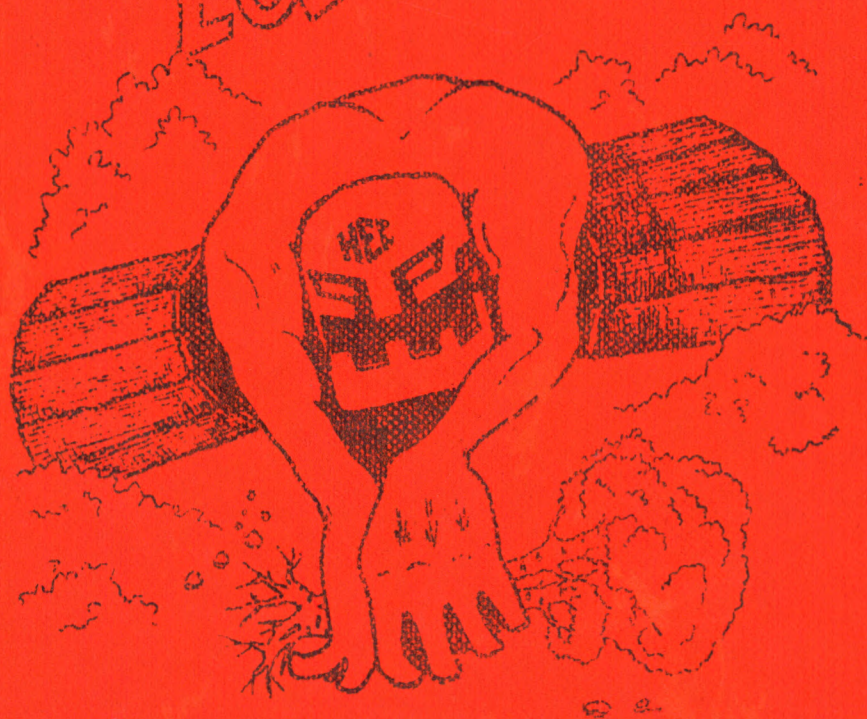


Southern Caver

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DECEMBER '82

RAIDERS OF THE LOST PARK



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REPORT ON INVESTIGATIONS OF GLACIER CAVES
IN CHUGACH NATIONAL FOREST, ALASKA*

Masataka Izumi

Abstract

In October, 1981, a caving team from the Kwansei Gakuin University Exploration Club visited Alaska to investigate glacier caves. This expedition followed previous visits in 1978 and 1979. Two new caves were discovered. One of these was in the Explorer Glacier and the other was in the Byron Glacier. Both are near Portage in Chugach National Forest, Alaska.

The entrance of the Explorer Glacier Cave was at the toe of the glacier. It was an obstruction cave within which we saw many ice speleothems. These were similar to speleothems in limestone caves, and included deformed icicles, ice helictites, flow ice and others.

In the Byron Glacier, a new cave was found. It was an ablation cave. Its entrance was to the right east side of a glacier stream in the middle of the glacier.

* THE THIRD EXPEDITION TO THE GLACIER CAVES IN
ALASKA, KWANSEI GAKUIN UNIVERSITY EXPLORATION
CLUB CAVING TEAM, JAPAN.

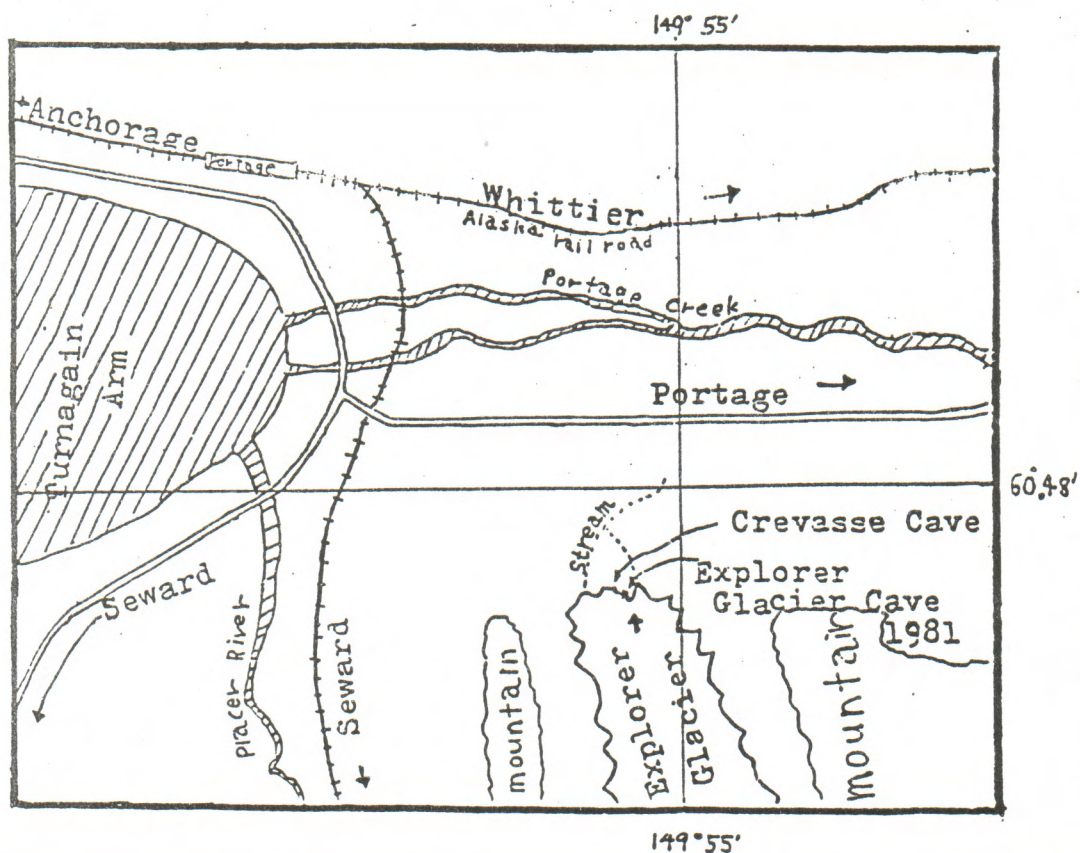
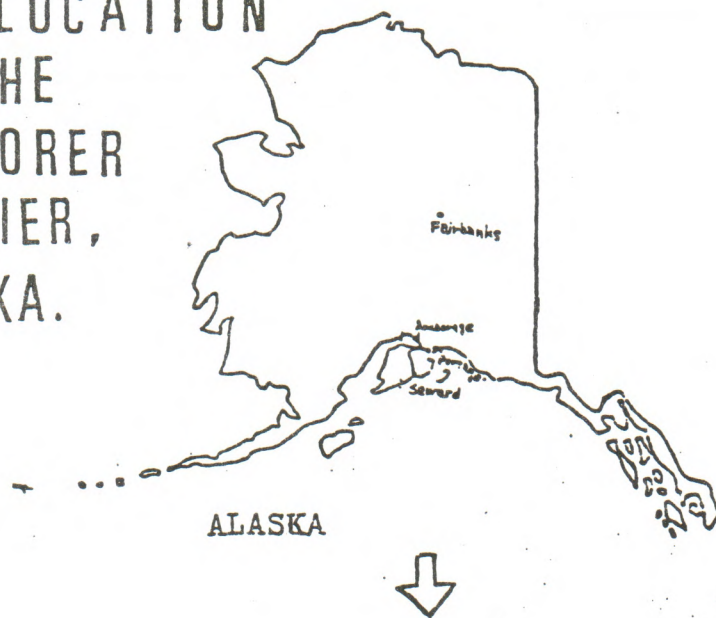
In October 1981, the Exploration Club of Kwansei Gakuin University went on its third expedition to the Portage area in Alaska. (Fig. 1). We investigated Byron Glacier and Explorer Glacier, because it was comparatively easy to approach them, and our expedition team had discovered glacier caves there in 1978 and 1979.

This October was rather warm in Alaska, and it rained heavily. When we camped at Portage area for two weeks, there were only three days that did not rain. Our investigation was concentrated on these three days.

