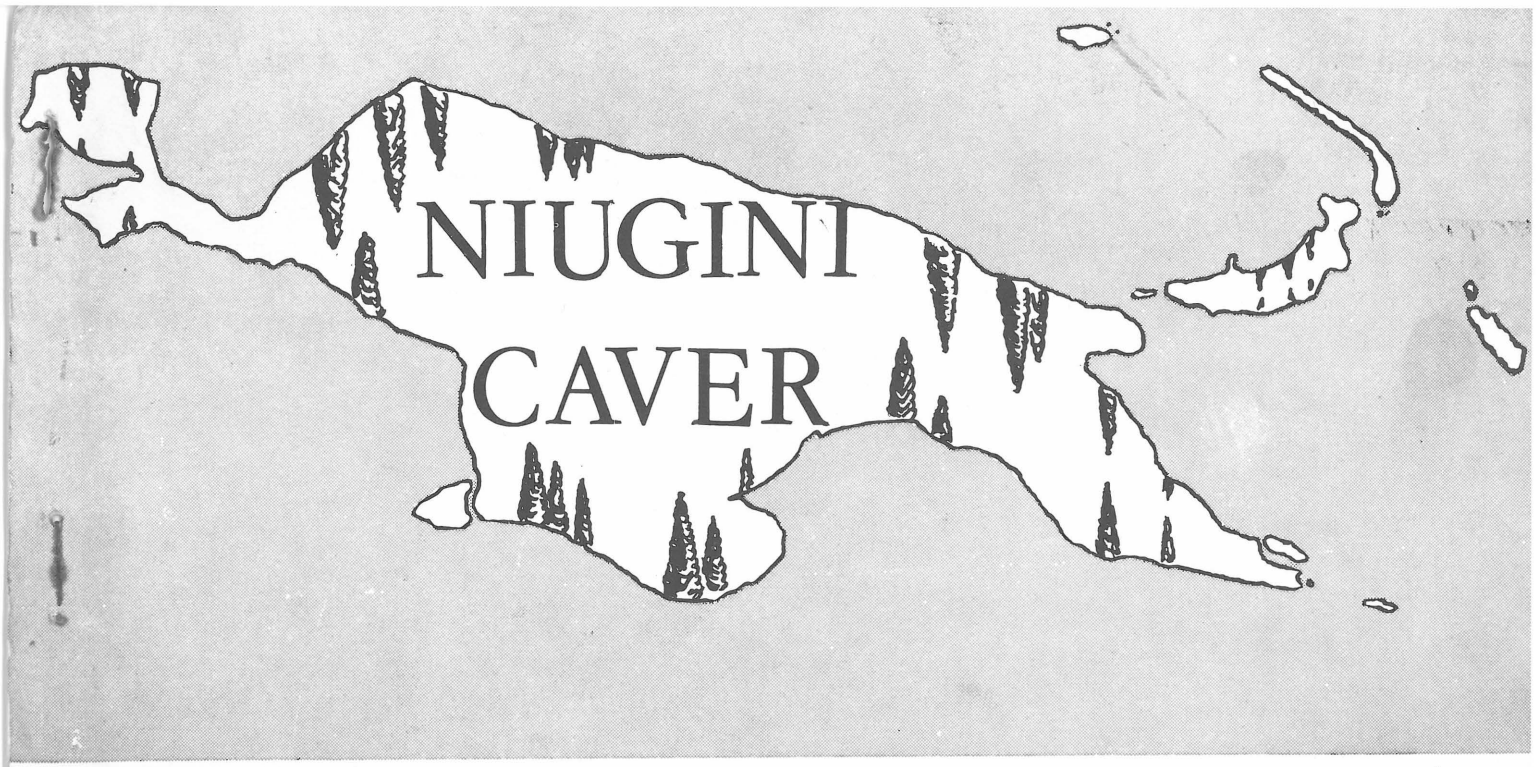
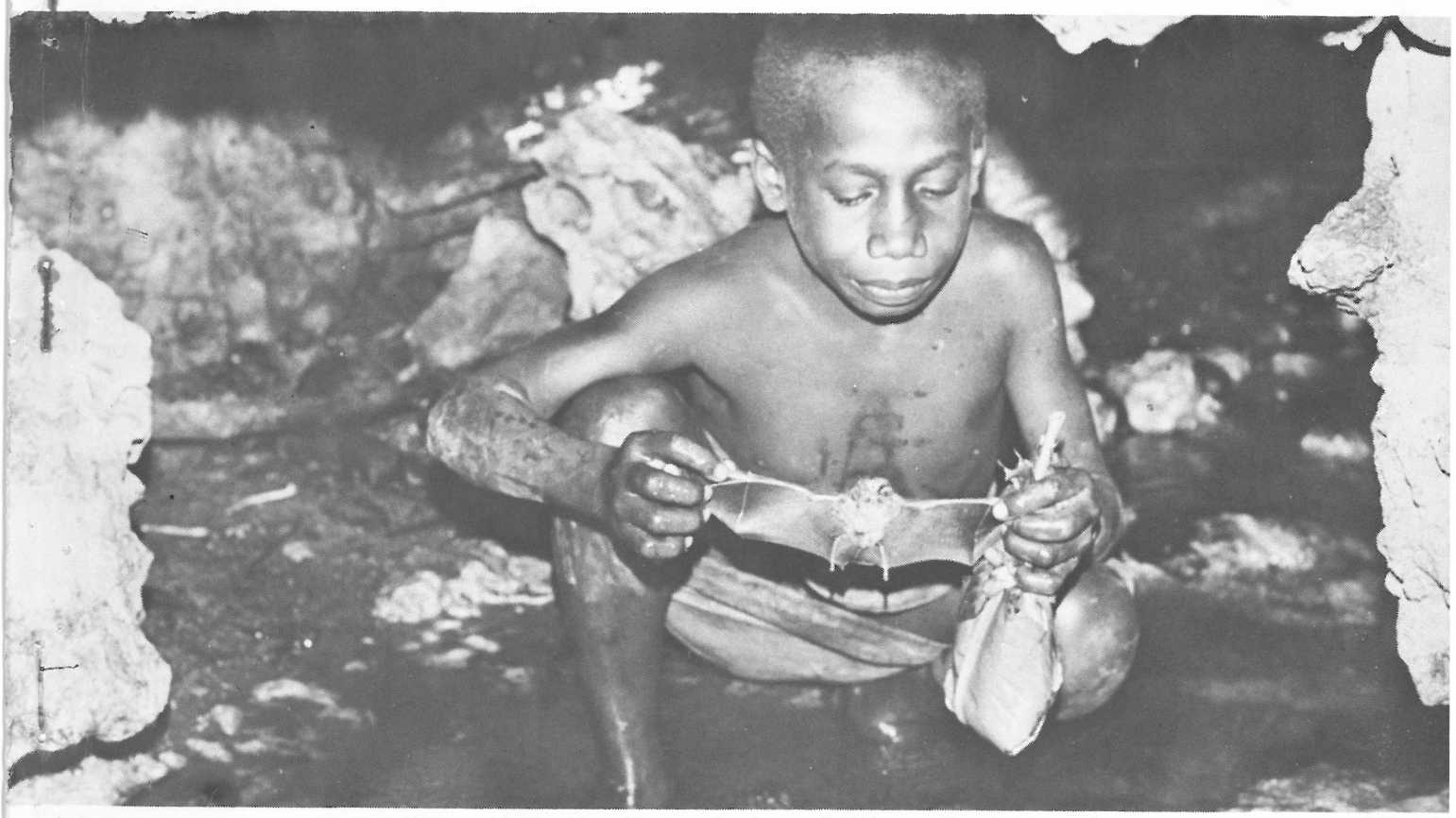



NEWSLETTER OF THE PAPUA NEW GUINEA CAVE EXPLORATION GROUP
**Volume 3 Number 4 December 1975**



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Niugini Caver is the newsletter of the Papua New Guinea Cave Exploration Group. The PNGCEG is an informal association of persons engaged in speleology in Papua New Guinea, and is an associate member of the Australian Speleological Federation.

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* * *

Cover Photograph. A Baining schoolboy examines one of the horseshoe bats he has killed in caves near Iuvare Village, New Britain. Other bats are wrapped in the leaf parcel. Flying bats and insectivourous bats from caves are sometimes significant food sources in certain areas in P.N.G. These bats are so named because of the highly specialized growths on their faces which resemble a horse-shoe, believed to be linked with echolocation. They are among the most common insect eating bats in P.N.G.

Photo by R. M. Bourke.

* * *

## TOKTOK BILONG EDITA - SAMPELA OL LIKLIK TINKTINK NABAUT

"New Guinea is the most exciting and promising caving area in the world ... Until you read a few copies of Niugini Caver you don't realise what a fantastic area we have that is just begging to be explored." So writes the editor of the Journal of the Sydney Speleological Society in 19(6): 140.

Yet I wish those of us who describe P.N.G.'s caves and karst could do so more eloquently without resorting to exaggeration. The style adopted by N.C. authors tends to be descriptive and accurate, but not particularly dramatic. Perhaps we should try to be more inspiring? But how does one convey the feelings one has when confronted with some of our caves? The huge river caves, such as Iaro and Kanada Atea in the Southern Highlands or Ora and Tuke on New Britain, create such an impression when one shares a chamber with the roaring river, and yet it is so difficult to describe them adequately. How can one describe a chamber 274 m long, and up to 152 m high and 137 m wide, such as the cave on north west Bougainville, and convey a feeling of its size? And how to describe the magnificent tower karst in the Emia Valley of the S.H.P. or the incredibly rugged arete and pinnacle karst from Mt. Kaijende or the beautiful cones from New Ireland? To say a river emerges from a cave entrance 10-20 m high and 55 m up a cliff face or the pitch is 180 m long or that the passage is made up of red and white crystals with splashes of brilliant red iron oxides or the cave is alive with insects and bats just does not seem adequate. Maybe we should hire a few professional photographers and writers to do the job for us! I suspect that a lot of people have not really "metrified" their thinking and would be more impressed by the old units of measurement. I must admit a chamber 900 by 300 by 450 feet sounds bigger than one 274 by 152 x 137 metres.

* * *

"We were both fascinated by the description of your 'new technique' .... We can quite see the advantage of the rapell, but an ascent by means of a prussick knot must be both tedious and strenuous ... Still I shall be most interested to hear of the results of your experiments, as they merit serious consideration." From a letter dated July, 1957 by David Taylor, a Port Moresby based caver, to a U.S.A. caver interested in an expedition to P.N.G.

Vertical caving techniques have come a long way since then. Almost all serious vertical caving in P.N.G. is done using the single rope techniques (SRT) of abseiling into the cave and prussiking out on a single rope. The safety standards must be amongst some of the best in the world. In particular the rope protectors developed by John Webb for the recent New Ireland expedition have solved the major problem of SRT caving, that is, how to protect the rope from abrasion as it passes over rock surfaces. Unlike previous protectors, such as split rubber hose, the new wrap around canvas protector cannot slip allowing the rope to touch the rock.

Yet at the same time I wonder whether all cavers in P.N.G. are as careful using SRT as they should be. I shudder to think of some of my techniques from four years back - unsuitable ropes, incorrectly adjusted harness, little attention to rock clearing, never mind the use of runners and rope protectors. And this with a back up of one man on the surface and the caves several days' walk from the nearest road! The recent fatal fall in the 110 m main shaft of Gaping

Chyll in Yorkshire after the polypropylene rope broke underlines the fact that SRT caving is not to be taken lightly. Papua New Guinea's first serious caving accident, when Steven Crabtree fell over a small cliff in Selminum Téé on the British expedition, shows that we are no more immune from accidents than anyone else. Steven was lucky that he was in the company of a group of competent cavers who even had their own expedition doctor. Apart from the expeditions, most of our caving is done by small parties with no other cavers in the area. Which is all the more reason to be extra cautious.

Whilst on the safety kick, a word of caution about flooding in caves. In February this year three students were drowned in a low passage in Salamander Cave in Indiana, U.S.A. as they tried to escape an underground flood. And again in Selminum Téé Dr. Wells had a close shave when a flash flood caught him underground. Caving as we do in areas of very high rainfall, precautions against flooding are a good idea. Remember it is better to sit out a flood in a high roofed chamber than to make a dash through flooded passages. Finally to keep things in perspective, I should add that I know only a few cavers who have been in underground accidents, but many who have been in car, motorbike and plane accidents, some of which have been fatal.

. . .

The British expedition has been most successful and the organizers and participants are to be congratulated. The large number of caves explored; the new Southern Hemisphere length record of about 20 km in Selminum Téé; the two caves over 300 m deep and others over 100 m deep; the biological, archaeological and anthropological results all add up to make it the best caving expedition to P.N.G. to date. Despite the lack of "a cave system deeper than anything yet discovered ... a speleological 'Everest'", the trip seems to have lived up to its billing of "one of the largest and most ambitious sporting expeditions yet to leave Britain". May there be many more.

. . .

After three years and 18 issues it might be appropriate to look at what N.C. has achieved. Well we have certainly published a lot of information about caves in P.N.G., thanks to the 42 people who contributed articles, maps and photographs. In the last year or so P.N.G. has attracted the attention of cavers all around the world. The overseas expeditions, especially the British one, have had a lot to do with this. But I would like to think that this newsletter has played a part. I had hoped to have published articles from all 20 provinces by now. Daryl Miegel's article on the Enga caves (p.123 this issue) brings the count up to 17 provinces, but that still leaves the East Sepik, Northern and National Capital Provinces. I don't hold out much hope for the N.C.P., but caves are reported from Ioma in the N.P. and from the Chuingai Hills near the Sepik River in the E.S.P., so we might get to report on caves from there yet.

Finally, if you find a subscription renewal form enclosed, could you attend to it. At K2 a year N.C. isn't really expensive - but paper, printing and postage all cost considerable nowadays. Happy Christmas and all the best for the New Year from the N.C. staff.

R.M.B.

* * *

## PARTICIPANTS REQUIRED FOR LELET EXPEDITION

A return expedition to the Lelet Plateau of New Ireland is being planned for July-August, 1976. It is anticipated the expedition will be in the field for at least a month. A team of about eight cavers is envisaged with the aim being to systematically explore and map cave systems in the area. Several vertical cavers from Tasmania and a few from Queensland hope to come on the trip and the organizer, Dave Gillieson, is seeking three or four PNGCEG cavers as well. Anyone interested can contact Dave at the following address:

27 Mount Street,
TOOWONG. QUEENSLAND. 4066.
AUSTRALIA.

Access to the plateau is very good and it is now possible to drive to the villages on the plateau. Depth potential is up to 1400 m and the area has been proved as a vertical cave area, although really deep systems have yet to be explored.

