# Who was Edie Smith?

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In August 1967, Edith Smith died. A short time later, during a Australian Speleological Federation [ASF] committee meeting in Orange [NSW], a resolution established the "Edie Smith Award" in order to:

1. Perpetuate the memory of Edie Smith.
2. Give recognition to those who have made an outstanding contribution to Australian speleology.[Anon. 1968a]

The Award is now considered to be one of the most prestigious in Australian speleology. On average, only one Edie Smith Award is conferred per year, with presentations made every two years, during the course of an ASF Conference. [Anon.1968b]

At least three speleological features have been named in her honour, Edie's Treasure in Tasmania's Exit Cave, Edie's Grotto and Edie's Tunnel in the Punchbowl and Signature Caves at Wee Jasper in NSW.

The first presentation of the Edie Smith Award took place during the 9th. ASF Conference [NIBICON] in December 1972 when Dr. Aola Richards and Ted Lane received an award for their joint editorship of "Helictite" since its inception in 1962, which had by that time, achieved international acclaim as one of the world's top five speleological research journals.

Over the years, the preamble to the presentation of the Edie Smith Award has been embellished to include the facts that she had been "..a pioneer of Australian speleology, a life member of the Tasmanian Caverneering Club and the first woman president of an Australian speleological society, the Canberra Speleological Society."

Why was Edie considered a "pioneer"? What had she done to motivate people to name bits of cave after her during her lifetime or shortly after her death? What contribution could a person have made that warranted the creation of a prestigious national award when she was possibly only well known in one state and territory? Who was Edie Smith?

Unfortunately, most of those who knew Edie have either themselves died or moved away from speleological circles. Edie herself was a very private person and so little is known of her early and personal life. Throughout her life in Tasmania, Edie was known by her proper name of Edith. When she moved to Canberra in 1955, her name apparently became shortened [by some] to Edie. The following biography will reflect this name change only where appropriate. The biography itself has been pieced together from scant published material and recollections - both personal and anecdotal. It is by no means complete.

Edith Margaret Smith was born at Forth [about 9km SW of Devonport], northern Tasmania on 14th August 1913, daughter of Salina Kathleen (nee Carruthers) and [Major] Ronald Edgar Smith. She had a younger brother, Ronald - and later, two half-brothers. Edith's mother died of cancer at the early age of 28, shortly before her husband could return on compassionate leave from World War One. Edith was then a little over three years old. Her brother Ronald and one half-brother (Charles), outlived both Edith and her father.

Edith's family was already known throughout Tasmania. James "Philosopher" Smith, Edith's grandfather, was a noted mineral prospector in western Tasmania whose principal achievement was the discovery of the world's richest deposit of tin at Mt. Bischoff in 1871. Mt. Bischoff

[785m] is 50km SW of Burnie. He later received a stipend for his services to the colony and sat in the Legislative Assembly before his death in 1897 [Blainey 1967]. Her father Ronald [1881-1969] was also born in Forth and served with the 26th. Battalion at Gallipoli, and on the Somme during the First World War, being wounded in both theatres [of war]. He also contracted paratyphoid and Spanish flu whilst serving during the war [Anon. 1969]. He is probably best known for his interest in the Cradle Mountain region and friendship with Gustav Weindorfer who built the Waldheim Chalet near Cradle Mountain in 1912, "The Major" was also a local historian and spent part of his latter years sorting and indexing his father's records. He may also have been the first person to take a motor vehicle into Waldheim Chalet - a 1926 Chevrolet. It is believed that Major Smith donated his diaries to the Queen Victoria Museum and Art Gallery at Launceston [Farrow 2000]. However, the collection, made up of 90 hand-written volumes dating from 1906-69 [NS234] is now housed in the state archives. [Goede 2000] Edith's mother also had an association with Gustav Weindorfer and Cradle Mountain, most likely being the second woman to reach the mountain's peak [Gustav's wife being the first, a year earlier] in January 1911 [Bergman 1959], when she was 21 and shortly before she married into the Smith family.

Virtually nothing is known of Edith's early life, except that she grew up around Forth and the family property across the valley from Waldheim, was educated in Launceston and the Collegiate College [Hobart], became an active member of the Girl Guides and after completing her education, was employed as a governess on properties in rural Tasmania including a period with the Shoobridge family at Bridgewater, now an outer suburb of Hobart. As far as is known, only two photographs survive of her during this period. They were taken by her father near their beloved Cradle Mountain during March 1939 when Edith was 26. [Plate 1]

At this stage in her life, Edith would have been firmly entrenched in what was considered the stereotypical female role of the period. There would have been little opportunity or encouragement in male-dominated Australia to take up professions other than those of nurse, typist, governess or shop assistant. But, as fate has it for some, opportunity was just around the corner. In late 1939, the world went mad as the European and later, the Pacific war erupted. With little hesitation, Australia joined the fray.

Whatever the reason, patriotism, opportunism, or perhaps a bit of both - Edith, like thousands of other Australian women and girls locked in similar situations, seized the initiative, threw her old life aside and began another. Edith went to war!