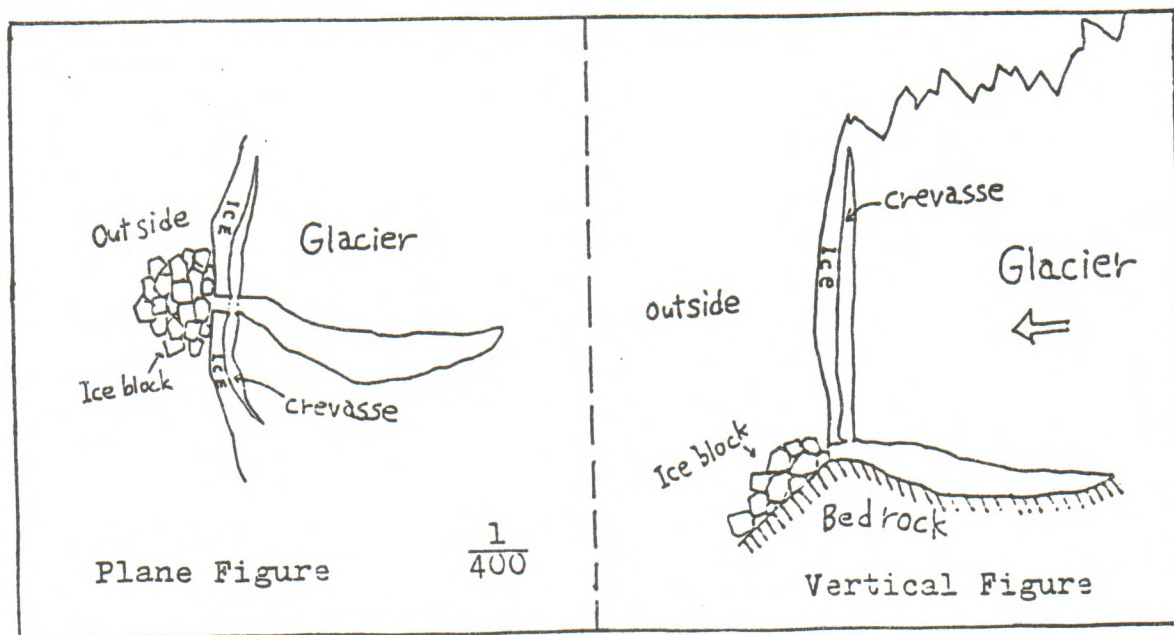
October 17 was the first fine day since we had come to Alaska, we went to Explorer Glacier area by car and then walked to the glacier from Beaver Camp Ground.

Explorer Glacier is a hanging glacier. We climbed the mountain along the creek which ran from the right side of the glacier snout. It took about one hour to reach the snout of the glacier. We went east along glacier snout, and we found some obstruction caves between the edge of the glacier and the earth. These caves were very small: about 0.7m high, 1.2m wide and less than 15m long. There were no ice speleothems in them. We found one cave which intersected a crevasse in the glacier (Fig. 2). The part of this cave which was formed by obstruction was not big, -being 15m long. About 0.5m inside the cave entrance, the cave was crossed a crevasse which was closed at the top and bottom. This crevasse was about 0.4m wide and about 15m high and its ceiling was blue. In this crevasse, blue light came through the ice from outside. An unusual ice speleothem connected both sides of the crevasse. It seemed that this speleothem was

THE LOCATION OF THE EXPLORER GLACIER, ALASKA.



(Figure.1) Location Map, Explorer Glacier, Alaska.



Crevasse and obstruction cave (Figure.2)

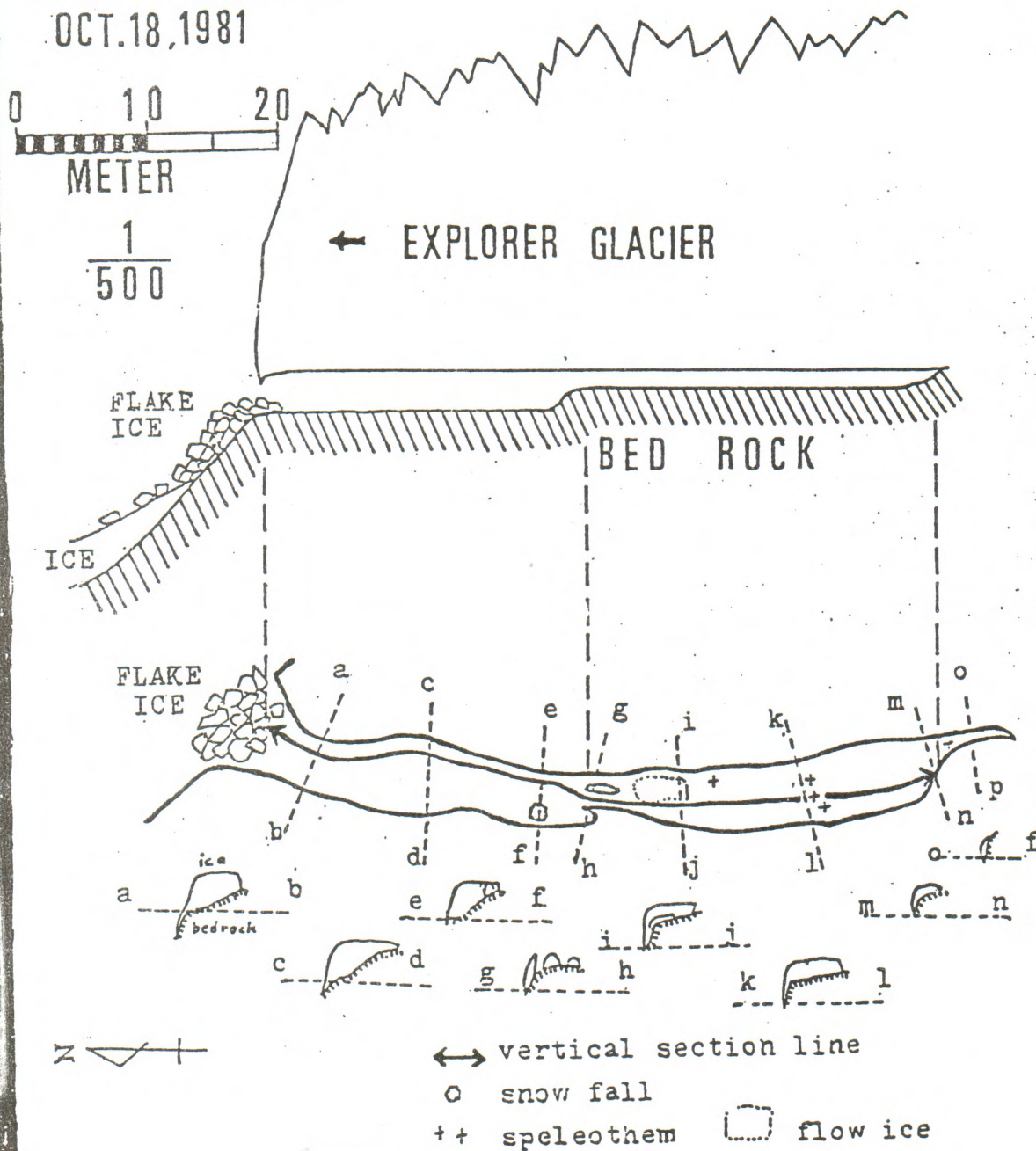
EXPLORER GLACIER CAVE 81'

CHUGACHI NATIONAL FOREST, ALASKA

SURVEY BY M.IZUMI, Y.NAKAMURA, N.NAGAI

MAP BY M.IZUMI

OCT. 18, 1981



KWANSEI GAKUIN UNIV. EXPLORATION CLUB

(Figure.3)

created by slow bending an ice bar. Perhaps, as the two sides of the crevasse separated, a connecting piece of ice had remained, which was deformed to produce this speleothem. These such speleothems were found in this crevasse. We continued to make our way toward the center of the glacier snout. We could see the entrance of a glacier cave which we eventually investigated and have term the Explorer Glacier Cave. (Fig. 1 & 3). The cave entrance was about 3m high and 7.5m wide. The cave ran parallel to a subglacial stream. It was about 67m long. This was in an ice fall area. Around the entrance were many ice blocks which we had to cross to enter the cave. This was an obstruction cave. We could see no scallops in the wall and ceiling except in the entrance area. But, on the wall and ceiling, there were many grooves, running from the end of this cave to the entrance, parallel to the glacier stream. These grooves must have been scratched by the bedrock as the glacier flowed over it. Icy breakdown was found only around the entrance of the cave, with none inside the cave. The floor of the cave sloped constantly to the left as went in. On the floor was only one big rock but some smaller rubble was present.

Twenty-five meters from the entrance of the cave, snow had entered through the ceiling on the right side. Possibly, a crevasse in the ceiling had formed a second entrance here. Thirty five meters inside, the height of the cave was about one meter, so we had to crawl. The floor was fairly flat. In this area, we

found a number of ice speleothems that were new to us. Also the grooves on the ceiling were more prominent. Deformed icicles, ice helictites, floor ice, hair ice, and other speleothems were found. They sparkled beautifully, reflecting our lights. In places, the floor was covered with an ice layer about 15cm thick. This ice was on the bedrock floor of the cave and appeared to be flowing along the slope of the bedrock. Near the end of the cave, the passage became narrower (30cm wide). There, the rock was on the right and the ice of the glacier was on the left. The passage continued for 6 meters before it pinched out. The surface of the cave had very beautiful ice speleothems everywhere. The hair ice in this section of the cave was particularly beautiful.