* * *

## THE NEW CONTRIBUTORS

Rick Giddings has explored caves in Bougainville and the Eastern Highlands and has visited tourist caves overseas. His particular interest is cave archaeology and the preservation of folk lore and legends associated with caves.

Leigh Gleeson is a "hard man" from Tasmania where he has been caving for the past three years. He is a member of the Southern Caving Society. He came to P.N.G. to participate in the New Ireland expedition. As well as caving around the N.G. Islands and is Tasmania, Leigh has caved in New Zealand, New Caledonia, and in the Chimbu, Southern Highlands, Enga and Central Provinces.

Daryl Miegel served as a didiman in the Enga for a number of years and explored local caves while in the area.

Peter Robinson is a member of the Victorian Speleological Association and the Cave Exploration Group of South Australia. During his stay on Bougainville in 1971 he made regular visits to Nenduma cave and surveyed it.

Tim Sprod received his caving baptism in his home state, Tasmania. When he came to New Britain in 1973 he joined the local cavers and has been doing some caving on the Gazelle since then.

* * *

## JUMARS AVAILABLE

Bushgear Pty. Ltd. in Melbourne, Australia have plenty of Jumars available at $29.50 a pair. The price includes the necessary rope attachments. They expect to have Premier lamps before Christmas and Elelrid ropes including their caving rope. All postage and freight has to be borne by the buyer who should instruct them how to despatch the goods. Freight should be added to the price of the goods when the order is sent. For the address see the inside of the back cover.

* * *

# PRELIMINARY RESULTS FROM THE BRITISH SPELEOLOGICAL EXPEDITION TO PAPUA NEW GUINEA

Kevan A. Wilde *

The following article was compiled from correspondence from Kevan Wilde and notes telephoned from Goroka just after Kevan left the trip. All figures quoted are tentative until surveys are drawn up and all the information is collated.

.....

The largest and most ambitious speleological expedition ever to come to Papua New Guinea - and indeed ever to leave England - has now been concluded. Here a summary of the results is given. A fuller article will be published in the next edition of Niugini Caver.

Finim Tel Area. (See maps pp 113-114). A lot of time was spent in this area, particularly in the major Horizontal system discovered there, Selminum Tém. The cave has been surveyed to over 20 km, although the exact length is not yet known. Not only is this a new length record for P.N.G., but it is also a new Southern Hemisphere length record as it is several kilometres longer than Exit Cave in Tasmania, Australia. The cave was quite complex with one passage about 3.5 km long. The passages were very large and were commonly more than 30 m wide and 30 m high. The cave has great depth potential, but no depth was achieved.

The cave contained a wealth of new and interesting cave fauna and a lot of time was spent collecting in it.** One of the most interesting specimens collected was an unusual polychaete worm** This represents only the fourth known species of cave polychaete worms in the world. As well a large fossil was found inside. Dr. Wells, a paleontologist from Adelaide, came up to examine the find, and it is believed to be a large mammal. At one stage Dr. Wells was caught by a flash flood underground and had a narrow escape. The cave was also the site of an accident. The expedition's geologist, Steven Crabtree, fell about 6 m off a rock slab about 1.5 km inside the cave and fractured his skull. He was removed in about 10 hours to a surface base camp near the cave's entrance. The expedition's doctor, John Burchan, sewed up the wound. After a two week rest at this camp Steven walked to Tifalmin and flew back to the main base at Telefomin.

Next tp Selminum Tém is another system, Wok Kaakil Uneibô Tém. It was surveyed to about 1.5-2 km passage length. The cave is very near Selminum Tém, probably only 20 m separates the caves, but no connection was made. Other features in the Finim Tel area are two or three very large collapsed type dolines. There are vertical pitches of about 150 m or more in them. There are quite a lot of river systems and various small caves. There is no real depth potential however as the resurgences are very high up on the Hindenburg Wall. All the vertical caves end in perched sumps, probably because of an impervious shale layer below the limestone.

Ok Agim Area. (See map C, p 114). A party visited Agim Tém and pushed it to a depth of about 170 m. The cave sumped down dip - it has about 600 m potential! A party of two went back to the area for a couple of weeks and turned up some reasonable shafts, but none of them developed. A group went up to Wam Tigiín

* P.O. Box 1055, Goroka, E.H.P., P.N.G.

**The polychaete worm was collected from near Telefomin, not Selminum Tém.

and found a couple of stream sinks but they were not investigated for lack of gear. Depth potential is expected to be in excess of 1500 m. The same party turned up a shaft with a 150 m entrance pitch. This was descended to the top of a second pitch, some 60 m long. This however was not descended because of lack of gear. The area is promising and shows good potential. It has the classic attributes of good caving areas. Another party followed us up but did not find anything due to navigational problems. This was in the area of the "big holes".

Aiyung De Bom. Caves were explored at over 3000 m a.s.l. here, making them the highest recorded caves in P.N.G. Caves were also explored at high altitude in the Ok Tigiín area.

Fault Controlled Valley. (See map B, p 114). A party of ten people spent five weeks in this area. The party included the four P.N.G. cavers, Howard Beck, Roy Blackham, Jim Farnworth and myself. Over 40 shafts were descended. Although well developed, these tended to choke between 30 and 50 m deep. Then three deep holes were descended one after another. The exact depths are not yet known, but they were about 230 m, 383 m and 360 m respectively. This brings to five the number of caves in P.N.G. surveyed as over 300 m deep. All the caves along the main valley fault were tight, very technical from a SRT angle, and became quite nasty in wet conditions. There were no natural belays with one or two exceptions. All pitches had to be bolted. The depth potential is about 1000 m or so.

In one of the deep systems I was hit by a falling boulder on both legs. I was about 100 m down at the time and managed to prussik up 80 m but had to be hauled up the last 20 m. No bones were broken, but I am still recovering. One of the other guys nearly got it in similar circumstances when we were filming in a shaft. We lost the tape recorder down a 50 m pitch at the same time.

Star Mountains. A two man party spent two weeks up there. They revisited the same areas as the 1965 Australian Star Mountains Expedition. No cave systems of any importance were discovered or descended. However they did find some interesting troglobites - insects showing adaptations for underground living. And they weren't even biologists! (The cavers, not the insects, that is!)

Summary. Between 30 and 40 km of horizontal cave passage were surveyed and about 150 shafts were explored. The longest cave was surveyed at about 20 km and the deepest at about 383 m. The longest abseil was 180 m with a number of others about 150 m.

Biologically the expedition was a tremendous success and many new surface insect species were found as well as new troglobitic types. Twelve archaeological sites and three art sites have been recorded. Really deep systems eluded the trip but the results were generally excellent and the expedition is considered to be more than successful.

We hope to sell the film of the expedition. The book should be out some time next year. As well there will be some specialized papers including a series of papers on the biological results.

* * *

# NEW GUINEA 75 - BRITISH SPELEOLOGICAL EXPEDITION TO PAPUA NEW GUINEA:

## AN ACCOUNT OF THE RECONNAISSANCE IN THE HINDENBURG RANGES AND AREA

Kevan A. Wilde *

The following is a brief and informal account of the reconnaissance for the British expedition, carried out by Howard Beck and myself. The original plan was to carry out an aerial 'recce' followed by two patrols. The first patrol was to take four weeks from Telefomin to Tifalmin across the Hindenburgs, east along the bottom of the Wall, looking at resurgences, to Imigabip and northwards, back over the Ranges, to Telefomin. The second would have taken us from Telefomin to Urapmin, south across the Ranges to the 'big holes' (see map), down to Imigabip, east along the bottom of the wall, looking at resurgences again, then up the Wall via Golgobip, through the honeycomb karst, across the middle of the fault controlled valley and thus northwards to Telefomin, which should have taken us two weeks; and meet the main party on about 27th June. However, it did not quite happen that way.

Howard and I left Mt. Hagen on the 4th April, 1975 in a Cessna 402. The route took us just south of Mt. Kaijende (Porgera), a magnificent spectacle of limestone relief and pinnacle karst, and then slightly north of the McNichol Ranges; across the headwaters of the River Strickland and over Lake Kopiago; then south of Mt. Wamtekin and into the Telefomin Valley. We unloaded the gear and took off for an aerial 'recce' of the area, which encompassed the 'fault controlled valley', the honeycomb karst south of Telefomin, the Hindenburg Wall and over the Ranges as weather and finance would permit. The Wall was incredibly impressive, in terms of vertical cliff faces and relief, which was around 1000 m (est.), but did not come up to the standards one expects after reading Malcolm Robb's article (Robb, 1973). We could not see any obvious sinks and could not get over the Ranges proper because of the rotten weather. The aircraft was far too fast for an aerial survey and I recommend a slow moving 'chopper' for future 'recces'. I felt very let down, but was prepared to see what it looked like from the ground. Howard was optimistic as usual.

After spending three days sorting ourselves, the gear and the 'kai' out, we set off for Urapmin with two weeks rations. We had decided to use only four porters to reduce costs, and found that we could only just carry two weeks gear and food between us. So that meant abandoning our original plan. The new plan was to walk to Tifalmin via Urapmin and then look around from there. We had had a lengthy and informative talk with the Assistant District Commissioner, Keith Winchcombe, who was also kind enough to put us up. So, using the information obtained from Keith, we decided to have a look at some sinks near Aiyung De Bom and then at a plateau west of Fugulil De Bom. (We had gone over the aerial photographs first and picked some likely looking sinks and things.) We thought we would see what the porters and we could carry so we set off with 25-30 kg packs and the porters with 35-40 kgs.

The walk to Urapmin took about 6 hours through undulating 'kunai' grassland with one being almost continually exposed to the sun and no water. We got there

* P.O. Box 1055, Goroka, E.H.P., P.N.G.

at about 1600 hours, absolutely parched. The same story the next day with the stretch to Tifalmin. We decided that we would have cut our loads down to about 20 kg and the porters to 30 kg. We stayed at the 'haus kiap' at Fasanabip (near the airstrip) for a couple of nights to get our breath back and to familiarize ourselves with the people and the environment. We decided that there would not be enough relief with the sinks near Aiyung, so we thought we would go and have a look at the back slopes of the mountain itself which were dipping at about 40° to the north.

Friday 11th saw us heading for our objective and one of our guides took us to a hunting house only four hours walk away. So I told him that we would have to push on towards the mountain, and we set off to mutterings of 'Ples no gut, nogat wara antap', cutting our way as we went. We spent the next two days hacking our way through the bush towards the summit, and when we got there we found it was no good anyway. Didn't even get a view as it clagged in. The summit is slightly in excess of 3000 m and is covered in sub-alpine grasses with areas of exposed limestone; we did not observe any apparent cave development and thought that the back slopes would prove unsuitable. So we set off back to Tifalmin and made it in one day's reasonable walking. Not too pleased, I might add.

Whilst we were in the Tifalmin-Bufulmin Valley we decided to have a look around. We were taken to some burial caves and a rock art site (see articles on burial caves and rock art of the Telefomin area). We decided to have a look at the plateau area west of Fugulil next. We also heard that Councillor Mirok of Nongabip had put a 'tambu' on the Ok Agim area which is near the 'big holes'. This was to be the next area after the plateau.

On 16th April we struck off towards the Bahrman Mountains with four porters and enough food for ten days. We had seen a clearing on the aerial photographs yhat looked ideal for a base and our guide said that the track went through the clearing, which was called Finim Tel. It was a gruelling nine hour uphill walk over the 3000 m high range, on to the plateau and through high altitude swamp ... charming. By the time we got to the hunting houses, which I was beginning to think didn't exist, we were cold, soaking wet, and not impressed. Still, after a good feed and a night's rest things seemed different ... It wasn't raining.

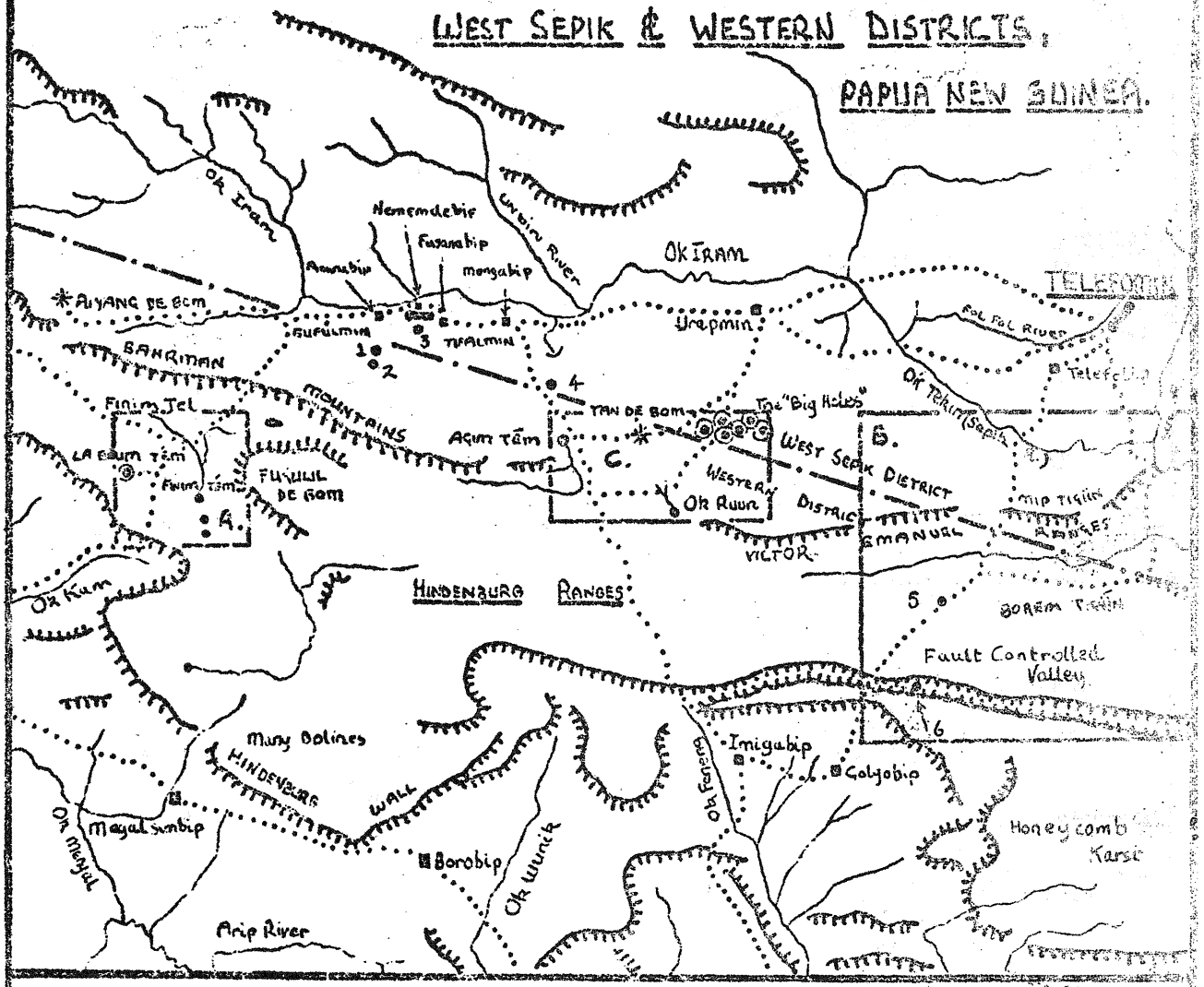
That night we decided that we would have a go at finding a large doline-type feature about 3-4 km south west of the base. The base, by the way, was located in a large clearing of sub-alpine grass and scrubland at about 2500 m a.s.l. The clearing is bisected by the Ok Finim which flows southwards sinking some 2-3 km away, and Ok Tumak which flows westwards from the base of Fugulil and joins the Ok Finim in the south west corner of the clearing. The clearing, we decided would be suitable for an airdrop. (See map A)

The next morning we took the main Tabubil track which one of our porter-cum-guides said would take us near to the big doline that we were attempting to find. He told us that he had been there as a child ... on a flying fox hunting and 'koroka' (pandanus nut) collecting expedition and the name of the hole was Le Buum Tém. We arrived there after a few hours of track following and cutting, and what a sink! Incredibly large, 150 m deep and 200 m across with sheer walls. We could see a large cave entrance in the south west corner and it was taking water. Our guide showed us where the people used to go down hand-over-hand 150 m sheer, to collect flying foxes!