Edith enlisted as an airwoman in the Women's Auxiliary Australian Air Force in Hobart on March 27, 1942. Her application form was a hand and rubber-stamped modified airman's enlistment form [PP48] and she indicated that she was prepared to serve anywhere and in rough conditions. Normally camera-shy, Edith had to face the camera for the obligatory "mugshot" and, despite the contrast, graininess and backdrop of the time, the resulting picture is probably one of the best portraits ever taken of her. Looking to one side of the camera, Edith seemed to be facing the future with a certain amount of apprehension, clad in a floral dress - in stark contrast to her later dress preferences. [Plate 2] The enlisting officer described the green-eyed 28 year old as having a "quiet, pleasant manner, clean and sensible" while her trade test found her "suitable as a trainee cook."

Thus, Aircraftwoman Smith, Edith Margaret, #92151 was inducted into Australia's war effort and less than two months later found herself posted to Victoria as a cook, firstly at Toorak, then Point Cook and later, Ballarat. Edith served in Victoria until May 1944, being promoted to the rank of temporary corporal during April 1943 and corporal five months later. During her tenure as a cook, Edith possibly learnt the priceless phrase recounted many years later to CSS member Fred Doutch "If it's brown it's burnt, but if it's black - it's buggered!" [Doutch 2000].

In May 1944, Corporal Smith was posted to Ascot Vale, [near Perth] Western Australia where she undertook a cinema operator's course. This new role ultimately took her to air force bases located

in areas such as the wheatbelt town of Merredin and coastal port of Geraldton. Her service record described her character as "very good" and work proficiency as "satisfactory". No charges for misbehaviour were ever laid against her, her Conduct Sheet [P/P 8] being marked "Certified No Entry" for each service area.

The Second World War officially ended with the signing of the surrender documents at Tokyo Bay on 2 September 1945. Edith's service with the RAAF ended with her discharge at the end of November [29th] the same year with 34 days pay in lieu of leave. However, it was a very different Edith, civilian, who arrived back in Tasmania a short time later. With a matured and liberated outlook on life, Edith faced the post-war world with renewed vigour, confidence and determination. Gone were the days of being a lowly governess! At the age of 32, Edith resolved to make something of herself!

At the beginning of 1946, Samuel Warren Carey [of wartime "Z" Force fame] became the foundation professor of the recently re-established Geology Department at the University of Tasmania. During September of the same year, Professor Carey founded the Tasmanian Caverneering Club [TCC] the membership being drawn mostly from the University's Geology Department, Tasmanian Field Naturalists Club and the Hobart Walking Club. TCC thus became the first organized speleological society in Australia.

During 1947, armed with a scholarship under the Commonwealth Reconstruction Training Scheme, Edith, no doubt following an interest in geology instilled by her famous grandfather, enrolled in a science course at the University of Tasmania, taking her first formal instruction in crystallography ".. in an old cottage with a sinuous floor." She completed her BSc degree, majoring in geology and zoology in 1949 and graduated in 1950. During her studies and being amongst people engaged in speleological pastimes, Edith herself was drawn into their activities and became a member of TCC in 1948. After her graduation, she continued working for the geology department as a research assistant, studying Tasmanian Permian bryozoa* [Anon. 1968c]. Edith also worked for an unknown period between her graduation and 1955 with the Tasmanian Department of Mines [Smith 2000] although all records of her employment with the Department were destroyed in 1986. [Bacon 2000]

At or around 1950, Edith bought a car, a dark coloured Morris Minor. Cars were not very numerous during this period of Australia's post-war reconstruction, so it quickly became a caving transport and driver education vehicle. But this was a Morris with character! At a time when just about everything on a vehicle apart from engine, gearbox and brakes were "optional extras", this Morris didn't have a cabin heater but DID have a soft-top that was far from windproof. So, if you went caving with Edith during the frequent Tasmanian cold spells, you didn't just pack your warm clothing - you wore them! Edith affectionately dubbed the vehicle "Morris The Horrors"!

A young 18 year old Albert Goede went on his second caving trip [to Wolf Hole at Hastings in March 1954] with Edith in the "Morris The Horrors" and felt the name quite apt, especially as he was prone to suffer from car sickness on what was, at the time, an extremely windy road. Albert, his siblings and mother were "adopted" by Edith following the death of his father in a motorcycle accident several months later. His mother and siblings returned to The Netherlands the following year, leaving Albert to be influenced by Edith to pursue an interest in geology - a distinguished pursuit that has lasted beyond his recent retirement.

Another of Edith's travelling companions was Allan Wells, latterly of the Australian Geological Survey Organisation, who was studying geology at the University of Tasmania while Edith was undertaking a study of fossil corals. He needed a driving licence so that he could conduct field work as part of his forthcoming Honours thesis. Edith taught him to drive the "Morris the Horrors", up and down the windy Sandy Bay Road and he has vague recollections of the linen roof flapping in the breeze, even though he didn't always travel in top gear due to the twisting nature of the road. Their paths were later to cross again in Canberra where he became involved

with her various tunnelling activities - but more on that later.

As one of the few female members of TCC, Edith blossomed in what was to become Tasmania's golden age of speleological discoveries. What she lacked in stature and stamina, she made up in sheer drive and determination.

At Hastings [south of Hobart], the downstream sections of Newdegate Cave, which included the Binney Chambers, were originally explored via a sump that was rarely dry. The Binney Tunnel, in which Edith played a major role, was dug between 1948 and 1951 to provide an all-weather access to the Binney Chambers. The project was successful but did not however, lead to any major discoveries.