Special Mention Should Be Made of Speleothems Altered By the Movement of The Glacier

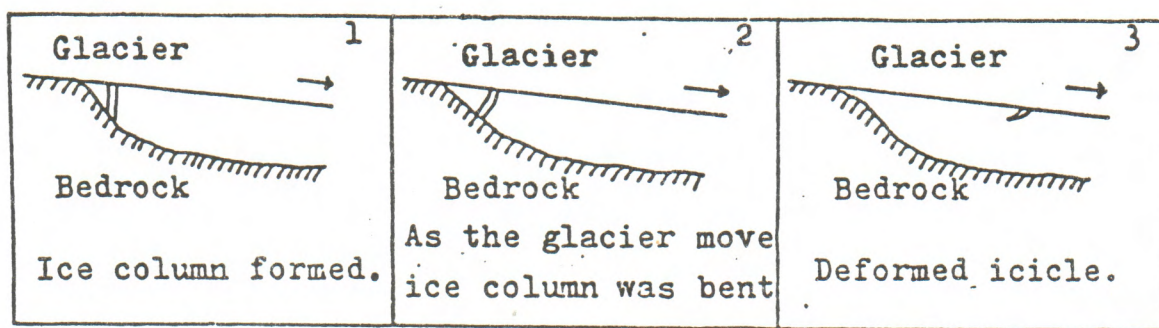
All ice stalactites seen in the Explorer Glacier Cave in 1981 were bent, in the same direction, pointing opposite to the direction of the glacier's movement.

The altered stalactites were found in a single line near cracks in the ceiling of the cave. Perhaps, water flowed into the cave through a narrow crevasse, and turned into ice as soon as it flowed into the cave. In this area, ice speleothems formed. As the glacier moved, some ice broke off the glacier's bottom (the ceiling of the cave). The ice column bent because of its elasticity. Gradually, it parted from the point of contact with the earth, and took its present form.

The fact that ice columns are bent by movement of the glacier was first reported by Peterson and McKenzie (1968) in an invest-

igation of the Casement Glacier Cave; "In some instances, because the bases of the columns were frozen to bedrock and the top were attached to the bottom of the glacier, columns were deformed by the flow of the glacier, which was about 1.8cm per day".

Though this deformed icicle has completely moved away from the bedrock, it retained the original form of the ice column. This kind of deformed icicle has not previously been reported from any other glacier cave.



(Figure.4) Deformation of ice columns

I.N.N. Cave in Byron Glacier

From a parking area near Byron Creek, we walked about 20 minutes along Byron Creek, to Big Snow Field. Within this lay Big Snow Field cave which was about 130m long.

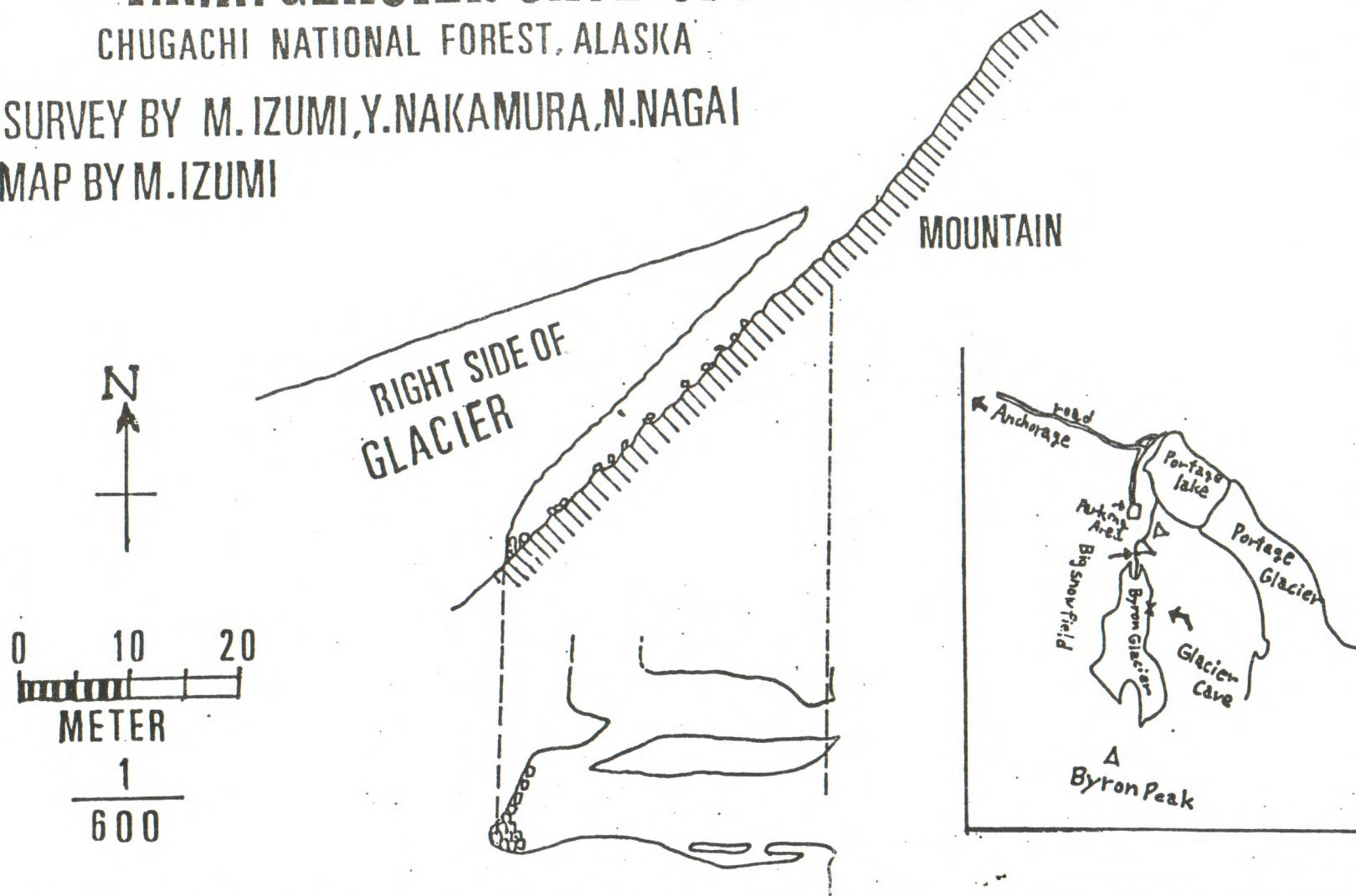
After walking about 10 minutes along the creek, we reached the snout of Byron Glacier. The snout area of this glacier was covered with many blocks of stone. We climbed the glacier to

I.N.N. GLACIER CAVE 81' IN BYRON GLACIER

CHUGACHI NATIONAL FOREST, ALASKA

SURVEY BY M. IZUMI, Y. NAKAMURA, N. NAGAI

MAP BY M. IZUMI



(Figure.5) I.N.N. Glacier Cave, 1981

the line between the area of stones and the area of clean ice of the glacier. Then, we found a glacier cave in the right east side of the glacier. This was a new cave. The arched entrance of this cave was 4m high and 8m wide. This cave was formed along the 46 cliff. It was about 70m long. We found a passage that had another entrance in the deepest point. This passage was parallel to the main route. As there were many falling stones, we had to discontinue mapping and leave the cave before we could survey it completely. This was an ablation cave. Perhaps, there were snow field on the mountain above the cave. In summer, snow melt flowed under the bottom of the glacier with warm air, forming this cave.

By the way, Mr. Izumi, Mr. Nakamura and Mr. Nagai found this cave. So, I named it "I.N.N. cave" from the initials of their names.

Acknowledgements

We left Japan on October 2, and reached Seattle on same day. In Seattle, Dr. William R. Halliday who had informed us of the information of the glacier cave by letter took care of arrangements. At first, we were going to investigate the Paradise Ice Caves in Mt. Rainier but, as the main entrance of this cave had collapsed at the end of September 1981, we could not investigate it. And, because of bad weather in October, we could not investigate other caves on Mt. Rainier.

Then, we went to Alaska, where we met Mr. Chuck Iliff and Mrs. Alice Iliff, who gave us information about glacier caves near Anchorage. Also we attended a meeting of the Glacier Grotto of the National Speleological Society. We met Dr. Julius Rockwell, president of this organisation, who gave us additional information about glacier caves.

Also we were assisted by Japanese who attended the same university: in Seattle, Mr. Katsuo Minami and his family, in Anchorage, Mr. Tsuguo Arai and his family.

We are very grateful to all them, especially, to Dr. and Mrs. William Halliday.

During his visit to Japan from December 20, 1981, to January 3, 1982, I met Dr. Jay Rockwell in Tokyo and he kindly corrected our report on the Explorer Glacier Cave. Also Dr. William R. Halliday and Mr. Kevin Kiernan and Dr. Garry D. McKenzie kindly corrected our report. I thank them very much.