# TELEFOMIN AREA & HINDENBURG RANGES.

## WEST SEPIK & WESTERN DISTRICTS.

## PAPUA NEW GUINEA.




### -LEGEND-

- Air strip
- Village
- Cave or shelter
- Sink hole
- Sawllet
- Rising
- Mountain Peak
- Escarpment
- Lake
- ..... Tracks

(N.B. POSITION OF CAVES ETC., IS APPROX' ONLY.)

SCALE 1:250,000.

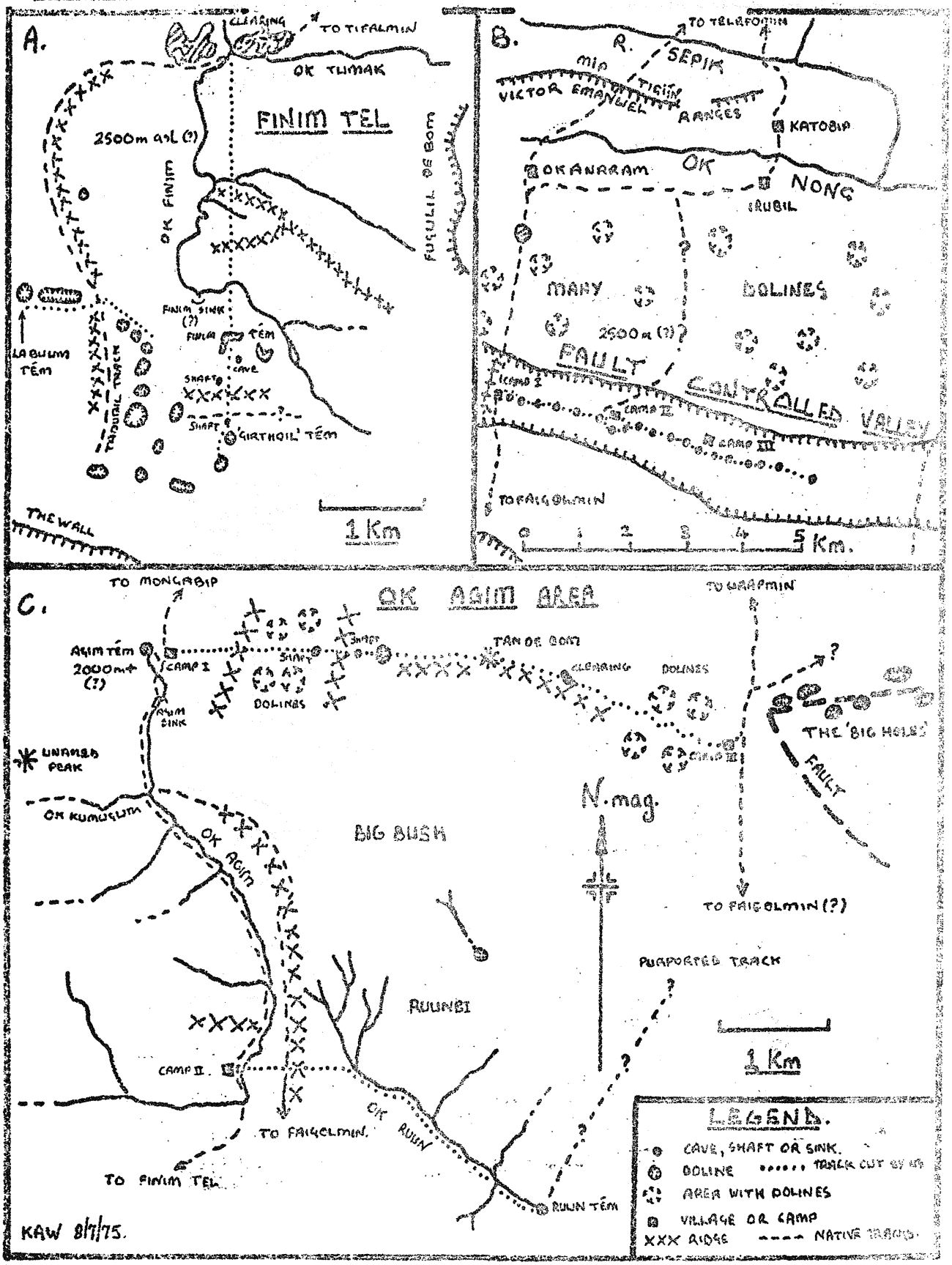
0 1 2 3 4 5 6 7 8 9 10 km.

N. Grid.

Map after B.M.R. Geological Series Sheet SB 54-7 with additions by K.A.W.

# SKETCH MAPS OF THE THREE MAIN AREAS OF EXPLORATION

BASED ON AERIAL PHOTO'S C.A.I. RUN 15-5110 & 5091-3 & RUN 16-6 [illegible]



We spent the next two days cutting towards a big, collapsed, double doline-type feature due south of our base; the first of these two holes turned out to be even more impressive than La Buum Tém. We were so thrilled that Howard jokingly christened it 'Girthoil' Tém (see appendix). The porters were duly impressed with the fact that we had hit it spot on after two days of hacking. On the way there we had found a couple of likely looking horizontal type caves and a narrow, very clean looking vertical shaft with an estimated 70 m entrance pitch. About halfway between the base and the holes we struck another double doline feature with a rising and a sink that I reckon was the Finim drainage and accordingly named it Finim Tém. (Our guide advised us that there was no local name for the feature.) We were amazed and horrified at the amount of clay and silt in the bottom, and up the sides of the dolines; thus indicating recent and substantial flooding. Howard succeeded in finding a horizontal fissure which may give us access to a system - heaven forbid'. The section between these features and base was typified by impervious siltstones (or clastics?) with surface drainage and no holes, but the latter part of the track cut through good looking doline karst.

We stayed in camp for a day and started to clear ground and erect the first timbers of a twenty-five man sleeping bothy. The following day, 21st April, Howard decided that he should walk to La Buum Tém and start cutting towards 'Girthoil' Tém in a generally south easterly direction, following a linear arrangement of dolines. He took a couple of blokes with him. I still had a touch of malaria and remained in camp helping to construct the bothy. Howard came back that afternoon with the news that he had passed through some good looking country, found a cave entrance and finished cutting near a doline taking water. It was raining and bitterly cold, with the mist hanging around in the trees, so he decided to head back to camp. We discussed the plateau area, that night, and both agreed that we were on to something good. Most impressive country. Anecdote - One night I was squatting in the bush with my trousers down when I was struck severely on the head with a soggy log. One of the porters thought I was a bush devil'.

The next day saw us heading back to Fasanabip village in the Tifalmin-Bufulmin Valley. Only took us a bit over four hours to get back'. We spent that afternoon and the following day talking with headmen and elders. We had had two weeks rations flown in and we were to go into the Ok Agim area, but Councillor Mirok's 'tambu' still stood. We had tried to contact him, but it appeared that he was on a government patrol in the Eliptomen area. So we thought we had better head back to Telefomin and have a look at the fault controlled valley and the honeycomb karst area south of the station. This would possibly give us the opportunity of meeting Councillor Mirok.

Two day walk back to Telefomin - arriving on the afternoon of the 25th. The following day we sent Yaiyok, our head porter, off to Eliptomen with a note for Mirok who came down the next day. Keith and I had a chat with him and he informed us that it had all been a misunderstanding; that we were not 'tambuood' from the whole area. Just Agim Tém, and even that was all right as long as we didn't scare the flying foxes away. Keith reckoned that he knew a good area with heaps of sinks a bit south east of Mt. Wamtekin and that he had a 'chopper' due in, in the next few days, which could take us up for a look see. We waited until 5th May but no helicopter. The following day we received a radio message to the effect that it would not be coming for at least another week.

Tuesday 6th May saw us heading off for Miip Tigiín (the Victor Emanuel Ranges) and down the other side to Ok Anaram where we established a makeshift camp for the night. (See map B) Ok Anaram is apparently a resurgence and a tributary of the Ok Nong. The following morning we started to push our way up Borem Tigiín towards the fault controlled valley. A little under 1½ hours out of camp and we were at a 'kunai' clearing, Uun Tém Tigiín, with a fissure-type shaft, Tina Bu Tém, in the south east corner. Just after the clearing was the rock shelter known as Borem Imal (see article on shelters etc.), Howard thinks it may be the one Champion used when he 'discovered' Telefomin. Late that afternoon after a most depressing slog, three-up-and-two-down-country, we arrived at a hunting camp known as Mogondubip. We were in the fault controlled valley.

We spent six days cutting in a generally easterly direction along the valley floor and we turned up twenty good looking shafts (including one cave with a pitch) with entrance pitches from 10-70 m (est). The first few hundred metres were full of the siltstone rubbish, but from there onwards it was good, pure grey-cream limestone and a lot of water sinking along the valley floor; the mind boggles at the thought of one huge master cave! There are known resurgences below the wall, south of the valley, but this would mean that the caves would have to develop against the dip which is about 30° north. It may be that the resurgences are in the Ok Nong - if so we won't get a great deal of depth. However, if they are on the other side of the wall we should get something in the order of 1000 m. Apart from the caves, the valley was absolutely miserable. It poured down with rain every day and the whole valley was usually shrouded in a veil of cold wet mist. The going was tough with the valley floor a mass of dolines and broken and faulted ridges. On 12th May, Howard put a bushknife through his knee and was pretty badly hurt. So we decided that we had better walk out and get him to hospital for stitches.

It took us three days to walk back and Howard must have had a hell of a time, but he did not say anything (as usual). We were chuffed about the valley though. We went a different way by following the Ok Nong down then crossing the ranges just south of Telefomin - a bad mistake: it was walking-across-the-grain-type-country and damned hard going. We finally crossed the range on to the 'kunai' sides of the Telefomin Valley. What a joy to sit in the sun; the first we had seen in two weeks, but we were soon sweating and cursing our way down the steep sided, slippery slopes.

Howard had four stitches in the muscle and six in the flesh; and was ordered to rest for a couple of weeks. From Friday 16th to Wednesday 21st I stayed in Telefomin, waiting for that elusive chopper again and planning the next patrol. Howard and I decided that I'd have a look at Agim Tém from Tifalmin, then cut across to the 'big' holes. The chopper arrived and Keith and I flew east of Telefomin towards Feramin, past a 3000 m high limestone feature a short distance north of the station and followed a left hand tributary of the Ok Tekin, flying south of Mt. Wamtekin (correct Telefomin is Wam Tigiín), which is all limestone and 3658 m high. Keeping on the same course, we flew over the Telefomin-Oksapmin walking track; it was fairly well clagged in but we could see an alpine clearing (3000 m a.s.l.) with a few depressions and sinks around, with exposed limestone. The area looked good and the clearing would be suitable for an airdrop. On the way back we flew directly over the feature near Feramin and that looked good too.

I don't know the actual depth potential, but guess it could be up to 1000 m. That afternoon the helicopter dropped me at Urapmin where I spent the night.

Thursday 22nd saw me heading for Fasanabip Village (Tifalmin) without a pack - an absolute pleasure. Made it in less than four hours. The porters met me at Fasanabip during the mid-afternoon. I had found a likely guide for the Ok Agim area and he said that the walking track started at Mongabip (Bufulmin) so we headed back there and spent the night round the fire telling 'tumbuna' stories. The next day we set off for the Ok Agim arriving at an old government patrol camp, at lunch time and by 1400 hours we were next to the cave Agim Tém and setting up camp in a very pleasant area of not so dense bush. (See sketch C) We were camped right next to the Ok Agim, but the river was dry, so we followed the creek-bed 'downstream' to the cave entrance. A decent sort of a hole too. A large entrance, which must take the overflow of the Ok Agim proper; limestone dipping (apparent) 30-40° to the north west (est), and a sloping floor down to a large shaft in a sizeable chamber. The chamber was full of flying foxes and the sloping floor was treacherously slippy and cowvered in slimy guano. I don't know the altitude of the entrance, but I guess it must be about 2000 m plus and the resurgence must be in the order of 1500 m. I suppose the sink could be a bit higher, giving maximum depth potential of around 600 m plus, not much; but it appears as though there is about 5 km between sink and rising so it could be a good cave.

Keith had told us of an old patrol camp near the major bend in the Ok Agim, so Friday we headed off towards it. The idea was to cut our way over to the 'big holes' from there, which according to the original 1:250 000 geological map of the area, are due east of the bend. We followed the dry creek bed 'upstream' in a generally northerly direction and a few hundred metres saw us at the Ok Agim sink with a fair bit of water going underground, but it was choked with boulders and alluvial sands and clays. Made the camp by early afternoon and I started cutting eastwards with two porters. Back at camp I took a look at the aerial photographs and discovered that the map had either the holes or the creek in the wrong place! Anyway if I kept going east we would hit a stream which looked like it sunk about 2 km or so, south east of the camp. Two days later we were there and there was a lot of water going down a double shaft in creamy, fossiliferous limestone. Another possible goer. Again, there was a lot of siltstone and rubbish around with the water running on the surface and sinking almost immediately it hit the limestone.