On another Hastings trip in 1954 Edith, despite her small stature [1.66m x 52kg (5'5.5" x 114lbs) in 1942], clearly demonstrated her belaying abilities when she accompanied a party of four to Wolf Hole. The underground party was made up of Bob Geeves, Albert Goede, West Australian Bill Gilbert and a Scottish traveller on an extended working holiday who was to feature in another incident elsewhere three years later, Jim Cartwright. Edith elected to remain on the surface and belay. Bob Geeves led the party that discovered Lake Pluto in the further reaches of the 2km long cave. Weighing more than 80kg, Bob had recently suffered from a bad case of the flu and didn't realize that he had not fully recovered. Hours later and after he had climbed about halfway up the 30m entrance pitch, he suddenly weakened, lost his grip on the [electron] ladder, and fell. Despite he being 30kg heavier than Edith, she arrested his fall, undoubtedly saving him from serious injury. After resting on a convenient but narrow ledge, a very grateful Bob continued the climb out. [Goede]

As a result of her geological and zoological training, Edith developed a keen and long-term interest in the fossils, bone deposits and fauna found in caves. It was around TCC campfires that Edith developed her legendary recital skills and recollections of her famous grandfather. Albert remembers that she ".. was a proud Australian and interested in poetry. On caving trips when sitting around the fire at night she used to read poems by Banjo Patterson, Henry Lawson and Rudyard Kipling." [Goede]

Taking advantage of her acknowledged organizational skills, TCC elected Edith to its committee from 1951 to 1953. In 1953 she became treasurer and in 1954, vice-president.

Apart from her speleological and Girl Guide activities, Edith had other interests. During 1953-54, she was a participant in a re-enactment of Sir John Franklin's remarkable 1842 pioneering journey from Hobart Town to Macquarie Harbour. She was also a keen gardener. There was also one other facet to Edith; she had a dog - Mutch. Mutch was a faithful Border Collie cross-breed, apparently renowned for his pungent doggy smell - to which Edith seemed blissfully oblivious.

November 1954 saw the establishment of the Canberra Speleological Society [CSS], largely as a result of the temporary disappearance of one Brian O'Brien [later Dr.] at Yarrangobilly Caves in December 1953. Dr. O'Brien would later become the first president of the Australian Speleological Federation [ASF]. As circumstances would have it, CSS began as a small, all-male society that would, within a year, change. CSS would remain a small, though close-knit and productive society for many years.

As 1955 progressed, Edith seemed to be getting a bit restless and during the year, accepted a position with the Bureau of Mineral Resources [BMR], in Canberra. The Bureau had recently lost many of its personnel to the private sector due to the beginning of Australia's first "mineral boom". [Harrington 2000] The BMR is now known as the Australian Geological Survey Organisation [AGSO].

Edith resigned her vice-presidency at a TCC committee meeting during August and such was her

standing [within TCC], they elevated her to Honorary Life Member then and there, the first member of the club to be so honoured. [Anon. 1967a] "No Citation was made. Things were kept simple in those days." wrote Albert Goede in personal communication. Throughout the lifetime of TCC, several honorary life memberships were created, notably Professor Carey, Dr. Albert Goede and Brian Collin to name a few.

A short time later, Edith - Mutch - and "Morris the Horrors", set sail for Canberra. If the previous few years had been TCC's golden age of discovery and Edith's blossoming as a speleologist, the following five years would see her attain seemingly legendary status, dimmed only by the fading memories of the few remaining long-term members of CSS and the dispersment and passing of former CSS members and BMR colleagues who knew her.

Edith arrived in Canberra and took up residency in the Hotel Acton, a government hostel on the edge of what was to become Lake Burley Griffin and where pets were forbidden. It is known that Mutch spent most of his time inside with Edith both here and at her subsequent "pet free" residence, the Currong Flats. How this subterfuge was achieved, given the pungent odor of Mutch, is open to speculation. While at the Hotel Acton, Edith and Mutch would hike to the top of Mt. Ainslie every morning before she left for work. [Young 2000] Edith's later residence was also noted for its legions of pot plants. With windows taped to control the amount of sun entering the rooms, Edith grew potted plants by the score, some to be given away as presents to all and sundry, along with horticultural advice, the empty spaces then replaced by more plants. [Cox, Galbreath, Lynga, Young 2000] This once prompted CSS member David Purchase to comment that a jungle knife was needed when visiting Edith. [Lynga] Many of her pot plants were still brightening the Currong Flats long after her departure in 1961. [Young 1967]

Edith started her career with the Bureau of Mineral Resources [BMR] as a stratigraphic indexer, embarking on "her pioneering work on the index of stratigraphic names, when it was an index of 3 x 5 inch [75 x 125mm] cards." [Jones 2000]. This index still exists! [Harrington] The library was then housed in a wooden Army hut. She also went on to compile summaries on the sedimentary basins of Australia and the Lexicon [dictionary] of the Stratigraphic Names for Tasmania and subsequently Queensland, Victoria and Western Australia. After some spirited internal wrangling, she was allowed to join CSS, becoming their first female member, although several more would swell the ranks shortly thereafter.