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1968 "Observation of a Glacier Cave in Glacier Bay National Monument, Alaska" : National Speleological Society Bulletin VOL. 30, No. 3, pp. 47-54, July 1968.

Participants in this expedition

Masataka Izumi, Yoshiharu Nakamura, Nobuaki Nagai, Kazunori Hirotsuka.

Masataka Izumi

4-11-12, Nishitomigaoka, Nara, 631 Japan

RIFT CAVE - JF 34

Russell Fulton

Rift Cave is situated in the Eastern Junee at an altitude of approximately 650 metres and is one of the easternmost of a series of inflow caves that includes Khazad-Dum, Cauldron Pot and Niagara Pot.

Access to the cave is by way of a track starting from the Junee Quarry Road. Walking time to the cave is approximately 30 minutes.

Originally discovered in 1946 by Iredale, Steane and F.C. Brown it was subsequently lost until its relocation in 1962 and exploration by the T.C.C. to a draught hole at an estimated depth of 130m. A dig was undertaken but stopped after 2m.

A grade 2 survey was completed by Kevin Kiernan of S.C.S. in the early 70's (see Southern Caver 10(3)) for the map and an accompanying description of the cave by Leigh Gleeson).

Rift Cave was surveyed again by S.C.S. over three trips in 1981 and 1982 at A.S.F. grade 44. The surveyed depth is 130 m, slightly less than the initial estimate. The strong draught reported from earlier trips was not present during the survey trips, however a slight draught was noticed at the dry sump.

It would appear that the only possibilities for extension left in the cave now are another dig at the sump or a climb up into the area directly above the sump.

RIFT CAVE JF 34 PLAN

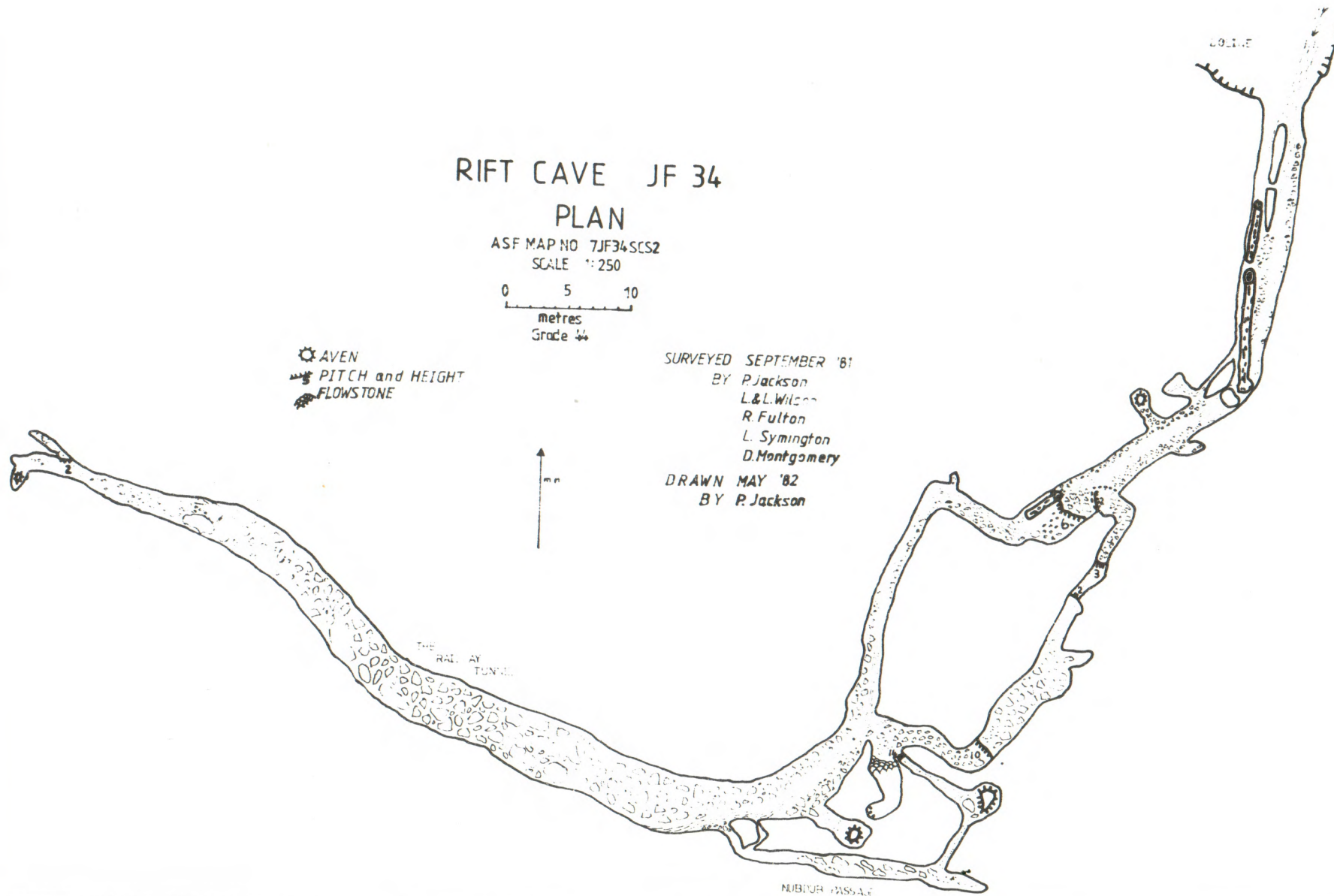
ASF MAP NO 7JF34SCS2
SCALE 1:250

0 5 10
metres
Grade 1/4

⊙ AVEN
✱ PITCH and HEIGHT
✱ FLOWSTONE

SURVEYED SEPTEMBER '81
BY P.Jackson
L.&L.Wilson
R.Fulton
L.Symington
D.Montgomery

DRAWN MAY '82
BY P.Jackson



SEARCH FOR ARCHAEOLOGICAL SITES ON THE JANE RIVER

22nd February - 26th February 1982

Stephen Harris

The team consisted of Richard Cosgrove (archaeologist), Stephen Harris, and Chris Rathbone (Trainee Ranger).

The aim was to explore as much of the limestone region above Humbaba Gorge on the Jane River to find caves and shelters likely to contain archaeological deposits. We were to spend 5 days on the Jane, having arranged to float down to the main party base camp by midday on the following Saturday.

Monday 22 February - The main party were transferred in three helicopter lifts to Eagle Creek on the Franklin River. In the early afternoon we were on the fourth lift on our way to the Jane River. The chopper was heavily laden as we were also carrying spare drums of fuel which we unloaded at Blackman Bend Helipad, on the Franklin River. We then flew up the Jane over the Humbaba Gorge through which we were to later struggle under difficult conditions. From the comfort of the helicopter on this sunny warm day, the whole Southwest looked spectacular.