Wednesday 28th May - torrential rain and we set off back for the Agim Tém Camp, arriving there at midday. I had decided that if we cut due east from there we would hit the 'big holes' in about 4-5 days. Well, after five days of cutting and searching we never found them; we got ourselves bushed at least three times and the only compensation was that we had found two reasonable looking shafts on the way, and there were scores of dolines that we did not have time to look at. On the Monday we broke camp, having moved into the rough vicinity of the 'big holes', and headed off towards Urapmin, along a native hunting track. We arrived at Urapmin in relatively good time. The following day I went to Fasanabip and waited for Howard, but he didn't turn up (he was due to arrive there) so I assumed his leg was still playing up. The plan had been to go back up to the Finim Tel and finish the base and do a bit more track cutting. Anyway I sent

the porters up with instructions to spend eighteen days there (including the walking) building the base. I had a chance of a flight from Telefomin to Goroka, so I went back to Telefomin. I then headed back to Goroka for a few weeks as our cargo boat had broken down in the Azores and had to return to England, pushing the arrival date back by several weeks.

APPENDIX

Translation of Tifal to English:

| | | |
|---|---|---|
| Ok | - | water |
| Be Bom | - | mountain |
| Tigiín | - | clearing |
| Tém | - | hole |
| Tel | - | plateau |
| Unang | - | woman |
| Mafak | - | bad, no good |

Note: Girthoil is northern English for good hole.

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* * *

## CAVCONACT 76

The organizers of the Eleventh Biennial Convention of the Australian Speleological Federation are not wasting any time telling everyone about it. The Convention, known as Cavconact 76, will be held at the Australian National University in Canberra from Monday December 27 to Friday December 31, 1976. It is being hosted by the National University Caving Club and the Canberra Speleological Society.

There will be both pre- and post-Convention field trips. Pre-Convention trips will be informal. Post-Convention trips will go to various cave areas in southeastern N.S.W., eastern Victoria and the A.C.T. Both limestone and non-limestone cave areas will be included. A special karst geology field trip is being arranged as a follow-up to a paper to be delivered by Professor Joe Jennings.

The call for papers has been made for the fields of geology, geomorphology, techniques, photography, conservation, biology and anthropology/archaeology and other fields. A photographic competition will be held. Requests for information and all correspondence should be directed to:

CAVCONACT 76, c/o Neil Anderson, 18 Arabana Street, Aranda, A.C.T. 2614.
AUSTRALIA.

* * *

# SOME LEGENDS, A CAVE ART SITE, BURIAL CAVES AND ROCK SHELTERS WITH POSSIBLE ARCHAEOLOGICAL POTENTIAL IN THE TELEFOMIN AREA OF THE WEST SEPIK AND WESTERN PROVINCES

Kevan A. Wilde *

The sites and legends recorded below were visited and collected by the writer and Howard Beck during April-May, 1975 whilst carrying out a field reconnaissance for New Guinea 75 - British Speleological Expedition to Papua New Guinea. This account is in note form and will be published in detail in the expedition report. The sites are located in the Bufulmin-Tifalmin Valley some 20-25 km due west of Telefomin, in the Hindenburg Ranges southeast of Tifalmin, and in the Ok Nong river valley some 10 km south of Telefomin. The sites are recorded in order of sequence from west to east.

## TIFALMIN AREA

The Tifalmin-Bufulmin area is the collective name for a group of villages situated in a 'kunai' grass valley drained by the Ok Iram which flows eastwards and joins the Ok Tekin (River Sepik) 8 km west of Telefomin. The villages are (from west to east) Amanabip, Nememdebip, Fasanabip and Mongabip. There are small areas of cultivation with taro gardening being the most predominant form of farming; the plots being usually located in the numerous dolines and depressions. Exposed limestone outcrops occur on both the northern and southern sides of the valley and continue to the tree line which is at an elevation of approximately 2000 m. The valley is sheltered to the south by the Bahrman Mountains (see map previous article).

Site No. 1. Small burial cavity located in a limestone ridge some 2 km west southwest of Nememdebip Village, containing human bones and a decayed penis gourd.

Site No. 2. At Tém Luu Tém. This site is a short distance south of No. 1 and located in the same ridge. The cave is some 6 m wide, 3 m deep and 4 m high with an entrance of similar dimensions that commands a magnificent view of the upper Bufulmin valley. It has a smoke blackened roof and a dry earth floor, which could have archaeological potential. Many faded charcoal drawings and a red clay painting, which from their appearance give the impression of being quite old, occur throughout the cave, including -

Circles + concentric circles + a 'lizard-like' zoomorph + meandering lines + rectangular grids + 'cross' motifs + an anthropomorphic form (partly obscured by mineral deposition and algae) + monochrome charcoal. A diagonally set red cross + monochrome red clay.

All the drawings are comfortably situated behind the drip-line and there is very little current deposition on the walls which are in the main dry with some mineral flow and algae being present. There is, however, deposition taking place on the formation on the roof. The drawings are well protected. The cave is now inhabited by a small herd of domesticated (imported) goats.

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It is interesting to note the presence of the following forms and motifs -

i. 'Lizard-like' form which also occurs at the Aibura site, Kainantu. This was briefly described by White and White, (1964) and later, in detail by Wilde (in press). Similar forms have also been recorded at a site in Irian Jaya (Galis, 1957).

ii. Variations of circular motifs occur in a similar form in the Singganigl and Kwinigl Valleys of the Chimbu District (Wilde, 1974) and at the Aibura site mentioned above.

iii. Rectangular grids which have been observed at the Chimbu sites mentioned above and in Papua (Strong, 1924).

iv. Diagonally set 'cross' motifs are not common, but White (1969) records a red diagonally set 'croix enveloppe' on the wall of a rock shelter west of the Tumbudu-Strickland river junction. Similar 'cross' motifs also occur at the Irian Jaya site mentioned above.

It is obvious that there are many legends and myths associated with the caves of the Telefomin area and that they feature greatly in the culture of the area; but local residents were unable (or perhaps reluctant?) to supply any information as to the origin of these drawings and did not appear to connect them with the 'tumbuna' (ancestors). They offered no metaphysical or spiritual explanation to account for their existence as is the case in many other areas. The people showed no reluctance to escort us to the site and were only too willing to assist. We were also told of a site in the foothills of the Bahrman Mountains south of the one described above. The writer believes that the At Tém Luu Tém site is the most westerly rock art site to be reported in Papua New Guinea.

Site No. 3. Bal Kurinon. A small burial cave some 500 m or so south of Nemedebip Village. The cave is about 1.5 m wide, of a similar height and 6 m long and contains the skeletal remains of some twenty or more persons.

OK AGIM AREA

The Ok Agim (River Agim) drains an area of the Hindenburg Ranges south of the Bahrman Mountains, flows east for some 4-5 km, then north for a short distance then sinks, rising again some 4-5 km to the north of the submergence and 4 km east of Mongabip Village. The topography is moderate to rugged (by P.N.G. standards) and the general elevation is around 2500 m with the occasional peak reaching some 3000 m. Much of the area is typical doline karst country with high altitude rain forest and lower montane forest.

Site No. 4. Karimuk Imal. A rock shelter and a small cave of possible archaeological interest located some 5 km southwest of Mongabip Village on the Ok Agim walking track. The rock shelter shows signs of use over a long period of time, whilst the cave itself appears to be unused.

OK NONG AREA

OK NONG AREA

The Ok Nong drains the eastern portion of the Hindenburg Ranges some 10 km south of Telefomin, and flows into the Ok Tekin a short distance west of Feramin. The topography and vegetation is similar to the Ok Agim area.

Site No. 5. Borem Imal. A limestone overhang with a smoke blackened rock surface, and a dry earth floor showing signs of frequent use over a long period of time. Situated approximately 12 km south southwest of Telefomin on the traditional trade route to Golgobip (Faigolmin or Faiwolmin area). Possibly suitable for archaeological excavations.

Site No. 6. Kuruku Neng Imal. A limestone rock shelter with a small chamber and heavily smoke stained walls and roof with a dry, earth floor. At the rear of the chamber is a small shaft which may give access to a major cave system. The cave is an abandoned stream sink and therefore is probably subject to floor wash in the wet season; despite this the cave shows signs of frequent human use over a long period of time. The site is situated approximately 1 km along a hunting track that travels westwards along the fault controlled valley, 15 km due south of Telefomin and is on the main Telefomin-Faigolmin trade route.

LEGENDS

The following is a legend related to the writer by an elder of Mongabip Village and refers to a cave known as Agim Tém which is located a few hundred metres north of the Ok Agim Sink. The same elder also provides the story about the cave near the Ok Iram.

"Before, during the time of our ancestors, a group of men and women set off to hunt bats and flying foxes in a cave we call Agim Tém. They cut a very long length of bush vine and lowered it down the hole. Then, with the exception of a youth left to guard the entrance, they climbed down. Whilst they were down there a bad female spirit (Unang Mafak) with dogs' teeth fastened around her forehead and wrists appeared at the entrance of the cave. The youth was terribly frightened and ran away and hid in the bush. The bad female spirit then cut the vine with a stone axe and everyone perished in the bottom of the cave.

"Sometimes we go hunting flying foxes in Agim Tém and we can hear the cries of a spirit dog that belongs to her. Also, after we have killed the flying foxes it always rains."

(It is interesting to note that none of my local companions would talk about the evil female spirit whilst we were camped near the cave. They would only discuss it in the safety of the village.)

"There is another cave near the banks of the Ok Iram and a long, long time ago a small group of our children went off to play and hunt bats there, but the entrance of the cave closed off of its own accord and the children were never seen again."

This latter tale is common in many parts of Papua New Guinea where caves are widespread, particularly in the Chimbu (Parker, 1967). A similar story was

related to the writer whilst on a field trip to Aibura Cave, Kainantu (Wilde, in press). There is a story of a whole village disappearing into the ground at a place near Telefolip (a village southwest of Telefomin) and it is said that they still reside under the ground and from time to time reappear on the surface. There are also tales of 'the road of the dead', being underground and of the souls of dead persons living in caves. These souls are said to manifest themselves in the form of flying foxes (pers. comm. D. Jorgenson).

The final legend comes from an elder of Urapmin Village which is about 13 km due west of Telefomin, and relates to a sink hole and flood feature known as Ruun Tém which is located some 6 km southeast of Agim Tém.

"Our grandparents say that there is a big snake that lives near Ruun Tém and if you kill the snake and its blood runs into the river that flows into the cave, the river will flood and drown the person responsible. If you want to kill this snake you must drag it into the bush and kill it. There are a lot of these snakes, they are everywhere and it is all right to kill them except at Ok Ruun (River Ruun)."

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* * *

# SOME CAVE SITES IN THE ENGA PROVINCE

D. Miegel *

Despite the extensive areas of limestone and karst landscapes in the Enga Province, this article is the first to describe caves from there apart from a popular account in Jens Bjerre's book Savage New Guinea of a visit to a large cave that takes the Lagaip River not far from Laiagam.

.....

Prior to coming to Vudal, I was unaware of the existence of any cave exploration groups in P.N.G. and had limited my caving to social outings, although a couple of the caves mentioned in this article were found while I was on patrol. As my caving was mainly in the form of social outings I did not take any interest in caves that were more than an hour's walk from roads, or which could not be negotiated inside on foot. Some of the caves were visited nearly five years ago and I can no longer recall many of the details. As I do not know local names for the caves, I shall refer to them by the names of the nearest large village.

1. Sauanda Cave. This is situated about 16 km from Kompiam on the Kompiam Wabag road. It is about half an hour's walk from the road at a point about half way between the Sauanda rest house and the Sauanda primary school. The entrance is obscured by bush and can only be reached by crossing a small creek and then climbing up the face of a waterfall about 2 m high. The cave goes straight into a limestone cliff for about 10 m then turns to the right for about 200 m before it emerges in a large cavern about 10-15 m wide and 20 m long. The floor of the cavern slopes steeply upwards for about 20 m to ground level.

A small stream flows through the full length of the cave, and about half way along there is a duckunder which could be impassable during the wet season. About half way along there is also a small waterfall about 1 m high, and at this point the cave is sometimes blocked up with bamboo poles - debris from villagers' bat hunting expeditions. These can easily be removed to open up the passageway.

2. Irelya Cave. This one can be reached by driving to the Irelya Lutheran Mission which is about 3 km from Wabag on the Wapenamanda road. You then walk for about 1½ hours south of the mission, that is, towards the mountains. The cave is small with two small entrances and a small central cavern with about three tunnels leading off. These rapidly narrow down to about 50 cm high and wide. The bottom of the cave is very muddy and all of the ceiling and decorations are covered in soot from the pitpit torches used for hunting bats.

3. Pawari Cave. This cave is situated about a half hour's walk from the Pawari Lutheran Mission station. To get to Pawari you travel along the Wapenamanda Kompiam road to Tipikores, then turn off and drive about 3 km down to Pawari. This road is very steep and would not normally be passable to two wheel drive vehicles.

It is actually an underground river which starts from the base of a waterfall in a deep gorge, and then flows underground and emerges again about 1 km furth

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down the Nimimb River bed. During the dry season the whole of the Nimimb River water flow is diverted into the cave, but during the wet season when the river floods, the cave fills up and part of the water flows along the normally dry river bed to the cave outlet. This is the only non-limestone cave in the area. Because of the amount of water flowing through the cave, I have made no effort to explore it, although this might be possible with good equipment at the end of the dry season, that is, August-September.

4. Yaramanda Cave. Access is gained by turning off the Wapenamanda Hagen road about 2 km on the Hagen side of Yaramanda, and then driving down to the Government sand pit (about 1 km) at the junction of the Noka and Aiyamba Rivers. From the sand pit you have an hour's walk firstly along the old road and then off towards the limestone cliffs to the east. This cave is actually a massive crack formed where a great slab of limestone has split away from the cliff face. It is no more than 10 m wide and at its deepest part, it would be 20-30 m from the floor to the ceiling. At the far end of the cave there are a couple of small chambers in which there are a number of stalactites and stalagmites.

