic tube, running from a mud choke just past section 3, to the mud choke at 5. In all probability this pre-dated the depression itself. Concurrent with this was the development of the passage with the half tube in its roof running beyond 6 (possibly 5) to, and through, what is now Pitch Chamber. At some later time the two phreatic tubes at 5 united. The prevailing water flow was very slow, with only a small pressure gradient, as the well marked cusps at the intersection show. A more rapid flow of water would have smoothed these over.

A change in the prevailing waterflow patterns then occurred, causing the area to become largely waterlogged. This caused solution of rock to occur in particular along the joints. This time the water flow was so slow that not even round passages were formed (i.e. ones which offer the lowest resistance to submerged waterflow), but passage shapes reflect the relative weakness of the rock to local solution.

The next stage, it is postulated, was the formation of the Kilcorney

depression by glaciation. Water escaped from this, carrying with it considerable amounts of boulder clay, via underground routes. Three of these are represented by the passages at 9–8, 16–17 and 1–3. Their highly irregular form reflects their mode of origin, flood water under paraphreatic conditions, and probably with quite a head, seeking to escape. The phreatic tubes mentioned earlier must have become blocked with clay to preserve their shapes so well. Pitch Chamber was formed during this period. Then, under a period of vadose development the boulder clay was washed out of 4–5–6 and beyond, and the small trench was incised. Later the entire cave, including all the passages beyond the present mud chokes, was filled with the thick, brown glutinous clay.

Present day developments date from this. The cave is flooded from time to time, whether from within or without it is difficult to say precisely, but the evidence points to the water welling up from deep down, rather than pouring through the entrances. The water entering the cave via 16 during ordinary floods contains a large amount of debris, whereas the bottom of the cave is absolutely free of large scale organic matter. Also the ends of the passages tend, on the whole, to be freer of mud than do the other parts. The sparkling Gour Passage, the washed stones at 7, the shingle at 13 indicate that water wells up.

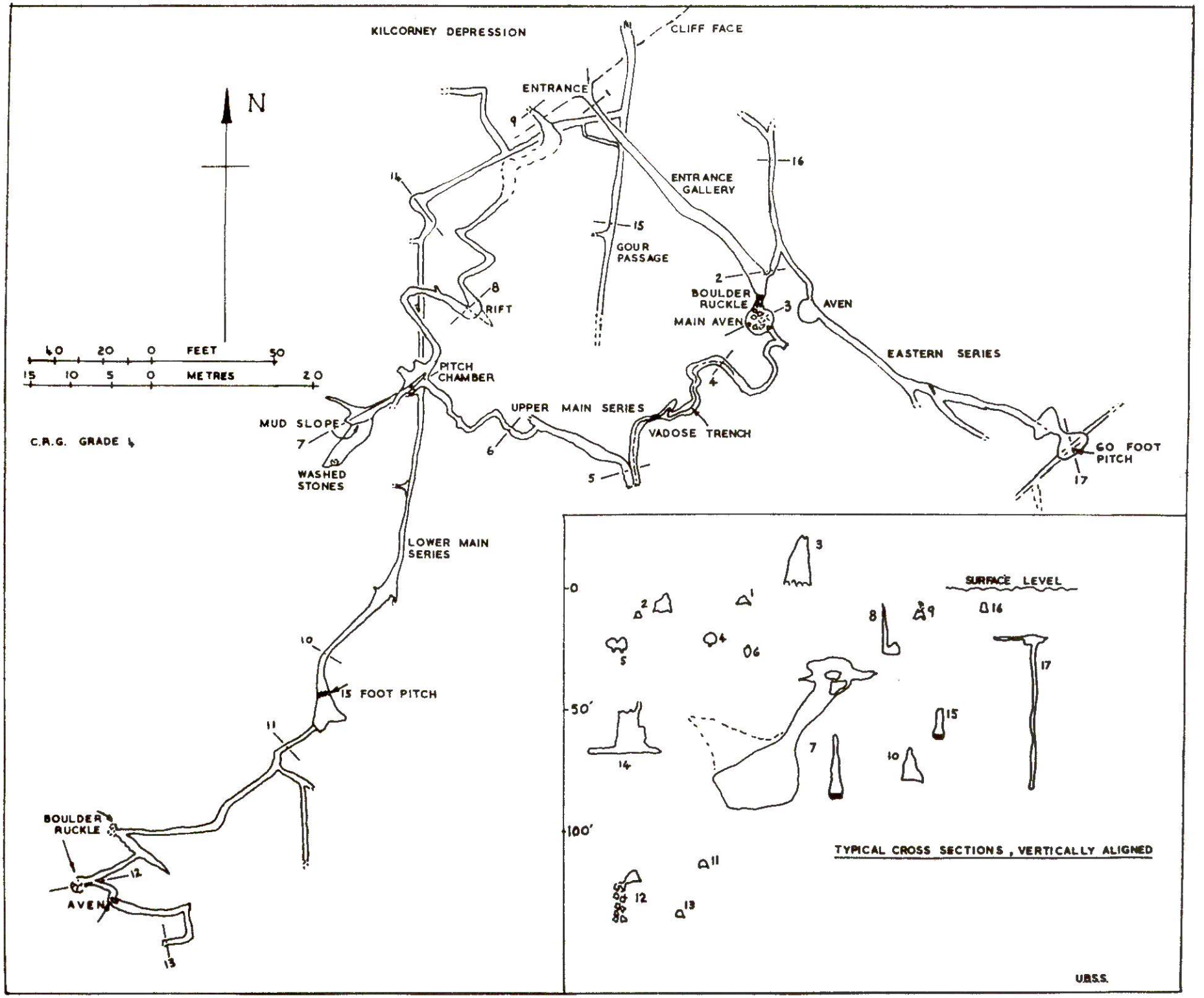
In what manner does the water reach this cave? It is reasonable to suppose that all the limestone locally is as soluble as that bounding this cave, and so there is probably a series of eroded joints criss-crossing the whole of the depression floor, and which fill up in time of flood, and which communicate with the ends of this cave.