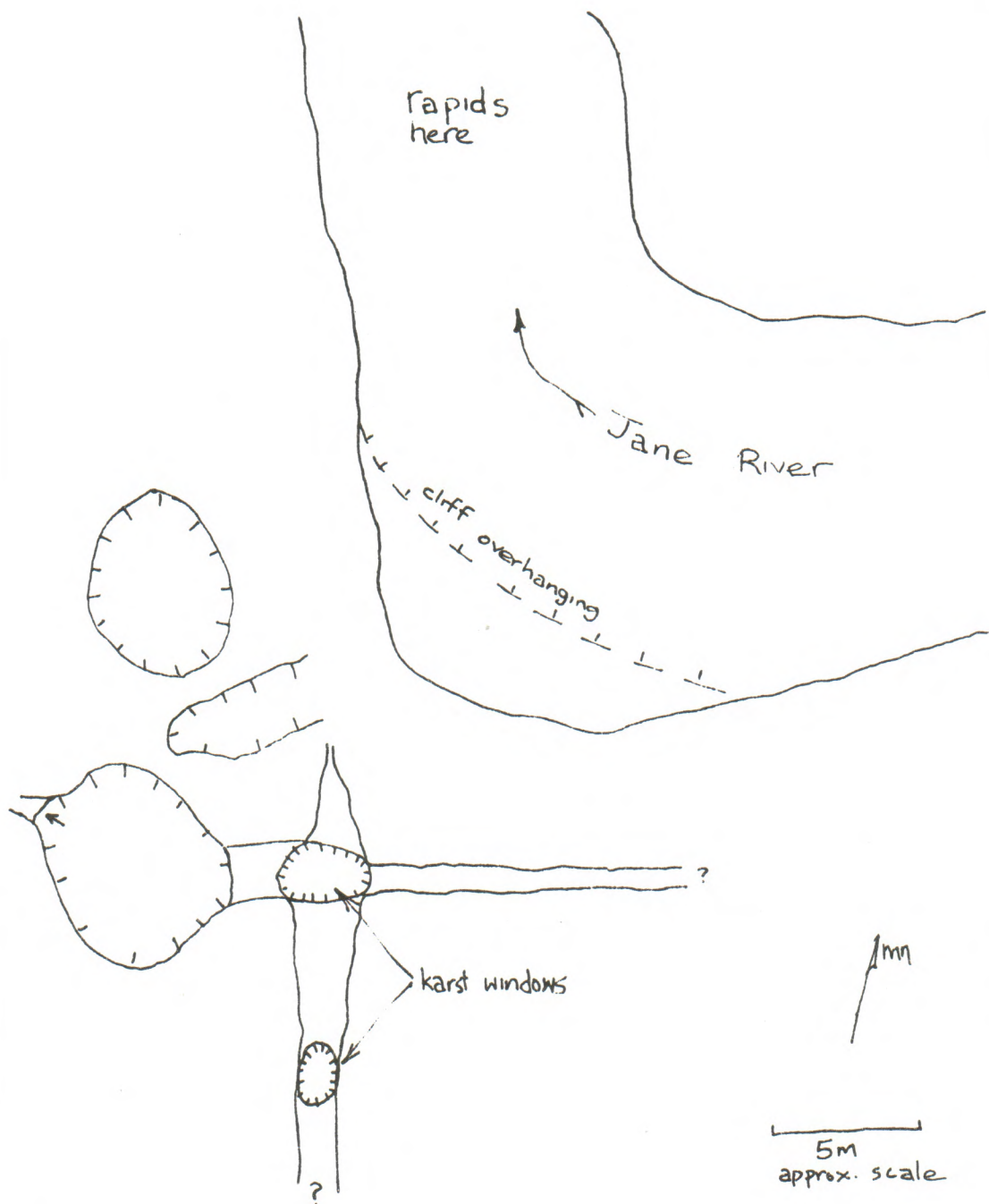
The helicopter landed at a small clearing in buttongrass not far from an old hydrographers hut to which we moved our gear. After cleaning up the deteriorating mess in the hut to make it habitable,

Sketch JR 1982/1

Karst Features at Franklin map

Sheet 014010

ASF Grade 1



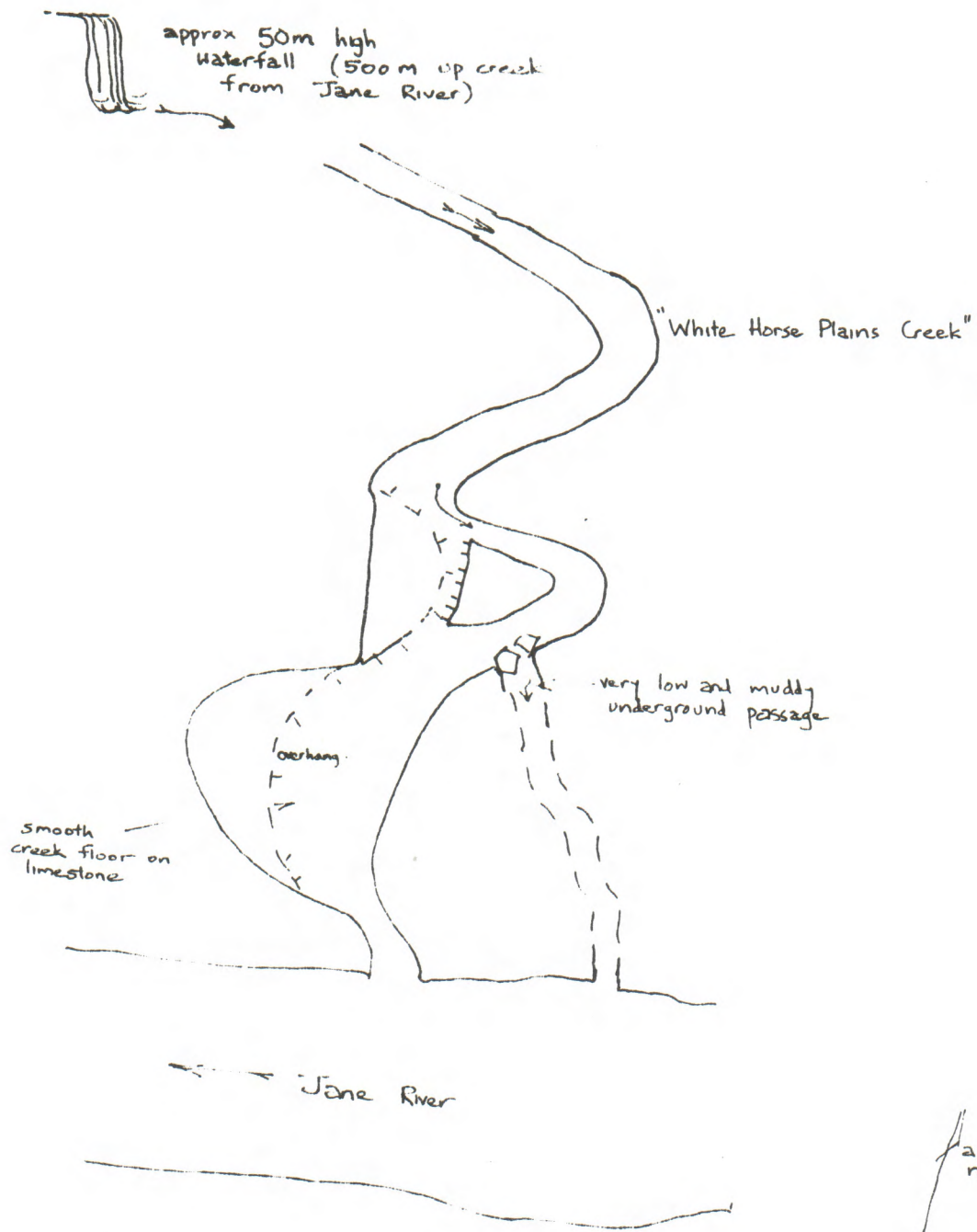
and after refreshment, we set about preparing our boat for a first journey.

We went upstream for approximately 700 metres dragging the boat through several rapids. We reached a right angled bend in the river (Franklin sheet 014010) with limestone cliffs rising approximately six to eight metres above the water. This area was explored and revealed some solution dolines as well as some interconnecting tunnels. These tunnels were muddy and fairly small in section (approx. 2m x 1.5m - 2m) and were interrupted by karst windows. In heavy winter floods these caves may carry some water from the Jane River itself. See sketch JR 1982/1.

Tuesday 23 February - We awoke to an overcast day. We had already decided to push upstream as far as possible to see the extent of the limestone and to traverse some of the limestone away from the river. Rain started falling heavily and breakfast was a slow and deliberate event.

We determinedly set off, motoring, dragging and wading up river. The mist shrouded forests rising above, hemmed us in our shivering cold riverine corridor. It was to prove a bad day. We soon discovered large tears in the rubberized fabric floor of the Beaufort boat. The boat was old and the rubber perishing. The chambers needing pumping with air frequently and we had no repair kit, a regrettable oversight. All this resulted in us sitting on slowly deflating buoyancy chambers with our legs in water.

We eventually arrived at the limestone/quartzite contact located at about 024004. We then floated back downstream to the creek