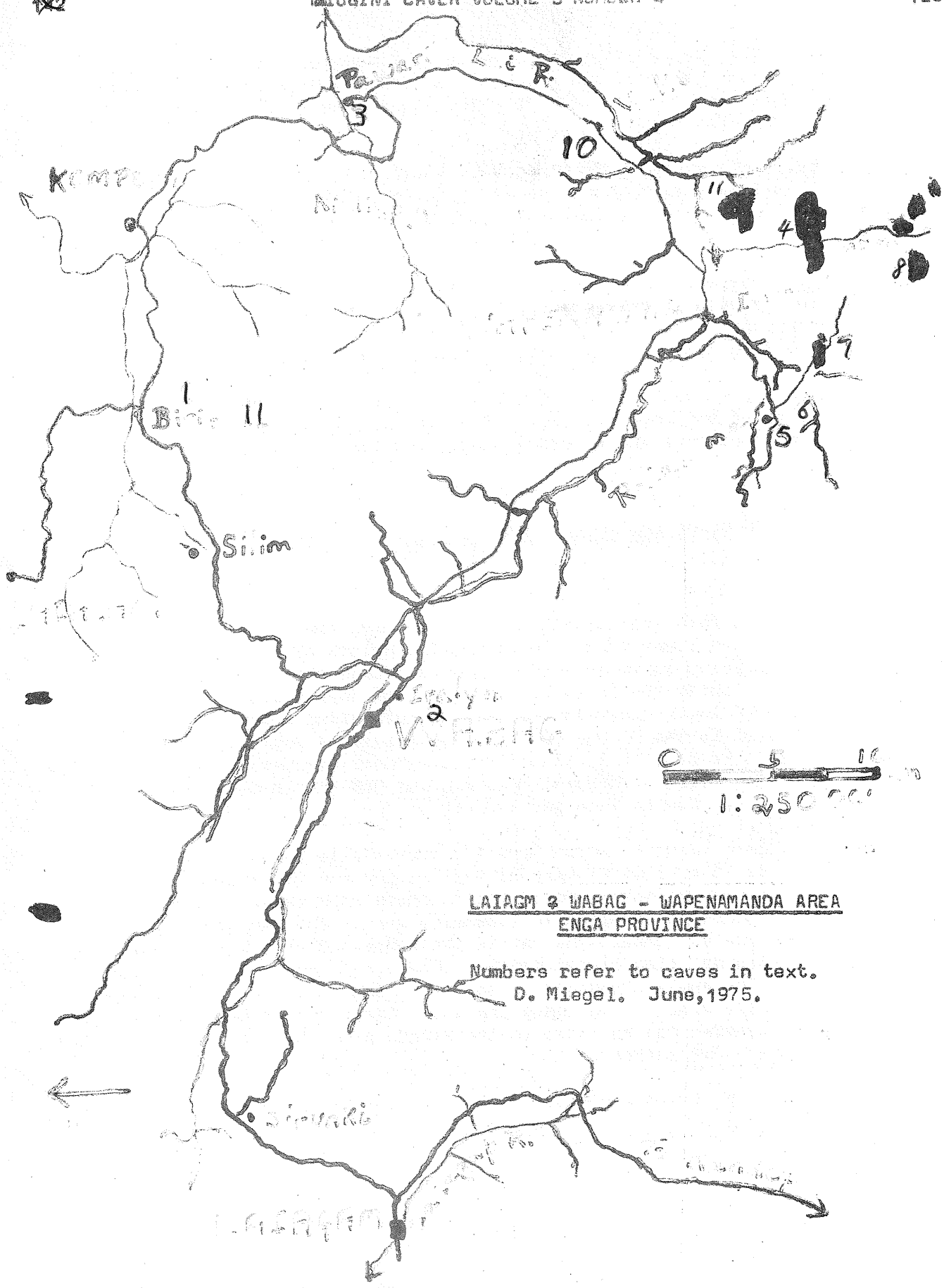
5. Raiakama Cave. This can be reached by driving out along the Tsak road to the Raiakama Lutheran Mission Station about 20 km from Wapenamanda. You then walk for about 15 minutes across the Tale River to the limestone cliffs where one can clearly hear subterranean streams rushing through the limestone. These streams feed a large spring at the base of the cliff. I have not entered the cave itself but have climbed the 30 m up the cliff free to the mouth of the cave. The cave itself then goes down so steeply that you would have to lower yourself down on ropes to get to the bottom. I could not see the end of the cave with my torch but an old man with me at the time assured me that when he was small he went into the cave to catch bats, and that two large caverns lead off from the main cavern.

The climb from the base of the cliff to the cave's entrance is almost vertical and would not be easy if you were carrying much gear. At the western end of the cliff there is a very large open cavern which would make an ideal campsite for anyone visiting the caves. Also at a couple of places along the cliffs, there are caves which are full of flying foxes. However I made no attempt to enter these as the people only hunt the flying foxes just prior to initiation ceremonies and did not want them disturbed.

6. Arumandu Cave. This is only about 2 km from Raiakama and in the same cliffs as the Raiakama Caves. It is only 1.5 m high and about 2.5 m long, but is of special interest in that it is the only known burial cave in the Province. The entrance is situated about 6 m vertically up from the base of the cliff. The mummified body of Taro, a man who was apparently a very successful clan fight leader, is believed to have been smoke dried and then placed in the cave in the early 1930s. Anyone visiting this cave will be asked to pay 20t to have a look at the body, and to pay K1 to take photographs. (See photograph, page 127).

As well as the caves described above which I have visited, there are a number of others which villagers have spoken about. These are as follows -

Caves 7 and 8. Small caves near Imungubus and Welya respectively were reported to have been used as refuges for women and pigs during times of inter-clan warfare.




LAIAGM & WABAG - WAPENAMANDA AREA
ENGA PROVINCE

Numbers refer to caves in text.
D. Miegel. June, 1975.

Cave 9. This lies further to the east of Yaramanda Cave. All I know of it is that a number of years ago some of the Lutheran Mission staff visited it and that they were able to walk from the Government sand pit to the cave and back again within a day.

Cave 10. This is reported to be very large and is situated at the base of the large limestone cliffs above the Yalis primary school. One should be able to drive from Wapenamanda to Yalis and walk up to the cave and back again within a day.

Cave 11. The people at Silim and Birip on the Wabag Kompiam road have told me that there is a large cave a full day's walk to the south of Silim. The people who told me about it claim that it is large enough to camp in, and that they go there from time to time on bat hunting expeditions.

From the map it can be seen that all the caves mentioned are located in a very small part of the Enga Province. I am certain that more caves could be located in the limestone areas around Kandep and Laiagam.

* * *

## PAPUA NEW GUINEA KARST TYPES. 3. CONE KARST

R. Michael Bourke *

The two karst forms classically recognized from the humid tropics are cone or cockpit karst and tower karst. Cone karst consists of a succession of rounded hills with intervening gulleyed depressions or cockpits. The cockpits are generally concave while the hills are convex. The term cockpit comes from Jamaica because of their resemblance to the cockfighting arenas. The classical area of cone karst is the Gunung Sewu area southeast of Jogjakarta in central Java, Indonesia. As well it is known from southwest Sulawesi in Indonesia, the Setul Range on the Thailand-Malaysia border, the Doberi Peninsula (Manokwari area) of Irian Jaya, Puerto Rico and Jamaica.

TheP.N.G. cone karst is known from the Darai Hills inland from Kikori in the Gulf Province, the Lelet Plateau of New Ireland and the Whiteman Range of New Britain. The lower photograph on the opposite page shows cone karst from the Darai Hills where it occupies an extensive area. The landscape consists of a continuous sea of cones. The one in the foreground has been cleared and levelled for a gas drilling rig at Kanau. (Photograph courtesy of the P.N.G. Post-Courier). The two photographs on the following page are from the Lelet Plateau at c. 900 m a.s.l. The cones are more widely spaced than in the Darai Hills. Cave entrances can be found in the stream sinks at the base of the cockpits. (Photographs by author).

* D.A.S.F., Keravat, E.N.B., P.N.G.

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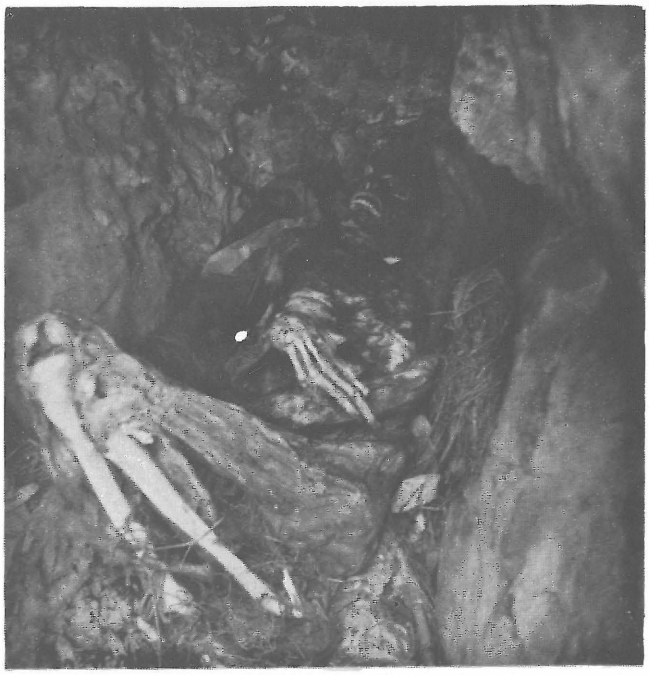
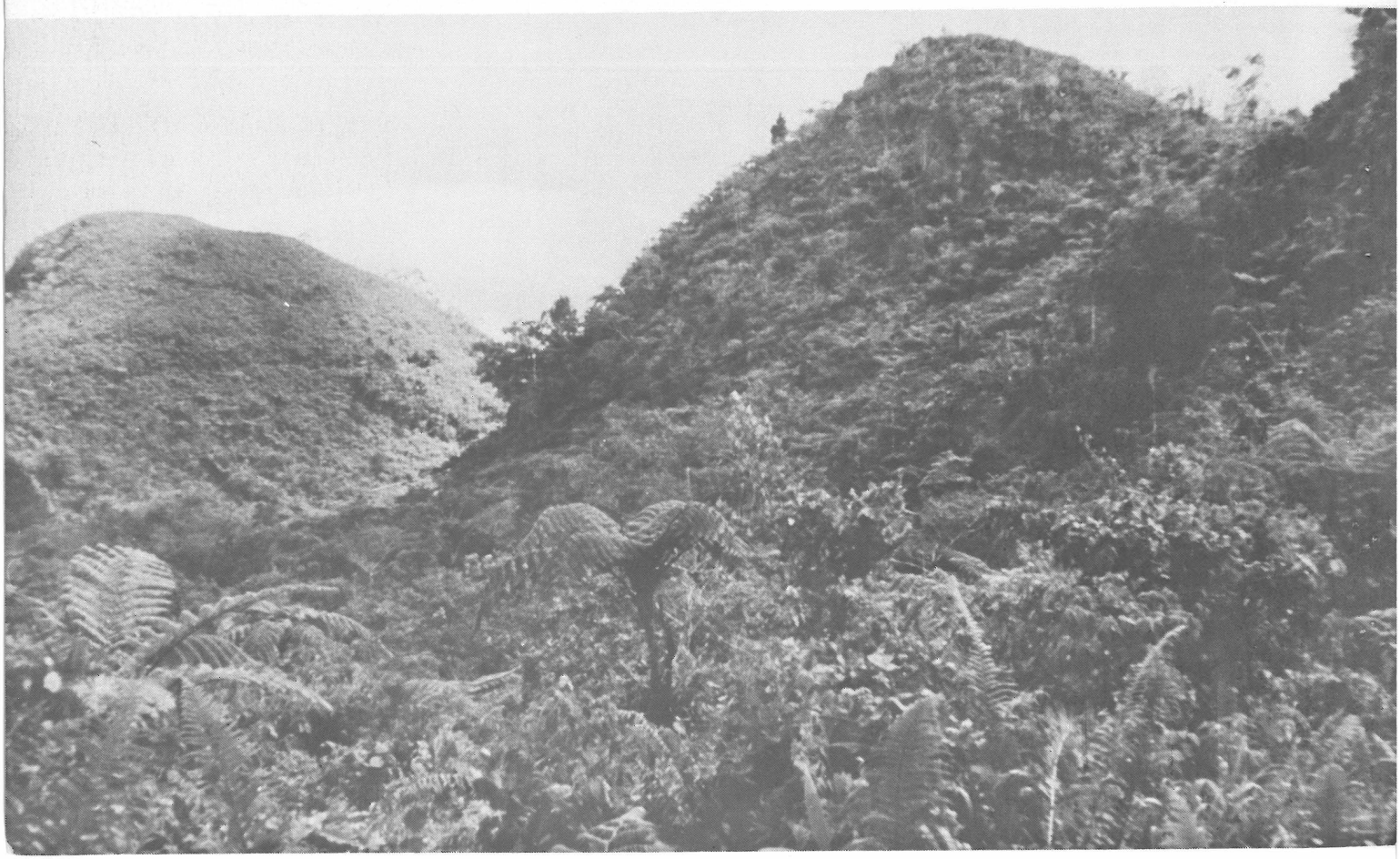


Right. A mummified body in Arumandu Cave Enga Province. (Photo by D. Miegel).

Below Cone carst in the Kikori area Gulf Province (Photo by P N G Post–Courier)



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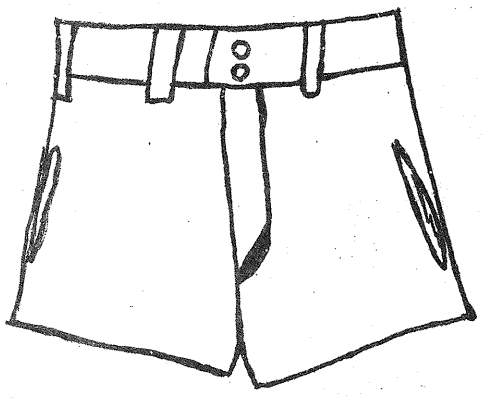

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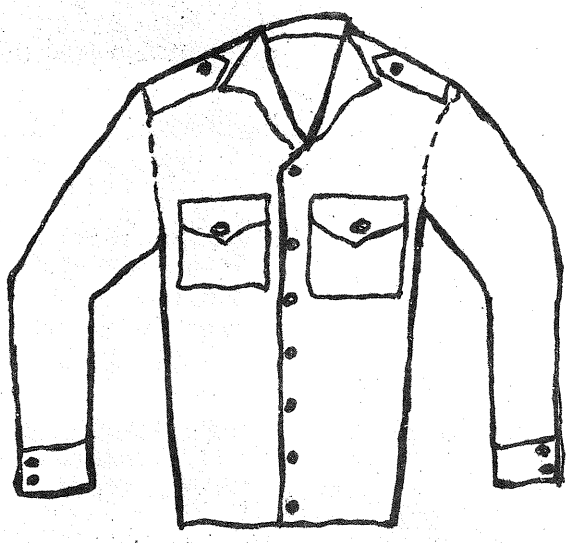

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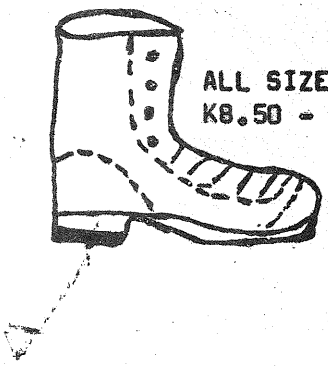