It has been suggested from observations (Wilson, 1965, p. 8–9) that at present the cave is losing mud. This may be so, but it is at least partially offset by the gain in mud, which comes in from the roof. This can be seen, especially along the Lower Main Series, at every minor cross rift.

NOTES ON THE SURVEY

The original survey by U.B.S.S. was made in July 1962 but was not published. In 1965 the Irsh Spelæological Society published an account of the cave accompanied by a survey (Wilson, 1965). This survey differed considerably from the unpublished U.B.S.S. survey so it was decided to make a fresh survey with another survey team to check the U.B.S.S. survey. This was done by the society in July 1966. The old and the new surveys of U.B.S.S. tallied almost exactly but two extra checks were made. Firstly many back-bearings were taken as well as forward ones. Secondly the accuracy of the survey was further checked by locating the north end of west arm of the Upper Seires, one of the discordant passages, by a party inside the cave talking to a surface party at the predicted spot, close to 9 and just west of the entrance.

The survey data were computed into northings and eastings and plotted at 25 ft. to 1 in. The drawing was reduced photographically for publication. The instruments used were a metallic tape, read to the nearest inch and a hand bearing, liquid filled prismatic compass read to 1° and an Abney level. The accuracy claimed is rather better than C.R.G. grade 4C–5C.



CAVE OF THE WILD HORSES KILCORNEY

SURVEYED BY U.B.S.S. 62-6
DRAWN F.K.H.

PLATE 38

SEDIMENTS IN THE CAVE

These have been described in their proper places but in the entrance series at least there are two quite distinct deposits on the walls. On top is the thick glutinous mud already described. Beneath is a darker, less tenacious mud. This appears to be similar to the secondarily deposited muds in Kilcorney 2 and 4.

REFERENCES

Proc.=Proceedings, University of Bristol Spelæological Society.

COLEMAN, J. C., 1966, "Flooding in the Lisdoonvarna Area, County Clare". *Irish Spelæology*, 1, 32.

HOBBS, D. P. S., and NICHOLSON, F. H., 1963, "Vigo Cave and Neighbouring Pot Holes". *Proc.*, 10, 6–9.

LUCAS, C., 1740, "A description of the Cave of Kilcorney in the Barony of Burren in Ireland". *Phil. Trans.* [*Roy. Soc*], Vol. 41, No. 456, 360.

WILLIAMS, P. W., 1964, "Aspects of the limestone physiography of parts of Counties Clare and Galway, Western Ireland". *Unpub. Ph.D. Thesis. Uni. Camb.*

WILSON, R. F., 1965, "The Cave of the Wild Horses, County Clare". *Irish Spelæology*, 1, 6–9.