not to scale
diagrammatic

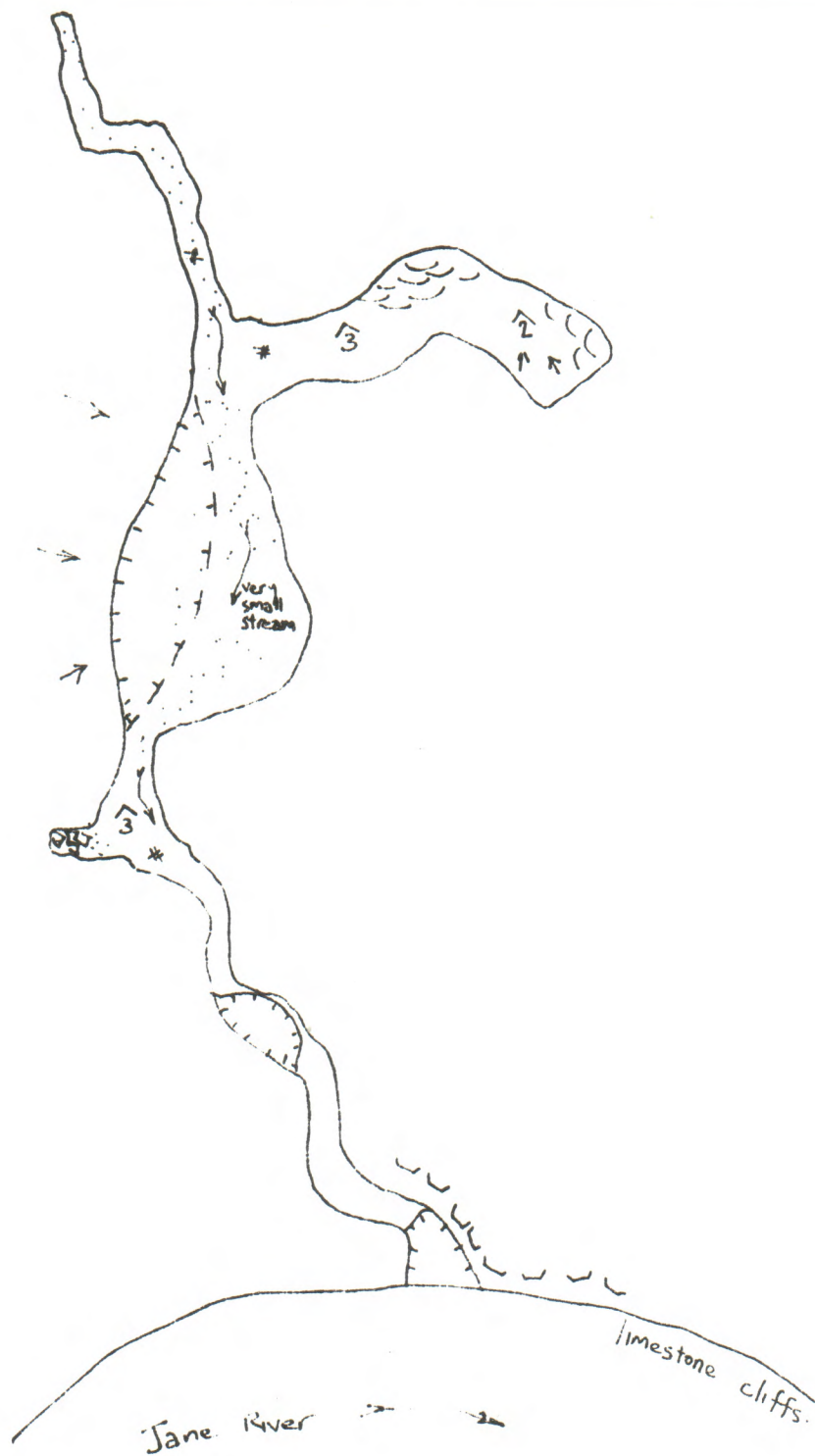
sketch
JR 1982/2
ASF. Gr. I

which flows from White Hills Plain, and followed it up to a very high and impressive waterfall located at about 024008. The limestone however unfortunately cut out as soon as we began to-attain height, a matter of only about 200 metres from the river. The only karst features found on the creek were within a short distance of the river and included overhangs and a low horizontal passage (see sketch JR 1982/2). Cut Huon Pine stumps were noticed on the lower reaches of the creek, and Prionotes cerinthioides (climbing heath) was abundant and in flower. Some fruitless exploration of the forest adjacent to the creek was carried out.

Returning to camp in a boat deprived of much of it's buoyancy, we scraped bottom in rapids where we would otherwise have floated easily over them.

After arriving at our camp about 4 p.m. where we fell upon a belated lunch, we walked upstream along the northern side of the river to the bend located at 014014. Two creeks flow into the river in this vicinity and some underground flow was evident but underground sections were always separated by karst windows. Small cliffs and steep sided dolines were found adjacent to the larger creek as we followed it up. A slightly inland route was followed back to the hut and small depressions with overhangs were investigated. No evidence of aboriginal man could be found.

The vegetation in the vicinity of these creeks was incredibly dense. Tangled thickets of Anodopetalum biglandulosum (horizontal) blocked our path at every turn. While the usual rainforest species were observed here no Acradenia franklinii (Whitey wood) was seen



JR 1982/3
ASF. G. I

10m
approx scale.

approx
m.n.

- in fact it was not observed near the river anywhere upstream of Goodwins Creek. A very small patch of approximately 5 plants of the uncommon and endemic Pseudopanax gunnii was observed in this locality.

Wednesday 24th February - This fine day began with heavy mist in the valley. Our next object was to explore the limestone adjacent to the river on the south bank between our camp and Goodwins Creek, a distance of about 1.3 kilometres. After rafting across the river we commenced exploration of dolines, holes and small bluffs on our route. The height of much of this land lay no more than 6-10 metres above the present level of the River and in severe winter floods the water might conceivably flood into much of the forest.

The area is very cavernous but there is no depth or continuity in any of the caves and likely occupation sites were not found. All caves observed had a number of karst windows. Some rillenkarren was observed on the surface but it is heavily vegetated with moss.

Patches of Anodopetalum, Trochocarpa and Gahnia made the going tough in places but there were some areas of magnificent rainforest with an unbroken canopy and an open understorey comprising ferns and moss. One cave is shown in sketch number JR 1982/3.

When Goodwins Creek was finally reached a coloured tape was tied to a tree to enable us to locate the stream easily from the boat.

We returned to camp late in the afternoon in great anticipation of a veal dish for evening meal. Unfortunately blowflies had beaten us to it and the meat was alive with maggots. Not to be

cheated of our luxury we picked and washed the creatures off and then cooked it after brief marination in some whiskey.

The tear in the floor of our boat had to be repaired somehow so that we could travel on the river to Goodwins Creek the following day where we would explore inland and then camp at the entrance of Humbaba Gorge. Richard, with much patience spent two hours with a thread and needle to do a beautifully neat and tight sewing job on the tears. While he did this, Chris and I burnt a huge amount of rubbish collected from around the hydrographers hut.

Thursday 25th February - Shortly after we had prepared our boat for the journey, rain fell heavily. Squalls or rain came over us all day. After much searching, a poor but adequate campsite was found at around 4 p.m. We were forced to clear a small area of scrub for the tents. The day had disappointingly left no time for exploration of Goodwins Creek.

We were cold after being on the river but a hot meal and a ration of whiskey cheered us considerably. Rain began to fall heavily after our meal and it was continuous through the night. At 5 a.m. I had to get out of my bag to retie the boat higher.

Friday 26th February - We awoke to driving rain and found it impossible to get a fire going. Tea was brewed on a Primus. With a rising stream, deteriorating weather, Humbaba Gorge as an unknown quantity and a midday Saturday arrival deadline, we abandoned any hope of furthering our exploration of the Goodwins Creek area. We decided to run for Flat Island Base Camp and our "mother party".

It took seven hours of hard work including 5 hours to portage the Gorge in alternating rain, hail and sunshine, to get to the camp on the Franklin, where we arrived at about 6 p.m. We had each made 3 trips of the portage which was a bit more than one kilometre long. Some spectacular rapids are to be found in this Gorge. In one place a 1 metre diameter cut Huon pine log lay irrevocably jammed between rocks and trees. It had obviously been cut a very long time ago and stamped clearly on its end were two sets of initials: FG and CA.

In retrospect the heavy equipment, including the outboard motor, severely retarded our progress. A future exploration party should be dropped somewhere above the Surveyor Range with light equipment and smaller rafts with paddles.

"REMARKABLE CAVITIES IN MOUNTAINS, ETC."

Reprinted from: BUFFON'S NATURAL HISTORY

of

The Globe, and of Man;

Beasts, Birds, Fishes, Reptiles and Insects.

Corrected and Enlarged

by John Wright M.Z.S.

LONDON 1831

There are other abysses, which are not on the summits of mountains. Many of them, perhaps all, are only openings to caverns. Plot, in his Natural History of Staffordshire, speaks of a gulf called Elden Hole, in Derbyshire, on the side of a hill, the opening of which was not more than seven yards one way, and fifteen the other, and to which no bottom could be found. Cotton says, that he sounded it in vain with a line of eight hundred fathoms. Some years since, however, a Mr. Lloyd succeeded in exploring this supposed bottomless profundity. "He was let down," says the narrative, "by two yards, though he descended obliquely, he could assist himself with his hands and feet; but below this, the rock projecting in large irregular crags, he found it very difficult to pass; and on descending ten yards more, he perceived that the rope by which he was suspended was at least six yards from the perpendicular. From hence, the breadth of the chink was about three yards, and the length about six; the sides were very irregular, and the crags were covered with moss, besides being wet and dirty. Within fourteen yards of the bottom, the rock opened on the east side, and he swung till he reached the floor of the cavern, which was at the depth of sixty-two yards from the mouth. The light, however, which came from above was sufficient to read any print. Here he found the cavern to consist of two parts: that in which he alighted was like an oven; the other, where he first began to swing, was a vast dome, shaped like the inside of a glass-house, and a small arched passage formed a communication between them; in this passage the stones which had been thrown in at the top (with the hope of filling up the abyss) formed a slope, extending from