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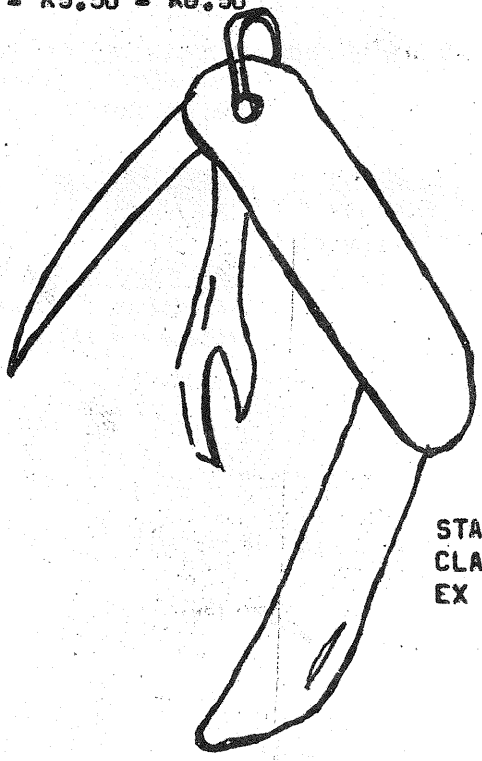

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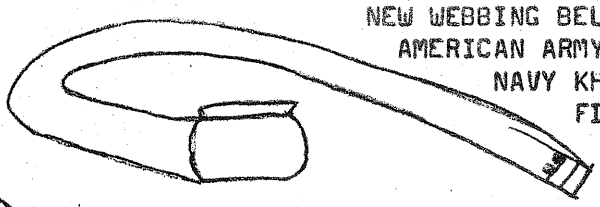

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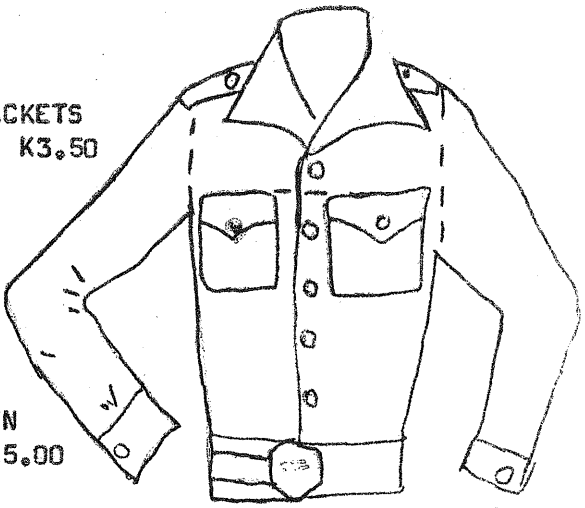

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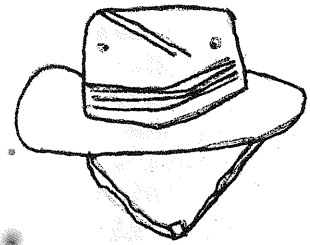

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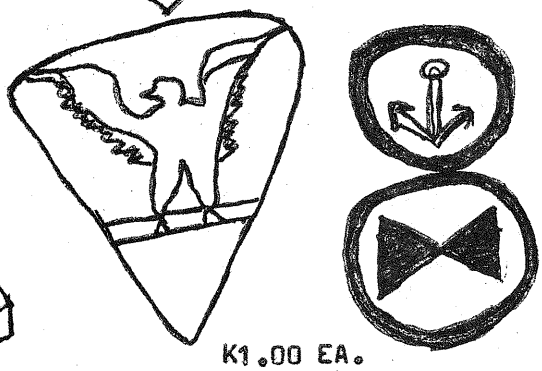
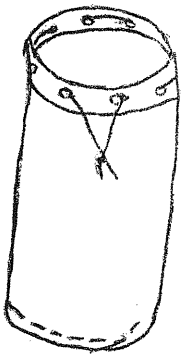


K1.00 EA.



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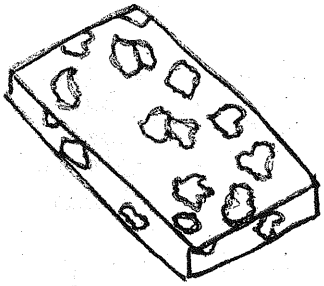

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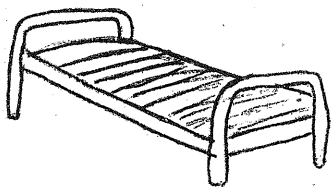

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## THE CAVING SCENE

British Expedition. In October Roy Blackham and Jim Farnworth joined the expedition to bring the P.N.G. contingent up to four - along with n Englishmen straight out from England, a solitary American and a Bulgarian. The American cameraman pulled out after a month and in October the Bulgarian, Petar Beron, who is a biologist, flew out to Hagen to do some collecting from other locations in P.N.G. and to attend an ecology and conservation symposium in Wau. As we go to press (late November), some of the party have pulled out to Hagen and Moresby and the rest will be out of Telefomin within a few days. All over but the shouting, as they say. Some of the members will be returning to England directly while a few others will stay in the highlands for the PNGCEG meet in the Chimbu over Christmas-New Year - which is still on by the way, although vague in the extreme. Pasin bilong Niugini!

A bare bones summary of the trip is given by Kevan Wilde on pp 109-110, so there is no need to add any more. The trip has been extremely successful, aside from the hoped for new world depth record, and the publication should be well worth waiting for. The logistics section alone should be worth it - something like 9 DC3 charters from Hagen to Telefomin including a beer making outfit complete with the barrel!

Central Province. In October Malcolm Pound visited Javavere three times. His survey of Old Cave is coming along slowly. The second trip was an introductory one with 13 people along, but none of the group is particularly interested in returning. The third trip was made with Leigh Gleeson to the Art Gallery Cave which they explored and had a look at two sumps in it.

Chimbu Province. Jim Farnworth and Leigh Gleeson set out to descend Bibima in early October. After a hassle over payment, the entrance pitch was rigged. At this stage they discovered that their camp had been robbed. Fearful of leaving the other member of the party, Mieke Vermeulen, alone on the surface, the descent was called off. They then spent "a most enjoyable full day in Irapui". Other caves in the area were not visited because of the prohibitive cost. Leigh writes: "... the literature on this area as taken from Niugini Caver (Wilde et al.) is very accurate and reliable and is thus a delight to work with".

In November Petar Beron visited five caves looking for cave life. Three of the caves near Goglme Mission north of Kundiawa have not been previously reported by cavers. The other two, Irukunguai and Mebik, have been reported. Petar found the Chimbu caves he visited to be very rich in fauna.

East New Britain. November has been quite an active period on the Gazelle. Early in the month Stanley Bongbong, Michael Bourke and Steve Freeman went out to the small caves at Londip for some photographs of the Japanese guns inside. An interesting find was some "cave art" in a small cavity. Whether the "art" is in fact that or Japanese characters is not known. The following weekend, Robin Bain, Michael Bourke, Denis Martin, Japeth Morris and a group of six Gaulim Teachers College students who are working towards the Duke of Edinburgh award, went out to the Iuvare caves. One of the male students, Konegi Rigin, didn't let a broken arm in a plaster cast deter him, although he found the crawl in the water in Alumgu hard going. The students are keen for a return trip to Iuvare and other caves in the area. Robin is following up reports of other caves in the Gaulim area.

The following week Petar Beron and Michael Bourke made two trips to the caves at Malabunga and Iuvare to collect cave fauna. Luminas Cave was sufficiently interesting to induce Petar back for a full day's collecting in it. He collected some 30 species from the caves visited and some species are probably net yet described. Petar has now collected from a variety of locations in P.N.G. with cave temperatures ranging from $9^{0}$ to $25^{0}$ C.

Enga Province. Leigh Gleeson visited one very small efflux cave at Lake Kopiago in October. He went to visit a burial cave, but could not agree on an entry price, so did not enter it.

New Ireland. The proposed trip for next year looks like going to the Lelet (see request for starters p 108). Dave Gillieson hopes to be doing some geomorphological research on the cone karst at the same time.

Southern Highlands. Leigh Gleeson visited a 200 m active stream cave an hour's walk out of Mendi in October. It is possible to do a through trip in the cave. At Pangia the kiap spoke of at least six stream sinks in his area.

ooooooooo

Looks like the lot for this year. Your editor is always glad to hear about caving activity for inclusion in this section. The same names always seem to come up - not because they do all the caving in the country but because they are corresponding with the editor. How about some news from some of the other cavers? Even if you don't know me personally, drop a brief note for inclusion in The Caving Scene. Other people are always interested to hear what's happening.

R.M.B.

* * *

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* * *

## BRIEF NOTES ON SOME CAVES ON NEW HANOVER AND MAKADA ISLANDS

Leigh Gleeson *

New Hanover (Lavangai) is a largish island off the northwest end of New Ireland. There are a number of small but interesting caves near Meteran village on the south coast. The caves occur in the elevated coral limestone up to 20 m above present sea level. The first one inspected was near the school at Metemana Village. A 6 m vertical climb down a 7 m diameter entrance leads through into a respectable chamber 2.5 m high and 8 m wide. Several small passages lead off but soon become tight or blocked off with mud. The presence of a few bats and some pool formation make it quite a pleasant little hole. This cave and others in the area were used by the villagers as bomb shelters during the war. For this reason some older people are unhappy about maps being made of the caves as, in their view, this would give outsiders a knowledge of where the villagers were hiding in the event of another war.

A second cave near this village occurs on the coast and is still active as a sea cave. It is quite a delightful hole consisting of a 100 m through trip with average dimensions of 5 m wide and high. In parts caverns develop to sizes considerably larger than this and house some moderately large bat colonies along with smells of equal magnitude. Some villagers were anxious as to my personal safety upon entering this cave as they believed it was occupied by a snake "masalai" or spirit. An encounter with a giant lizard on re-emerging from the cave I regard as coincidence.

Another cave of dimensions similar to that first described is to be found midway along the track between Metemana and Metekauin Plantation. Villagers refer to a large sea cave at Cape Botiangin just east of Meteran although this was not verified. As for the rest of the island one might expect to find a similar frequency of caves in the elevated coral reefs bordering the coast around most of the island. According to the geological map no limestone occurs in the Tirpitz Range which represents much of the topographic high on New Hanover and covers a major segment of it. Thus potential for deep caves is not good. Nevertheless the coastal caves are worth exploring.

Editorial note. There is also a walk through cave called Sila reported at Umbukul. Near Hau Village a cave called Valval is reported by villagers. It is said that there is salt water with seaweed growing in it inside. Legends are associated with the cave. Visitors must ask the owner Lamlam for permission to enter because he has the "key" to get inside, without which it is impossible to enter.

Makada is one of the Duke of York Group of islands that lies between New Britain and New Ireland. A recent visit there revealed the presence of at least one small but interesting cave. It occurs in elevated coral limestone behind Nagail Village on the northwest side of Makada. A 2 m high entrance gives way to a 10 m corridor which opens up into a chamber some 10 m in diameter and 1.5 m high. This chamber contained a bat colony of about 50 animals when visited in September, 1975. Other very small sea caves were also inspected in the vicinity. Villagers did not report any other caves when queried.

* 5 Derwent Water Avenue, Sandy Bay, Tasmania. 7005. Australia.

* * *

# SOME FURTHER CAVES IN THE EASTERN HIGHLANDS

Rick Giddings *

## HAIZA'NAMITO CAVERN, GOROKA SUB-PROVINCE

Situated adjacent to that part of the Omahaiga Creek which is called Lili'wa'kuka on Kotuni Clan land and within an area the Goroka Local Government Council plans to develop as a Flora and Fauna Reserve. Access is via the Kotuni Road and the foot track to the base of Mt. Otto. It is about 8 km northwest of Goroka in a direct line.

This cavern appears to have been formed by a washout from under some giant boulders. It is easily accessible by way of the bed of the Haiza'namito stream which trickles from its entrance. This stream drains the entire length of the cavern. The cavern comprises a single chamber approximately 15 m long. The roof is approximately 2 m high at its highest point.

It is an unattractive feature devoid of natural decoration. The floor is soft mud with deposits of maggot-ridden bird droppings. Small swiftlets nesting in the cavern were the only fauna noticed during my brief visit there. The cavern is occasionally visited by students from the Kabiufa College on bush excursions. Regretfully, it has little value as a tourist attraction for the proposed reserve.

(Gahuku dialect: "haiza" - insignificant; "namito" - stream.)

## O'NAPA CAVE SYSTEM, KAINANTU SUB-PROVINCE

Situated immediately south of the Ramu Hydro Scheme proposed lake storage area and within the Arona Re-settlement Scheme.

This system is believed to comprise a subterranean creek bed which is accessible during the dry season. It is possibly up to 800 m in length. It was first (?) explored by a government geologist investigating the Ramu Scheme in 1972.

Editorial note. Gerry Jacobson writes "In the very dry season of 1972 my colleague Mike Furstner and I explored an underground stream in the Ramu Valley about 5 km south of the present Yonki township. The stream was negotiable from the north end for about 150 m with wide shallow passages formed by horizontal jointing. It was then blocked by a sump. We couldn't get in the south end where it rises." (Gerry Jacobson is a former government geologist.)

## THE KEKA CAVES - HENGANOFI SUB-PROVINCE

Haga'rinteoa Cave. Some 51 km east of Goroka on the Highlands Highway lies the village of Kika in the Henganofi Sub-Province. A walking track originating there leads south across the Kafetina River and into the valley of the Oro'go'renka Creek.

* P.O. Box 623, Goroka, E.H.P., P.N.G.

After walking for about twenty five minutes along this track one arrives opposite the mouth of the Haga'rintega Cave which is situated in a small knoll to the west of the track. The cave is not visible from the track as its entrance is hidden in a thicket of heavy undergrowth comprising mainly wild cane interspersed with tall casuarina trees. Read (1975) called this cave "The Tomb".

The cave has a small entrance which leads down a slight incline to the main cavern. From there a tunnel continues into the hill, in all a distance of perhaps 37-45 m. At the end of the tunnel, and behind a small man made stone wall, lies the skeleton of an old man named Katimaria who probably died and was interned there c. 1960. He chose this site as his last resting place before his death. Shreds of calico still cover his mouldering bones and nearby are two enamel plates, a spoon and a whisky bottle full of salt, which would have belonged to him in life.

There are two other caves in the same area, one named Kengkeng'pinka AND the other, Nama'joga. Very brief mention of the caves near Kega was made in a Kainantu patrol report during the early 1950s.

REFERENCE

Read, K. (1975). Two Small Caves near Henganofi, Eastern Highlands District, Niugini Caver 3(2): 29.

* * *

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# NENDZMA CAVE, BOUGAINVILLE ISLAND

H. Meier *

Location. The cave is approximately 500 m north northwest of Borumai Village, Bougainville Island. The area is reached by a 1½ hour walk from the Kieta-Panguna road. The beginning of the walking track is reached by a 18 km drive from Arawa. Peter Robinson applied the name Boromai to the cave in his articles on its exploration (Robbie, 1971; Robinson, 1971a, b).