Before her BMR career began however, her preference in clothing brought her into conlict with the male-dominated structure prevailing in geological circles at the time. Hardly a catwalk model, Edith always wore slacks, much to the consternation of management. The Chief Geologist was forever telling Edith to wear "more suitable clothing" at work. Edith steadfastly refused to wear anything but slacks. [Bartlett 2000] She was, according to Evelyn Young, "a very firm-minded lady!" [Young]

It appears that very soon after arriving in Canberra, Edith dispensed with the services of the drafty "Morris the Horrors" in favour of a light-coloured Morris Minor Estate Wagon. There is no evidence that it acquired a nickname but with its distinctive external wood trim, the Morris quickly became a readily recognized and dependable caving vehicle, the only drawback being Mutch. Mutch went just about everywhere with Edith, to the distress of her many passengers. Mutch's combined doggy smell and bad breath often left passengers feeling quite ill by the time they arrived at caving or hiking destinations. [Galbreath, Ryan 2000]

Shortly before Edith's arrival in Canberra, CSS had made its first foray [October 1955] to Wee Jasper, a small caving area situated some 45km WNW of Canberra requiring a journey of approximately three times that distance to reach by road. Here Edith was to later spend a lot of time working with the late Joe Jennings and other members of CSS in the exploration and surveys of a number of caves, especially the Dip and Punchbowl Caves.

Some of Edith's early energies at Wee Jasper during 1956-57 were spent digging in Dogleg Cave, a dangerous cave prone to flash flooding. A lot of digging was frequently undone when flooding refilled the dig sites. The Second Watertrap was eventually opened for a brief period during a dry spell in late 1957 and Edith was one of the few to explore beyond before yet another flood filled the traps. On another trip to Wee Jasper during June 1957, it was Edith who found the long sort-after connection between Dip 4 and 5. That wrote Joe Jennings, "was an exciting moment!!" [Jennings 1957, Lynga 2000] [Plate 3]

At some stage during early 1957, Edith visited the Naracoorte caves [South Australia] in company with Elery Hamilton-Smith, then secretary of the fledgling ASF. They had driven across from Melbourne for a short visit. While at Naracoorte they met up with Jim Cartwright, now joined by his brother Don, who was also on a world-wide working holiday. The two Scottish brothers had just returned from the 1956-57 Nullarbor Expedition where they had gained notoriety for their daily habit of waking everybody with bagpipe music. The encounter took place in a cave where Edith caught one of the brothers [presumably Jim] running his hand up and down a stalactite. In an early example of active conservation, she hit him quite hard on his helmet with her geological hammer whilst saying "Now I hope you'll remember not to touch decoration!" He apparently learnt his lesson very well! [Hamilton-Smith 2000] "If it was Jim, Edith would have known him well enough to get away with such an action." [Goede]

Once again, when it came to vertical pitches, Edith demonstrated her belaying prowess. David Purchase reflected that "I first met Edie when I joined the Canberra Speleological Society shortly after I arrived in Canberra in May 1957. My first real memory of her was when I climbed a ladder out of one of the pitches of the Dip Cave at Wee Jasper to find, on reaching the surface, that the lifeline had been under the control of what I thought was a rather frail-looking lady. This was a matter of concern to me as I doubted she would have been able to prevent me from finishing up as a messy heap at the bottom of the pitch had I fallen off the ladder. It did not take me long however, to realise that Edie was one of the most competent people anyone could wish to have on the other end of a lifeline. Indeed, Edie and I subsequently spent a great deal of time at opposite ends of a lifeline which she always ensured was never too tight and never too loose. As Joe Jennings commented in his little note (Jennings 1967) - 'When lifelining, nothing would distract her and she was extremely sensitive to the message of the rope.'" [Purchase 2000] while Fred Doutch remembered that "Of all the people on our trips, Edie was the only one that I trusted most on the end of a rope tied around me." [Doutch 2000]

Of all Edith's exploits, perhaps she is most widely known for the excavation through the rockfall between the eastern end of the Pitch Chamber of Punchbowl [Cave] and lower level of Signature Cave, an initiative of CSS members Jim Webb and Don Fitzsimon. The passage, approximately 10m long, was dug during 1957-58 and greatly facilitated exploration of Punchbowl, which prior to that, was only accessible by a vertical entrance. This connection attracted numerous names throughout its lifetime ranging from simply "The Tunnel", "Edie's Squeeze" to "The Dame Edith Smith Memorial Highway". It was here that Allan Wells briefly re-enters the story. Freshly graduated from the University of Tasmania, he joined the Bureau of Mineral Resources and was a member of CSS from 1957 to about 1959. He subsequently spent numerous weekends at Wee Jasper excavating various cave connections and while assisting Edith with the Punchbowl/Signature dig, came closest to "succumbing to claustrophobia!" [Wells 2000]

There were not many enthusiastic diggers in CSS at that time, so Edith often continued the dig alone. [Cox 2000] However, digging teams at various times comprised not only of Allan Wells, but also David Purchase, Ron Galbreath, Margot Cox, Cedric Pratt, Jim Webb and others. Shortly after completion of the tunnel, the youngest Galbreath daughter, then only 3 months old, was passed howling through the connection. [Galbreath] The link greatly assisted David Purchase with his research into bat migration and Edith's zoological and exploration interests. Bone deposits were to be found in sediments throughout Punchbowl Cave and Edith, often accompanied by Barbara Ryan, sifted the dirt and methodically recorded her finds. [Ryan 2000] Unfortunately,

the existence of the passage ultimately became public knowledge and "... an increasing number of undesirable people gained entry to Punchbowl Cave and the cave was being despoiled. As a result the tunnel was blocked in September 1966." [Purchase]