the wall at the west side of the first dome almost to the bottom of the second cave or oven, so that the farther end of the cave was lower by twenty-five yards than where he alighted. The diameter of this cavern he judged to be about fifty yards; the top he could not trace with his eye, but had reason to believe that it extended to a prodigious height; for, when he was nearly at the top of one of the incrustated rocks, which was an elevation of at least twenty yards, he could even then see no enclosure of the dome, though of course he saw much farther than when he stood at the bottom. After climbing up a few loose stones on the south side of the second cavern, he descended again through a small aperture, into a little cave, about four yards long and two yards high, which was lined throughout with a kind of sparkling stalactites of a very fine deep yellow, with some small stalactitical drops hanging from the roof. He found a noble column, of about ninety feet in height, of the same kind of incrustation, facing the first entrance. As he proceeded to the north, he came to a large stone, that was covered with the same substance, and under it he found a hole two yards deep, that was uniformly lined with it. From the edge of this hole sprung a rocky ascent, sloping like a buttress against the side of the cavern, and consisting of cast solid round masses, of the same substance and colour. He climbed up this ascent, to the height of about sixty feet, and got some fine pieces of the stalactites, which hung from the craggy sides of the cavern which joined the projection he had ascended. Having got down, which was not effected without considerable difficulty and danger, he proceeded in the same direction, and soon came to another pile of incrustations of a different kind and colour; these being much rougher, and not tinged with yellow but brown. At the top of this he found a small cavern, opening into the side of the vault, which he entered, and where he saw vast drops of the stalactites hanging, like icicles, from every part of the roof; some of which were four or five feet long, and as thick as a man's body. The greater part of the walls of the large cavern, or vault, was lined with incrustations of three kinds: the first was the deep yellow stalactites; the second was a thin coating, resembling a light-coloured varnish (this covered the limestone, and reflected the light of the candles with great splendour); the third was a rough efflorescence, every shoot of which resembled a kind of rose flower. He now returned through the arch which separates the two vaults, reascending the slope of loose stones, which greatly lessened the magnificence of the entrance into the inner cavern. When he had again fastened the rope to his body, he gave the signal to be drawn up, which he found much more dangerous, and difficult than being let

down, on account of his weight drawing the rope between the fragments of the rocks, to which he adhered, and his body jarring against the sides, notwithstanding the defence he made with his hands. The rope also loosened the stones over his head, the fall of which he dreaded every moment; and if any of them had fallen, he must inevitably have perished. Being obliged to ascend with his face towards the wall, he could not make any particular observations on the rocks that were behind or on each side of him; he saw, however, under the projection of the rock, where the passage first became narrow, the entrance of a cavern which seemed to penetrate a great way, but he could not get into it".

A far more terrific abyss exists in the bowels of a rock near Castleton, in Derbyshire, into which a level has been driven, in search of lead ore. The visitor enters by a descent of a hundred and six steps, and then proceeds along a canal, which has been blasted out of the solid stone. "At the distance of six hundred and fifty yards from the entrance, the level bursts into a tremendous gulf, whose roof at bottom is completely invisible; but across which the navigation has been carried by flinging a stone arch over a part of the fissure where the rocks are least separated. Here, leaving the boat, and ascending a stage erected above the level, the attention of the visitor is directed to the dark recesses of the abyss beneath his feet; and firm, indeed, must be his resolution, if he can contemplate its depth unmoved, or hear them described without an involuntary shudder. To the depth of ninety feet all is vacuity and gloom; but beyond that commences a pool of Stygian waters, not unaptly named the Bottomless Pit; whose prodigious range may in some measure be conceived, from the circumstance of its having swallowed up more than forth thousand tons of rubbish made in blasting the rock, without any apparent diminution either in its depth or extent. The guide indeed informs you that the latter has not been ascertained; yet we have reason to believe that this is incorrect, and that its actual depth of standing water is about three hundred and twenty feet. There cannot be a doubt, however, but that this abyss has communications with others still more deeply situated in the bowels of the mountain, and into which the precipitated rubbish has found a passage. The superfluous water of the level falls through a water-gate into this profound caldron, with a noise like a rushing torrent. This fissure is calculated to be nearly two hundred and eighty yards below the surface of the mountain; and so great is its reach upwards, that rockets of sufficient strength to ascend four hundred and fifty feet have been fired without

rendering the roof visible. The effect of a Bengal light discharged in this stupendous cavity is extremely magnificent and interesting."

A dreadful cavern in India is described by Aelian. "In the country of the Arian Indians", says that author, "is to be seen an amazing chasm, which is called The Gulf of Pluto. The depth and the recesses of this horrid place are as extensive as they are unknown. Neither the natives, nor the curious who visit it, are able to tell how it first was made, or to what depths it descends. The Indians continually drive thither great multitudes of animals, more than three thousand at a time, of different kinds, sheep, horses, and goats; and, with an absurd superstition, force them into the cavity, whence they never return. Their several sounds, however, are heard as they descend; the bleating of sheep, the lowing of oxen, and the neighing of horses, issuing up the mouth of the cavern. Nor do these sounds cease, as the place is continually furnished with a fresh supply."

Great cavities and deep mines are generally in mountains, and they never descend to a level with the plains; therefore, by these cavities, we are only acquainted with the inside of a mountain, and not at all with the internal part of the globe.

It was for a long time thought that the chains of the highest mountains ran from east to west, till the contrary direction was discovered in the new world; but no person before Mr. Bourguet discovered the surprising regularity of the structure of those great masses: he found, after having crossed the Alps thirty times in fourteen different parts, twice the Apennine mountains, and made several tours in the environs of these mountains, and in mount Jura, that all mountains are formed nearly like the works of a fortification. When the body of the mountain runs from east to west, it forms prominences, which face as much as possible the north and south; this admirable regularity is so striking in valleys, that we seem to walk in a very regular covered way; if, for example, we travel in a valley from north to south, we perceive that the mountain which is on the right forms projections or angles which front the east, and those of the mountain on the left front the west, so that, in fact, the salient angles of each side reciprocally answer the returning angles, which are always alternately opposed to them. The angles which mountains form in great valleys are less acute because the direction is less steep,

and as they are farther distant from each other; and in plains they are not so perceptible as in the course of rivers, which generally take up their elbows; the middle of them naturally answers to the most striking projections, or the most advanced angles of mountains; and this is one cause of the serpentine course of rivers. When in a valley the inclination of one of the mountains which border it is less steep than that of the other, the river takes its course much nearer the steepest mountain, and does not flow through the middle.

Modern writers class mountains into systems, groups, chains, and branches. A branch is an assemblage of minor mountains, extending from a chain. A chain is an aggregate of considerable mountains, which sometimes changes its name, when it is of great extent. It may be insulated, or may form part of a group. A group is the union of several chains which stretch out in various directions. A system is composed of several groups, connected together, whatever may be their extent or elevation.

According to this arrangement, the mountains of Europe form four systems; those of Asia four; those of Africa four, and those of America five.

The European systems are,

- A. The HISPANIC SYSTEM, composed of the Pyrenees and of all the mountains of Spain and Portugal, and which consists of six groups.
 - 1. The Pyrenaic group, formed of all the chains belonging to the Pyrenees. Its highest point is the Maladetta, which has an altitude of 1,787 fathoms.
 - 2. The Iberic group, comprehends the Sierras of Occa, Moncayo, Molina, and several others; one of its branches terminates at Cape St. Martin, and the other near the banks of the Segura. Its point of extreme height is the Sierra de Moncayo, which has an elevation of 1500 fathoms.

"From what I have seen in the mountains of Europe and the Cordilleras of America (says Humboldt), caverns may be divided, according to their interior structure, into three classes. Some have the form of large clefts, or crevices, like veins not filled with ore; such as the

cavern of Rosenmuller in Franconia, Elden hole in Derbyshire, and the sumideros (sewers) of Chamacasapa near Tasca and Tehuilotepic in Mexico. Other caverns are open to the light at both ends; these are rocks really pierced through - natural galleries, traversing a solitary mountain: such as the Hole-berg of Muggendorf, and the famous cavern of Danto in Mexico. A third form, and the most common, exhibits a succession of cavities placed nearly on the same level, in the same direction, and communicating with each other by passages of greater or less breadth.:

Of the caverns produced by fire, Iceland yields numerous examples. Some of them are of great extent, and are made use of by the inhabitants for sheltering their cattle. The largest in the island is five thousand and thirty-four feet long, from fifty to fifty-four broad, and between thirty-four and thirty-six feet high. The magnificent basaltic cave of Fingal, in the island of Staffia, is also, in all probability a volcanic production.

Scarcely any part of the globe is without caverns. North and South America have them on a gigantic scale. The cavern of Caripe, in Colombia, is two thousand eight hundred feet in length. In Europe, there are caverns in Great Britain, France, Germany, the Austrian Dominions, Greece, and other countries. Those of Adelsberg, in Carniola, are said to afford a subterranean walk of two leagues. Those of Derbyshire, two of which have already been noticed, are of considerable magnitude.