Area description. The cave is situated in a steep sided valley with numerous vertical cliffs up to 100 m high. Waterfalls 10 m high are quite common along the course of the small river. Part of the river goes underground on the right hand side of the gorge at 370 m a.s.l. The efflux is 500 m downstream on the left hand side at 300 m a.s.l. The surface river usually carries some water except during dry periods. (See map).

Geology. The limestone is believed to be part of the Keriaka limestone of Lower Miocene age. It is mostly grey, fine grained massive with intercalated limestone breccia. The limestone is fossiliferous in places with shell fragments of lamellibranchs and other molluscs. It is underlain by calcareous volcanic agglomerate. (Baumer and Tillmon; Sampsey Exploration Services).

Cave Description. It was partly surveyed in 1968 by a team from Conzinc Riotinto of Australia Exploration investigating limestone deposits in the area. Serious exploration started in 1971 led by Peter Robinson. At that time the main entrance (1), 300 m upstream from the efflux, was the only known access to the cave. This entrance is at the foot of a cliff 20 m above the riverbed. A short distance in, the cave opens into a large hall (2). A handline is recommended to descend 20 m down a steep slippery slope to the floor of the hall. Two more entrances into the entrance hall have since been found at floor level. A number of passages on the northwest side lead down to the stream passage. Progress up and downstream is blocked by sumps.

Following the passage at the end of the entrance chamber leads one to the bat chamber (3). Thousands of bats are suspended from the sides and ceiling. Villagers frequently visit this area to hunt bats. Once a smouldering fire was found in here. The bats had cleared out, but had returned by our next trip. From here separate shafts of 5 m and 7 m give access to a steep passage which leads to the river. Downstream is a sump and upstream a very narrow impossible squeeze.

Halfway between the entrance hall and bat chamber a squeeze followed by a narrow cleft gives access to Boots Extension (14), a chamber of impressive dimensions. Attempts to reach the upper western part of the chamber have not been successful so far. It is quite easy to reach the outside from here and this route is usually used when leaving the cave.

A good sized tunnel leads off in a westerly direction from the bat chamber. After 35 m a pillar (4) is reached. There is a cream coloured flowstone on the

* P.O. Box 73, Panguna, Bougainville Province, P.N.G.

right. Flowstone on the left is dark brown red in colour. An opening goes up inside the pillar, but this has only been explored for 5 m.

Beyond the pillar passages are narrow clefts about 1 m wide with the ceiling often not visible. After 70 m a turnoff is reached (5). The passage on the right opens into a chamber which terminates in a rockfall (5A). A slight breeze has been noted in the rockfall. "Tourists" are usually not taken past this point as the lower sections of the cave are thought to be subject to flooding.

From the turnoff the left hand passage skirts the chamber and leads to a dry sump (6). Openings to the west end in an unstable rockfall. Ceiling height is now only 1 m. The passage slopes to a chamber. There is a drop of 2.5 m over sandy aggregate into the chamber. To one side is a 12 m shaft (7). This shaft was descended with a rope ladder. At the bottom of the shaft is the main river passage. This can be followed downstream for 150 m to a sump. Upstream a short crawl leads to where the river divides and passages become too low to follow.

A crawl leading east from the bottom of the shaft leads to the Hermitage (8), a chamber with a ceiling of 20 m or more. A single bat was once noticed here. This was the only bat seen this side of the turnoff (5). The passage, which has been wet since October 1972, can be followed upstream to a 7 m waterfall (9). A passage connecting this area to the top of the 12 m shaft has since been found. This makes it possible to bypass the shaft (7).

Seventy metres downstream from the waterfall a southern extension (10) can be entered. A short crawl leads into a sand floor chamber. The highest point in this extension is reached after climbing a 4 m cliff and following the passage for 50 m. Here two waterfalls enter the passage. The water can be followed through crawls and squeezes into a chamber where two more waterfalls emerge from the ceiling. The lower part of the chamber ends in a sump.

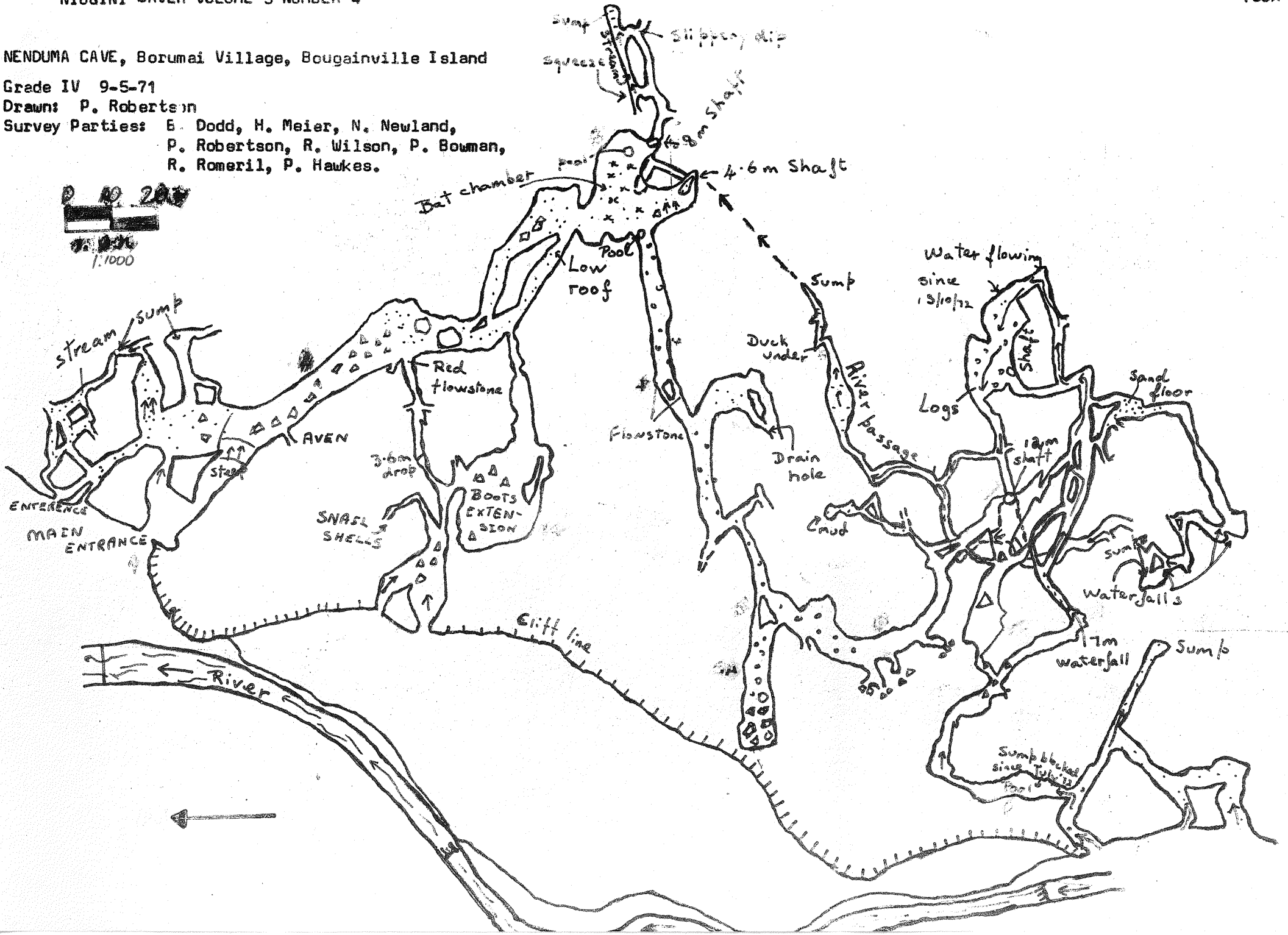
After returning to the top of the 12 m shaft (7), one can go in a westerly direction. A short crawl and scramble up a 45° slope brings one into an area with a lot of decoration (11). Although plentiful they are not spectacular. This is the only area in the cave found so far which has more than just the odd formation. From here access can be gained to a passage which in one direction leads down to the 7 m waterfall (9) and in the other direction can be followed through a rockpile to a sump (12). This sump is usually blocked, not only by water, but also by wood and gravel. On the other side is the influx (13). Here the river enters the limestone through three negotiable passages. These passages join and terminate in two sumps, one negotiable at times (12), the other not negotiable.

At the efflux the river emerges from a low tunnel 300 m downstream from the main entrance to the cave (1). This passage can be followed for 10 m to a deep sump. On emerging the river divides, part passing under a natural bridge and following the cliff face to join the surface river. The other part, approximately half the total flow, turns back into the limestone. This flow reappears from numerous places along the cliff face starting 50 m downstream. This takes 20 minutes as established by trials. This cliff marks the edge of the limestone.

NENDUMA CAVE, Borumai Village, Bougainville Island

Grade IV 9-5-71
Drawn: P. Robertson
Survey Parties: B. Dodd, H. Meier, N. Newland, P. Robertson, R. Wilson, P. Bowman, R. Romeril, P. Hawkes.



Summary. A considerable part of Nenduma Cave is subject to flash flooding! It is not a difficult cave and access is easy. Passage length surveyed so far is approximately 1500 m. The cave has further potential as has the area is general.

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Robinson, Peter (1971a). Incidents and Explorations at Boromai Cave, Bougainville. J. Sydney Speleo. Soc. 15(10): 292-294.

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* * *

## A FURTHER TWO CAVES FROM NEW IRELAND

H. Gallasch *

N27. Lockabor Burial Cave. The entrance is situated in a small coralline limestone cliff abutting the beach about 1 km south of Resese Village.and is 15 m inland from the high water mark. The narrow entrance passage bypasses a small room on the right and at about 20 m opens into a wider (10-20 m) but low chamber. The roof is not more than 160 cm above floor level. The chamber is generally circular in shape with a level silt floor. There are five enclaves partially shielded by stalactites and columns. Within these the bodies have been deposited. In the more recent burials, coffins have been used and these have been constructed of rough sawn timber, packing boxes, galvanized iron and in one case, a sawn off canoe. The remnants of six coffins are visible, usually little more than an outline of rotted wood. Unlike most burial caves on New Ireland where random bones are all that remain, Lockabor contains complete skeletons in the position they were laid to rest, although many of the bones are crumbling to dust. The place is 'tambu' to the villagers. Burials, usually of older important people, have continued in the cave until only a few years ago and perhaps are being limited by the cost of the privilege of being buried there. (See N.C. 2(3): 193-205.)

N13. Lemetura Cave. This is near the Silom Cave (N14) (i.e., Moramon Cave), being only 3 m from the east coast road and around 500 m north of Moramon. The entrance is an opening near the roof of a circular chamber about 10 m across. A somewhat difficult climb down the side leads to a ledge which half circles the chamber midway down and opposite the entrance leads to a passage going into the mountain. After 10 m the passage terminates in a small chamber profusely decorated with dripstone decorations with small holes continuing downwards. This small cave is noted for two things, the thick mud on the floor and the beautiful helictite and straw formations in enclaves near the main chamber. Another cave, Kororeda, was reported some 20 minutes walk up the mountain from Moramon Cave.

* D.A.S.F., Keravat, E.N.B., P.N.G. * * *

# OBUNGERAM CAVE IS BOTTOMED

Tim Sprod *

Cave: Obungeram, North Central Bainings, East New Britain

Trip Dates: 14-16th June, 1975

Trip Members: Colin Cranfield, Jim Farnworth, Tim Sprod

We were driven to Malasaet Village by Mike and Jean Bourke on the Saturday morning. On arrival we found that there had been a fire dance in the village the night before, which we had unfortunately missed. Many of the villagers assumed we were searchers for the plane which had crashed in the Bainings that Thursday, and Mike had his work cut out correcting this impression. We set off for Alacasam Village, walking down to the Toriu River, wading it and ascending to the village. The villagers there were building a house and were reluctant to guide us to the cave that day, so we spent the afternoon washing, seeing over the church and school and talking to the Tolai school teacher, Ernest Kilal.

The night was spent fairly comfortably on his floor and we set off the next morning about an hour after dawn. The walk to the cave was easy, taking about 1½ hours with the last third through the 'bus tru'. One of the guides cut a new bamboo ladder which Colin regarded with suspicion, and rightly so. Despite repeated reassurance from the guides, a rung broke when he was nearly down and he descended the rest the fast way. We then shared our lunch amongst the party - ourselves, our two guides, three village kids and Ernest - and set off. One of the kids insisted on carrying the rope and we had got some way in before we realized that he and the other villagers had stopped to chase bats. Colin and Jim returned for the rope and we continued through hordes of bats to the first duck under, the limit of exploration prior to Jim and Mike's December trip.

We saw very few bats. Jim was having trouble with both his torch and carbide lamp, which later came good again. We then came to the pitch that stopped Jim and Mike, and Colin had his first experience of abseiling into a virgin passage. As the next duck under was very low, we left most of our gear at the bottom of the pitch and continued on. Another sump stopped us, but again there was a way on in the roof. This ended in a chimney traverse to the floor again and, soon after, the final sump. We started back with Jim surveying by guesstimation and my torch rapidly fading. Using a prussik and lifeline, we ascended the pitch and returned slowly to the entrance pitch where, as Jim had the least distrust of the bamboo ladder, we sent him up to tie the rope.

After inspecting the light and thinking about sleeping in a damp, rocky cave, we decided we had enough daylight to return to Alacasam. Our guides had left, but had been asked to blaze the trail back. We had several false starts, but each time refound the track. The light faded badly an' ol' Huey really sent it down. We all felt full of energy and loped along, smiling and whistling, and made Alacasam with just enough light to still see. Ernest made us welcome again and we took our time walking back to Malasaet the next morning, stopping for a picnic and swim at the Toriu on the way. Just as well we saved our energy, because when we got back to Keravat, Mike had us walking around a table collating Niugini Cavers!

* P.O. Box 1391, Rabaul, P.N.G.

*** * ***

# A TRIP TO THE GALAVIT-PONDO AREA OF THE BAINING MOUNTAINS, NEW BRITAIN

Leigh Gleeson *

The North Baining Mountains are located southwest of Rabaul on New Britain. Lithology of the regionsconsists of approximately 600 $km^2$ of tertiary limestone bounded on the north by volcanics and south and east by an assortment of clastic sediments. Maximum elevation in the area is 1680 m (Davies, 1973). However the effective cave depth potential for most of the area is considerably less than this, even though the limestone is continuous to sea level.