While continuing the survey work in Punchbowl Cave, Edith undertook another dig in a passage beyond the Far Chamber and broke into a small chamber now known as "Edie's Grotto". [Jennings 1964] Her survey traverse and outline plan of Punchbowl Cave was completed shortly before she left Canberra. [Anon. 1961a]

Edith was drawn to people affected by family disruption. This has already been shown by her "adoption" of Albert Goede and his family in Tasmania following the death of his father. In Canberra, she "adopted" Ron Galbreath [amongst others] when he arrived from Tasmania during 1958 and moved into the Hotel Acton prior to beginning work at the Mt. Stromlo Observatory. By the time his family arrived three months later, she had already introduced him to caving at Wee Jasper and then promptly took the rest of the family "under her wing" and introduced them to caving too!. But Edith seemed to have a special affinity with children, and "was renowned for her expertise in leading groups of school children through the caves" [Wells]. She kept a library of children's books and storybook records at her flat and gave book vouchers as birthday presents [Galbreath, Smith K. 2000]. Being a friend of Tasmanian [children's book] author Nan Chauncy, Edith once gave Mary Galbreath an autographed copy of one of Nan's books. [Galbreath]

Edith also doted on her two nephews, bringing them to Canberra, along with the son of one of her Launceston friends, during school holidays on at least two occasions, taking them caving at Wee Jasper and visiting Taronga Park Zoo in Sydney, staying at the home of Pauline Lynga's [nee Hiscox] parents. [Lynga, Smith K.]

By 1958 there were several female members of CSS although, still being a relatively small club, its affairs were conducted in a casual, simplistic and most enjoyable manner. [Plate 4] As a person who disliked formality, Edith vigorously opposed CSS having a constitution, a situation that existed until long after she returned to Tasmania. [Ryan] Having already served in several committee positions with TCC, there was no great surprise when Edith was elected president of CSS. "We are quite satisfied that no club member thought it significant that Edie or any other woman member should be president, nor would it have made any difference to the club had we been told we had the first woman president of an Australian caving club. This is not to detract from Edie's personal significance in our club - she was indeed a driving force, respected, trustworthy and liked by all. She was able, totally reliable, unselfish, never afraid to speak her mind, and even-tempered. She was our mate!" [Young] Edith also played an "important role in simply bringing CSS together. She was outgoing and personable - she was very patient with people." [Lindsay 2000] By his account, she had to be - he was another person she taught to drive! As ground-breaking as her appointment was, Edith only served one term as president although she went on to become secretary in 1960.

Edith briefly returned to Tasmania in December 1958 as an attendee of the 2nd. ASF Conference, held in Hobart. Her visit was memorable not for the Conference itself but rather for what happened immediately after. In what was to become a classic five-day, post-conference field trip to Exit Cave with Edith as co-leader, the party not only spent two days trying to find the cave, but another two thrashing their way back through the dense vegetation to civilization! Only one day was spent in this magnificent cave. The party started to cut a track on the way out, one that was completed by members of TCC about 2 years later. However, with more energy than bush sense, the chosen route took them over the highest part of Marble Hill so that visiting the cave by this route would still be an epic journey! This experience in geographical embarrassment no doubt deeply influenced Edith - and caused her to strongly champion the proposal to cut a low-level track to Exit Cave from a different direction several years later.

During 1959, Edith became concerned about the despoliation of popular picnic sites around

Canberra and started a cleanup campaign that pre-dated similar efforts of Ian Kiernan [Clean Up Sydney Harbour/Australia/World] by some 30 years. One weekend in particular, she took Mary and Martin Galbreath [then aged 11 & 8] on a cleanup of nearby Pine Island, returning to Canberra with the back of her station-wagon full of litter. [Galbreath] A photo-journalist from the Canberra Times heard of the campaign and interviewed the trio at Edith's flat with some of the debris. The child-loving and camera-shy Edith made sure the children featured in the picture and story rather than herself. [Anon. 1959]

Contrary to many accounts published between 1967 and 2000 in the "ASF Newsletter", its successor, the "Australian Caver" and no doubt elsewhere, Edith did not remain in Canberra until 1963. According to the "ASF Newsletter" #12 [Anon. 1961b] "The Very Latest" #7 [Anon. 1961a] [and personal recollections of David Purchase], Edith, whose position within CSS was whimsically listed as "Tunnelling Officer - Edith Human-Mole Smith" at a time when the society had only one "ordinary member", left Canberra in mid-1961. [Anon. 1960] The position of "ordinary member", another whim, was usually voluntary in order to facilitate periodic co-opting.

During the latter part of 1960, Edith applied for an appointment with the Tasmanian Department of Mines and was obliged to undergo a medical examination. This examination revealed that she had breast cancer - at a time in medical history when the survival rate from any form of cancer was not exactly high. Edith underwent mastectomy surgery at the Canberra Community Hospital [Canberra's only hospital at the time] shortly after. Only her closest friends knew that she had undergone this emotionally and physically painful surgery. But in Edith's case, this surgery proved not to be curative. She tried to make light of the resultant surgery with impish comments such as "I know I had two when I came here!" and "I never had any use for them anyway" [Galbreath, Lynga, Ryan, Young] As she recovered from her operation Edith learnt that her application to the Department of Mines was successful and so made preparations with assistance from the Youngs and others, to leave for Tasmania.