One of the most beautiful of these caves is that of Corycia, near Parnassus, in Greece. Mr. Raikes, by whom it was visited, thus describes it: "I had been so repeatedly disappointed with scenes of this kind - they had so generally appeared inferior to the descriptions given of them, that I expected to meet with the same reverse here, and to find nothing but a dark, narrow vault. I was, however, to be for once agreeably surprised. The narrow and low entrance of the cave spread at once into a chamber three hundred and thirty feet long, by nearly two hundred wide. The stalactites from the top hung in the most graceful forms, the whole length of the roof, and fell, like drapery, down the sides. The depth of the folds was so vast, and the masses thus suspended in the air were so great, that the relief and fulness of these natural hangings, were as complete as the fancy could have wished. They were not like concretions or incrustations, mere coverings of the rock; they were the gradual growth of ages,

disposed in the most simple and majestic forms, and so rich and large, as to accord with the size and holiness of the cavern. The stalagmites below and on the sides of the chamber, were still more fantastic in their forms, than the pendants above, and struck the eye with a fancied resemblance of vast human figures.

"At the end of this great vault, a narrow passage leads down a wet slope of rock. With some difficulty, from the slippery nature of the ground on which I trod, I went a considerable way on, until I came to a place where the descent grew very steep; and my light being nearly exhausted, it seemed best to return. On my way back, I found, half buried in the clay, on one side of the passage, a small antique patera, of the common black and red ware. The incrustation of the grotto had begun to appear; but it was unbroken, and I was interested in finding this simple relic of the homage once paid to the Corycian nymphs by the ancient inhabitants of the country. The stalagmitic formations on the entrance of this second passage are wild as imagination can conceive, and of the most brilliant whiteness.

"It would not require a fancy as lively as that of the ancient Greeks, to assign this beautiful grotto as a residence to the nymphs. The stillness which reigns through it, broken only by the gentle sound of the water which drops from the points of the stalactites (the *viar aevaovra* of the grotto of the Nymphs in the *Odyssey*), the dim light admitted by its narrow entrance, and reflected by the white ribs of the roof, with all the miraculous decorations of the interior, would impress the most insensible with feelings of awe, and lead him to attribute the influence of the scene to the presence of some supernatural being. An inscription, which still remains on a mass of rock near the entrance, marks that the cavern has been dedicated to Pan and the Nymphs".

One of the most celebrated caverns, though not superior to many others, is that of Antiparos, an ample description of which has been given us by M. de Tournefort. It is computed to be three hundred fathoms deep from the surface of the earth; but the grotto appears to be forty fathoms high by fifty broad; it is filled with large beautiful stalactites, or sparry pillars like icicles, of various forms, as well on the roof of the vault as at the bottom.

AREA REPORTS: SEPTEMBER to NOVEMBER 1982

Phil Jackson

Junee-Florentine (5 trips)

Two of these trips were to complete the survey, work in Welcome Stranger, however due to cavers' natural tendencies to over-imbibe in C H O and to fool around, there is still a need to revisit this pleasant cave.

Another trip was spent taking photos in Bone Pit (JF203) and in exploring JF 212, 213, 226, 227 and 228. A new discovery of 140 metres length of passage was made within this complex. Details and survey of these caves will appear in future issues.

Mt. Ronald Cross (3 trips)

This area possibly has the deepest cave potential of anywhere in Australia. One 3 day trip was made to carry equipment and supplies to the base camp for a week long future trip. The week long trip was reduced to a few days after the party became tent-bound for three days due to uncommonly foul cold weather (rain, sleet, snow). The third trip was to reclear the old track and the work is progressing well (many thanks to all involved). In spite of the seemingly unconquerable weather odds, the club still holds high hopes for this area.

Mole Creek (2 trips)

One trip was by Steve Harris and National Parks and Wildlife

officers to decide on the future of Kubla Khan Cave now that it has a protected status.

The second trip was to Herberts Pot where an adventurous team did some boulder kicking and gained access to the stream sink just below the Herberts entrance. After descending the 20m pitch, Phil Jackson felt a gentle nudging on the back of his leg. Upon turning around he saw a 1m diameter boulder rocking and delicately chocked by the rock he was standing on. The frightening part was that below him was a 50 degree slope with several tonnes of similar boulders. Needless to say, a quick ascent was had by all. ** Warning ** anybody foolish enough to enter this cave should use extreme caution and wings!

Bubs Hill (1 trip)

A brief visit to Quarry Cave was the result of a Mt. Ronald Cross trip that was aborted due to foul weather.

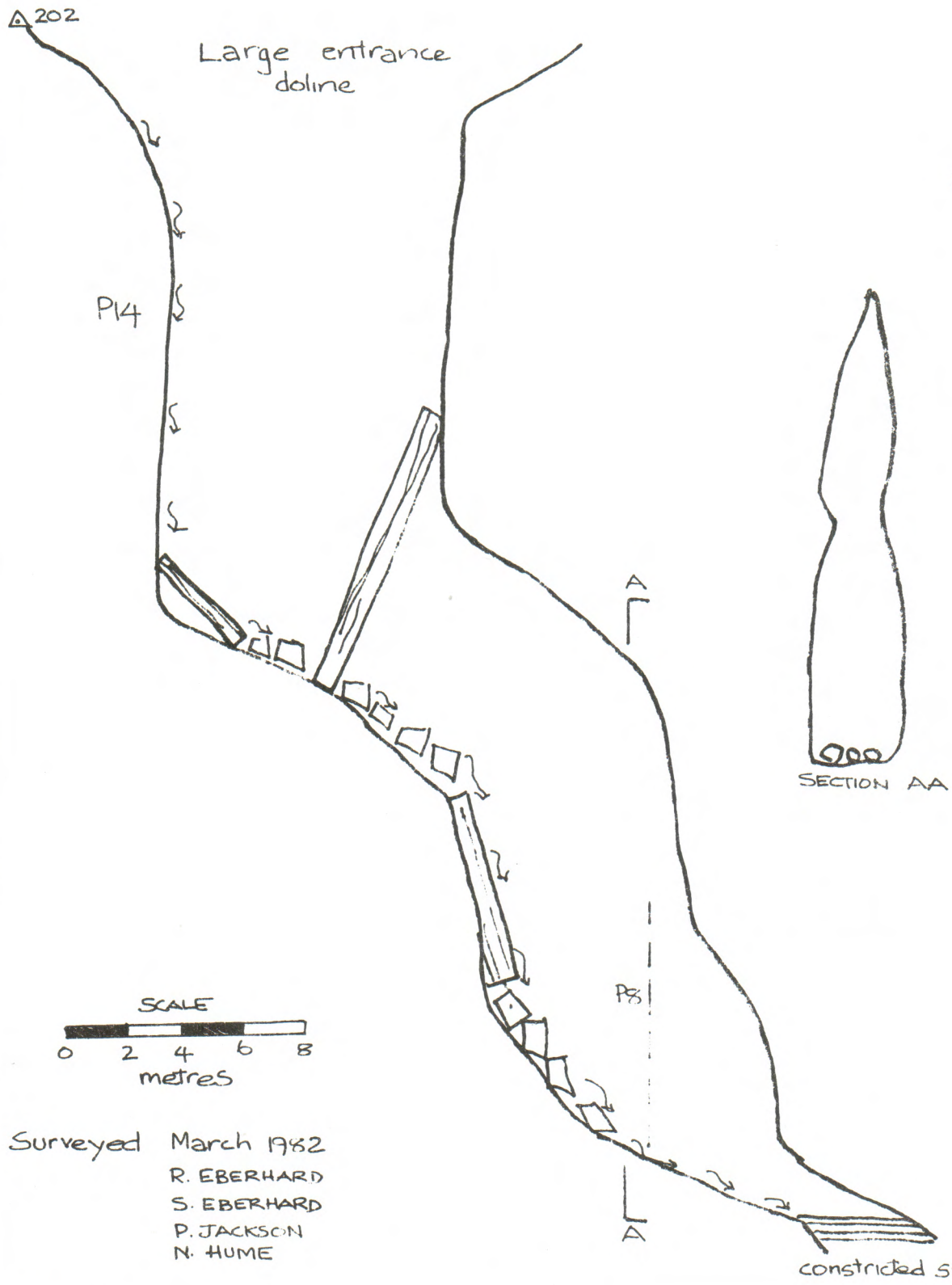
Hastings (1 trip)

A quick trip to Newdegate cave with some beginner cavers.

Picton (1 trip)

A brief reconnaissance of this 'new' area revealed no caves although the possibilities for future searching look promising.

JF202
FLORENTINE VALLEY
LONGITUDINAL SECTION
ASF GRADE 43



Surveyed March 1982
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