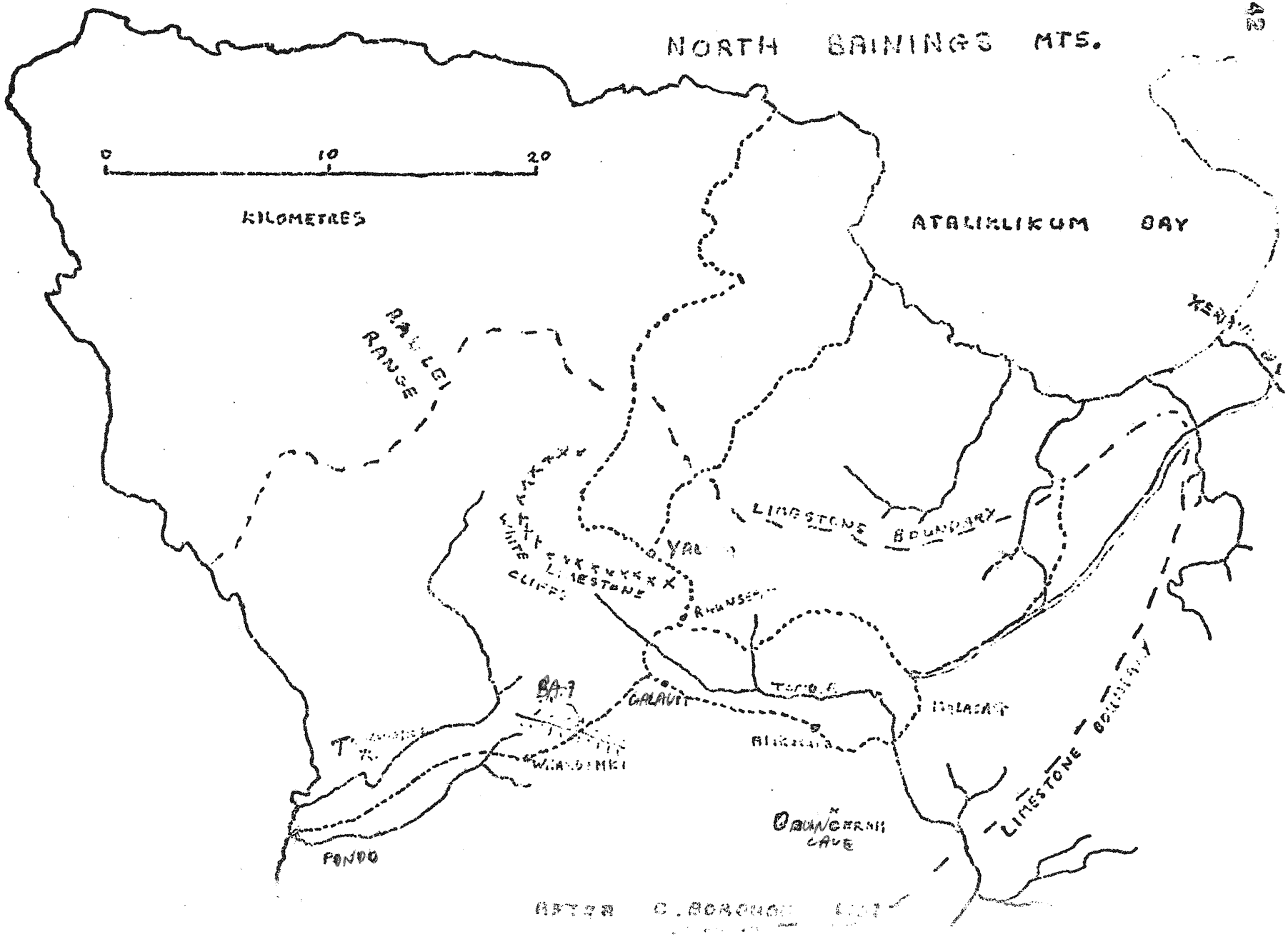
This report refers to a three day reconnaissance trip by Jim Farnworth and myself to the area between Malasaet Village and Pondo Plantation. Our original plan was to spend five days operating principally at about 800-1000 m between Galavit and Wilambimbi Villages (see map). Chris Borough visited the area in 1963 and reported respectable looking shafts in this area, although his party did not see any entrances (Borough, 1963). Unfortunately our original plan did not come to fruition firstly because of the lack of drinking water in this area and secondly because of unreliable travel time information.

On 13th September, 1975, we set out from Malasaet which is now readily accessible by road, at least during dry periods. From Malasaet a steady descent to the Torio River is followed by a gradual climb up to Alakasam (2½ hours). From here the track traverses around the mountain and up a small ridge to Galavit (2¾ hours from Alakasam). The track to Wilambimbi leads through gardens and kunai grass climbing gradually, occasionally taking advantage of the open flow-stone streambeds whose waters issue freely from many sites on the side of the mountain ridge. We do not know whether these streams emanate from caves. An attempt by Jim to check one of these streams ended when it became too steep for continued inspection.

An hour after leaving Galavit and at an elevation of about 800 m, we found ourselves in the forest proper but still on a good walking track though climbing steeply. The track continued to cross streams and even follow them for consider-able distances until they disappeared at around 900 m. Three hours out of Galavit we camped under the overhang of a huge limestone block of which quite a few were present at this level. Unfortunately one hour before we had passed the last free flowing water we were to see for another day. We collected rainwater with a plastic sheet that evening.

Next day we set off waterless. Within ¾ hour Jim had spotted a small entrance on the right hand side of the track. He checked it and found it choked by sticky mud after 6 m. Just further on Jim sighted a second, also on the northwest side of the track. It was tagged with the number BA1. Initial prospects looked good with a 16 m entrance pitch with dimensions 7 m by 3 m, but on descent it was found to choke with mud on a flat floor 6 m in diameter. Within several hundred metres of this point four more respectable looking shafts were found. We soon recognized that we were on a series of terraced structural benches obvicusly very favourable for the development of shafts. Elevation is of the

* 5 Derwent Water Avenue, Sandy Bay. Tasmania. 7005. Australia.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LIMESTONE BOUNDARY
WHITE CLIFFS LIMESTONE
GALAUIT
BALAWAIA
LIMESTONE BOUNDARY
WINDESIMET
PONDO
BUNGERMI CAVE

order of 1000 m. We pressed on to the top of the mountain ridge and beyond to search for much needed water, determined to return to check out the shafts.

Finally muddy pools of water were found on the Wilambimki side of the summit ridge ½ hour from the top. This could not be relied upon by a party working in the promising area just mentioned. We pressed on anxious to verify reports of good pothole country further on towards Wilambimki. Losing altitude rapidly, we spotted only three possible dolines two of which may only have been gully heads. A few hours later we emerged at a tributary stream of the Iowanamaronga River. We decided to press on to Wilambimki and Pondo. We had been travelling for 6½ hours when we arrived at the deserted village of Wilambimki. No cave entrances had been seen on the lower slopes of the mountains as we approached the village.

An early start the following morning and a 5½ hour march saw us in Pondo just in time to catch a power boat to Open Bay and then a plane back to Rabaul. During the morning's walk we had descended about three caves all of which were found to choke at about 5 m. These were not numbered. No doubt more holes could be located in this area but the effort would be considerable for minimal returns.

We feel that the area to return to is that in the vicinity of BA1 where many more shafts await checking. One should keep in mind that the existing areas known to hold caves, namely near Yalum and the high plateau above the white limestone cliffs at Yalum, are no less desirable for a return trip. Furthermore the area south of Alakasam which contains the extensive horizontal system (Chungeram Cave) may be just as attractive for prospective return trips at least in terms of finding reasonable size caves (pers. comm. R. M. Bourke and J. Farnworth).

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## INTERNATIONAL CONGRESS OF SPELEOLOGY

The Seventh International Congress of Speleology is to be held in Sheffield, England in September, 1977. The Congress is organized by the International Union of Speleology. The Australian Speleological Federation, of which the PNGCEG is an associate member, is a member of the I.U.S. and has representatives on a number of I.U.S. commissions. P.N.G. has never been represented at the Congresses although papers from P.N.G. were presented at the previous two congresses. The last one was held in Olomouc in Czechoslavakia in 1973 and was a great success, apart from official interference from the local bureaucrats. The previous congress was held in Stuttgart, Germany in 1969. With all the attention P.N.G. is receiving in international speleological circles, it would be a pity if P.N.G. is not represented this time.

* * *

## SPELEO PERSONALITY - HAL GALLASCH

Harold Earnest Gallasch, born in Adelaide in 1943, started his caving career at a tender age in the Glen Osmond hills. Later he learnt that his caves were in fact mine tunnels. After high school Hal did a degree in Agricultural Science after switching from Geology in first year. He wandered around New Zealand for a while before coming to P.N.G. to work for D.A.S.F. in mid-1965. (He first came here in 1963.) Postings have been Kerema, Popondetta (extension and research), Vudal (teaching) and Keravat (research). He is currently engaged in agronomic research on coconuts and coffee, and working on a Masters degree. Hal is married to a Tolai girl and has a daughter and a son.

Speleology is but one of Hal's many interests. It competes for time with mineralogy, anthropology, marine biology and archaeology. To Hal these represent excuses to get away from city life and get out into the bush on one's own. He is interested in getting around and seeing what is in his environment. If there are caves there, then they represent another aspect of the local environment to be investigated. If not, then there will be coral reefs or a volcano or native artifacts. For Hal an interest that starts with exploration or casual observation grows into a need for study and documentation. Thus he has moved from exploring mines and reefs to collecting minerals and coral and become a well informed amateur expert in both fields.

In 1961 Hal started caving with the Cave Exploration Group of South Australia at Naracoorte, in the Flinders Ranges and on the Nullarbor Plain. As well he has caved in Western Australia, Tasmania, N.S.W., and in New Zealand. In P.N.G. he has caved at Cape Rodney and Marshall Lagoon in the Central Province, at Snake River between Lae and Bulolo, on Los Negros Island off Manus, on New Ireland, and in the Kandrian, Pomio and Gazelle Peninsula areas of New Britain. He was a member of the 1972-73 U.Q.S.S. New Britain Expedition to Ora Cave. He is interested in cave exploration, photography, and art and sites of anthropological interest. His caving finds are documented in nine articles in Niugini Caver.

Hal is a collector. He collects stamps, artifacts, minerals, coral, butterflies, fungi and wine. You name it and he probably has a cupboard full of them - to his wife's horror. In fact his mineral and artifact collections are quite sizeable and significant. He is also interested in art, both ancient and contemporary. He is basically a loner who believes that if two is company, then three is a herd, a mob and probably a stampede. He is an eccentric and makes a point of arriving a prescribed time later than everyone else. He is a firm believer that life should be lived at a slow and steady pace.

He considers one of his most notable achievements was the discovery of a new mineral, named Phosforiam lavendulun, in the Broken Hill area of N.S.W. He is the only person to have found this rather beautiful mineral, although related ones are known from South America. His wanderings have given him the opportunity to explore caves in unusual places. None of the areas in P.N.G. he has visited were on the beaten track for cavers when he went there. Another significant first was his report on the cave engravings from New Ireland.

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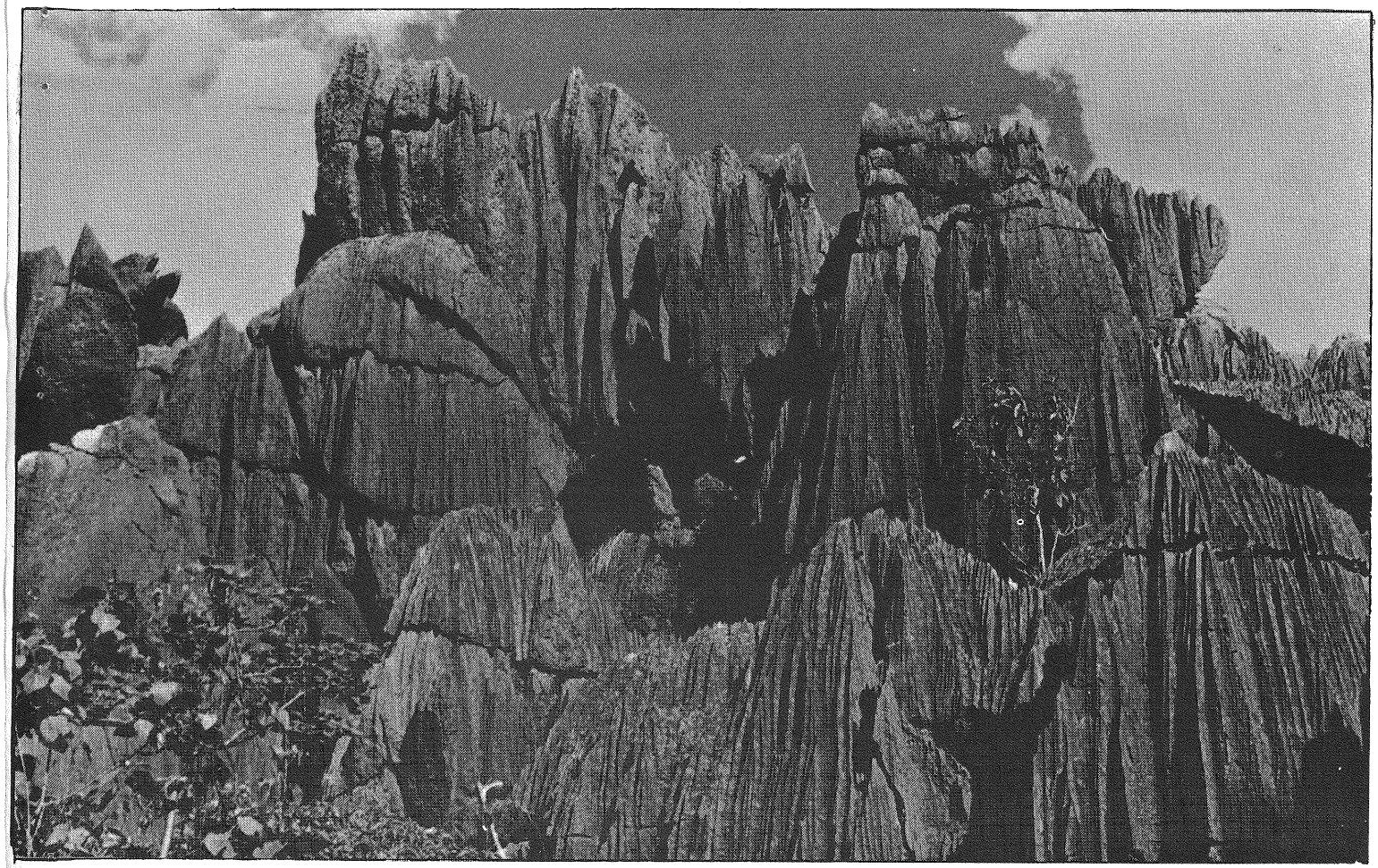

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