As her preparations progressed, Edith invited an unknown number of friends to her flat so that they could choose a memento from her belongings. [Cox, Ryan] Barbara Ryan chose a small hand-made vase that still graces her kitchen window sill while Margot Cox re-lives memories while using her chosen "Edie Smith Memorial Mixing Bowls". One of Margaret Galbreath's last memories of her visit was Edith suddenly giving her a good-bye kiss "... which surprised me a lot as it was unlike Edith." [Galbreath] Barbara Ryan also received a kiss when she and her husband visited Edith during their Tasmanian honeymoon in January 1966. It was as if Edith had a premonition that she would never see her friends again.

Prior to her departure and at their March [Anon. 1961a] meeting, Edith was made a life member of CSS - the first and possibly the only person to be so honoured by CSS until fairly recently when Neil and Carol Anderson were also presented with honorary life membership. [Brown 2000] At a farewell party in mid-April at the home of Evelyn and Graham Young, Edith was presented with a "portable cave" made from cardboard and a life-size portrait of herself in caving gear captioned "VOTE 1. EDIE - THE DOGLEG DIGGER", a relic of her term as CSS president [Young]. The photograph was reportedly the work of CSS member Ed. Slater, a professional wildlife photographer. Shortly after this party, Edith quietly left Canberra for the last time. The ever-faithful Mutch went too.

Back in Tasmania, Edith - now classified as a geologist, which pleased her greatly - began work as a publications officer for the Mines Department in Hobart. However, according to Albert Goede, she was rarely well enough to go caving again. To further add to her woes, sometime during 1964-5 [Goede], Edith was diagnosed as suffering from adrenal cancer which, following an adrenalectomy - meant taking cortisone for the remainder of her life. [Ammer 1982]

The records of TCC are virtually non-existent for this period of the 1960's, so there are few written accounts of Edith's movements. One confirmed appearance was at the marriage of Albert

and Therese Goede in February 1964. When Edith returned to Tasmania, in keeping with her love of children, she recorded stories for the blind children of Hobart up to the time of her death. The last one was reputedly a rendition of Norman Lindsay's "Blinky Bill". [Smith]

While in relatively good health, Edith was involved in digging a tunnel in Junee Cave [near the town of Maydena], one of the major resurgence caves that drains the Junee-Florentine Valley. The tunnel was attempting to bypass the cave's sump but was unsuccessful. The sump has since been penetrated a short distance by diving, breaking into open passageway.

During 1965, she took part in the trip to Lune River that began cutting the long-awaited low-level access track to Exit Cave. The track ultimately passed through dense forest, sword-grass plain, swampland, crossed streams and utilized overgrown timber fellers' tramways before reaching the cave - but Edith was to see little of this. With dogged determination, she led the party into the bush until she was utterly exhausted. "It left her grey with fatigue and she almost collapsed." wrote Goede. [pers. comm.] Edith took no further part in the project although she maintained a keen interest in the track's progress. The completed track provided quicker and easier access to the cave, and Edith rejoiced as best she could with other members of TCC at news of each exciting discovery.

On what became known as "Black Tuesday" in February [7] 1967, the southern part of Tasmania endured one of the worst bushfires ever to be visited upon Australia, [Anon. 1975, 1993] rivalling that of Victoria's 1939 "Black Friday". The wildfires penetrated the suburbs of Hobart to within 3km of the city centre with winds of 160kmh and moved across a front of 145km further south down the east coast. Before the fires were brought under control, 62 people had lost their lives and more than 4,000 made homeless. The devastation south of Hobart was immense, with eight towns almost completely destroyed. The relief effort required was just as immense, and Edith responded too, loading her vehicle with groceries, spare blankets and clothes and distributing them amongst the effected residents of Kingston and other southern towns. [Smith]

A few months before her death, Edith committed herself to leading a party of scouts on a cave introductory tour of King George V Cave at Hastings. Why she did this, given her deteriorating health, is unknown. Perhaps she was merely refusing to give in to the attack from within. As Joe Jennings [1967] was to aptly write shortly after her death "If she urged anyone on to more effort, it was chiefly by example, not by precept."

Shortly before her death, about ten members of CSS managed to set up an inter-state teleconference call of questionable legality in order to cheer their friend's disposition [Cox, Galbreath, Young]. Imagine their dismay as they tried to explain to an angry Edith the reasons behind the closure the previous year of her precious tunnel connecting Signature to Punchbowl Cave. Eventually Edith calmed down as she realized the damage that was being caused by casual cavers using the tunnel to enter the Punchbowl caverns. However, all too soon the allotted time was up and this was the last contact they had with their caving friend.

Edith's condition steadily worsened as the cancer spread further through her body although she doggedly continued with her work, refusing to give in to the pain and lethargy sapping her strength. Indeed, the 1968 Departmental Bulletin of the University of Tasmania's Geology Department revealed that she was still working on the morning of her death. Edith Margaret Smith died of cancer on the 29th of August 1967 at the home of a friend in Launceston. She was just 54. As was her wish, her body went to medical science.

A month after Edith died, a small, well decorated side passage discovered in Exit Cave the previous March, was named Edie's Treasure in her memory. A commemorative plaque was installed soon after. [Anon. 1967b]

One of the most rewarding aspects in researching this biography of a person who died more than

30 years ago, was the receipt of many unsolicited but glowing testimonials to Edith's professionalism, both geologically and speleologically. Two, by former colleagues of the Tasmanian Department of Mines are of particular relevance to Edith's nature and so are recounted here at length, ".. Her time was mainly spent on editorial duties and she was responsible for publication of all the department's technical reports and bulletins for the 1961-67 period. .. I spent some time during slack periods as a cadet officer organising the foreign language collections at her request. These had never been catalogued and in her absence were not even recorded. She felt I could learn a lot [I did] as well as arrange the collection.

She took a great interest in those of us who were new and young geologists and worked mightily to see we improved our language skills. All those who had to slide a document past her could attest to her skills, pedantry and knowledge. We all managed an argument at some stage but always without acrimony and with a sense of involvement and fun. Her wide experience and knowledge was always apparent and she commanded great respect and affection. She was, often, brutally frank but honest and was a fine teacher. I have never forgotten her, or her kindness.

I knew she was ill and often in great pain in her last few months as we worked through two bulletins of mine. She never spoke of it, never gave in to it and insisted upon business as usual with the same spirit. ..." [Dr. David Leaman, Leaman Geophysics 2000]

"I first met Edith Smith when I joined the Tasmanian Mines Department as a raw honours graduate from the University of Tasmania in early 1962. I had just finished my honours on the "Structure and Petrology of the Raglan Range", and the Geological Survey, then under the direction of the late Ian Jennings, decided they would like to publish it as a Bulletin. I was told that the document did not require technical review, but just to get it ready to submit to the Editor Edith Smith. I was aware she had a reputation of being a willing but tough editor who had the habit of slaughtering people's poor manuscripts.

I did a literal cut-and-paste job on the thesis [no word processors in those days], had it re-typed, and proudly gave it to Edith. I recall she beamed a little wryly when presented with the document, and said something like "I will work on it young man, and then get back to you." Two days later she summonsed me and said "This is a pretty good manuscript, but let me show you how I have made it better." The manuscript was copiously covered in red, where the editor's scalpel had been at work, but not to the extent of major surgery. She demonstrated the techniques of putting polish on a manuscript - such as pruning unnecessary words, avoiding repetition and ambiguity, crafting good sentences, and structuring logical paragraphs to produce a manuscript that was both appealing and satisfying whilst still engendering a personal style. I greatly appreciated her approach. She was a consummate writer herself who led by example. That mentoring served me well throughout my career. I have gone on to write many geo-scientific articles that happily did not attract the editor's incisions in every sentence. I have edited manuscripts of other aspiring writers, and have imparted the wisdom of Edith to my geologists - who have appreciated it to the same extent that I did.

In about 1960, Edith also compiled the Lexicon of Tasmanian Stratigraphy - a booklet that collated and defined all the formally defined stratigraphic names and terms according to the new draft of the Australian Code of Stratigraphic Nomenclature. She was the custodian of Tasmanian geo-nomenclature, and all later writers still conform to those procedures. I was recently reading Rick Wilkinson's "Rocks to Riches" .... and came upon a reference to her stratigraphic lexicology work in the 1950's." [Dr. Dennis Gee. Director, NT Geological Survey]

EPILOGUE

And so Edith Margaret Smith died in 1967 but, as shown above - in many respects she lives on. She was a pioneer in Australian speleology and conservation as well as being the first woman president of any Australian speleological society. In many respects, she was also a pioneer

feminist, before the term was really coined, pushing open doors never before opened by women, and before there were feminists to follow her through. But has she or the award named in her memory been treated well in the intervening years? In some aspects Edith and the Edie Smith Award have not been treated with the respect they quite rightly deserve. Indeed, it now seems likely that those who championed the creation of the Edie Smith Award and the accepting ASF executive of the day, neglected to inform her immediate family of their resolutions. [Smith]

When Edith died, she seemingly slipped into obscurity almost straight away. Certainly an obituary was published in the Speleo Spiel [Anon. 1967a], The Very Latest [Jennings/Young 1967] and the ASF Newsletter [Anon. 1967c & Anon. 1968d] shortly after the event [albeit inaccurately] but once the Award was established during 1968, mention of her quickly faded. Why was this? Could it have been that she died of cancer at a time when cancer was an almost taboo subject throughout Australia? Or was it a generational thing? Old stalwarts fading away to be replaced by younger members who had little or no knowledge of Edith Smith or what she represented? They in turn being replaced by even younger members with absolutely no knowledge or interest of past events.

As has been shown, CSS, taking pride that Edith was their first female president, and the first female president of any speleological society for that matter - forgot - and forgot quite quickly it seems - that they had also elevated her to honorary life membership back in 1961. With the publishing of CSS's 40th. Anniversary issue of the "The Very Latest" [Vol. #11] in 1994, Edith - and Dr. Joe Jennings [himself another great speleologist] hardly rated a mention, and then, only in trip report summaries.

And what of the Award itself? By association, the Edie Smith Award suffered a similar fate - at least until fairly recently. Disdain may be too harsh a word to describe presentations of earlier times but certainly the Award and some of its recipients suffered a certain amount of indifference, especially when there was little or no tangible evidence of an award being made.

But, despite its past treatment, the Edie Smith Award has prevailed. It HAS become one of the highest accolades in the speleological community and to be placed alongside previous recipients and Edith Smith herself is a great honour indeed.

And yet, resurgence of interest does occur. Periodically, the question IS asked - "Who was Edie Smith?" But who could provide an answer? The details of the life of Edith and many of her equally deserving contemporaries were, and in many instances still are, locked away in numerous libraries and recollections in various parts of the country and indeed, the world, effectively lost to everyone until people take the time and effort to probe, collect and collate the material into meaningful and presentable text.

As mentioned earlier, this biography of Edith Margaret Smith is incomplete, it may always remain so, but hopefully, it has at least gone part of the way to answering that question: "Who was Edie Smith?"

## ACKNOWLEDGMENTS

This biography was a major undertaking of research and writing that took more than 18 months to complete. Tracing former members of the Canberra Speleological Society, Bureau of Mineral Resources [AGSO] and Tasmanian Department of Mines [MRT] was an arduous task involving more people than just the co-authors.

To this end we have a multitude to thank [many un-named] including: Cathy Brown of CSS and AGSO who provided the first of many contacts from both organizations, the developers of e-mail and programmers who subsequently worked out the sub-routine commonly referred to as

"AllStaff", successfully employed by officers of AGSO [Kathy Nelson], WA Geological Survey [unknown] and Mineral Resources Tasmania [Carol Bacon & Greg Dickens] to cast our search-net far wider than we could possibly have imagined.

Andrew Chalmers of the National Archives of Australia rates a special mention for facilitating free access to Edith's war record once her service number was known.

Alexandra Farrow of The State Library of Tasmania also helped by providing information of Edith's early caving life and insights about her father.

We also thank Wayne Tyson of SRGWA for computer enhancement and digitizing the accompanying photographs and numerous other SRGWA members who endured reading through various revisions of text. Thanks are also due to John Murphy of the Centre for Microscopy and Microanalysis, The University of Western Australia, for further computer enhancing and layout assistance.

However, special thanks are reserved for the many respondents listed under "Personal Communications" who took the time to reminisce or probe a period of more than 30 years, put those remembrances to paper then suffer numerous, seemingly inane questioning, questions whose answers led to supplementary questions and in some cases, sudden, late night phone calls when the tyranny of time zones were forgotten. Thank you all once again for your tolerance!

Edith Smith was a truly remarkable person - the time for even part of her story to be told was long overdue.

**********

Arthur Clarke

Ian Binnie, Norm Poulter and Vicki Bresnan at Bathurst

**APPENDIX A**

**Edie Smith Award - list and summary of recipients**

NOTE. The summaries below reflect the recipients at the time of their award, while any title listed is their current status.

**1972 Dr. Aola M. Richards** - For her work in the study of glow worms in New Zealand caves and as co-founder and co-editor of Australia's first speleologically-based scientific journal, "Helictite". Dr. Richards also researched and wrote "An ecological study of the cavernicolous fauna of the Nullarbor Plain, South Australia" [J. Zoology, London 1971]. [Adapted from ASF Newsletter #59 and elsewhere]

**1972 Edward A. Lane** - Received his award for being a leader of many early cave exploration expeditions, a speleo-author and co-founder and co-editor of Australia's first speleologically based scientific journal, "Helictite". [Adapted from ASF Newsletter #59]

**1974 Professor Joseph Newell Jennings** [1916-84] - A speleologist prior to arriving in Australia from England in 1952, Joe was one of the founders of CSS [1954] and the ASF [1956]. He became the second ASF president [1958-60]. His contributions to speleology are given by the volume of his writings: books, reviews and substantial popular articles on karst account for about half of his 200 scholarly publications. His book "Karst" [1971] and its successor "Karst Geomorphology" [1985] are still pertinent club library reference acquisitions. Joe's studies ranged all over Australia and the world. He firmly believed in and practised a partnership between academic researchers and cavers, his wise counsel guiding many speleologists of all persuasions to greater achievements. He was regarded overseas as a symbol of Australian speleological excellence. [Condensed from ASF Newsletter #72, 102, 105 and Karst Geomorphology]

**1976 Professor Elery Hamilton-Smith** - [Fellow of the ASF 1974] - Originally a member of the CEGSA and foundation secretary of the ASF, he later moved to Victoria where he was a foundation member of both VCES and SASS but later initiated their amalgamation into the VSA. He helped instigate early Australian caving expeditions to the Nullarbor, New Guinea, New Caledonia in addition to the exploration of many other areas in eastern Australia. Elery's major contributions to speleological research have been in systematic exploration and documentation, especially cave biology where his interests include the collection and description of invertebrates particularly beetles and studies of cave dwelling bats. His publications on cave biology are extensive and in particular it is his interpretations of the significance of cave biota and the encouragement of others which has contributed to the high international standing which Australian speleological research enjoys.

**1978 Benjamin Nurse** - A half-line announcement in the ASF Newsletter #83 belies Ben's contribution to speleology. A longtime president of the Sydney Speleological Society, Ben has been the driving force of SSS since its inception in 1954. He was one of two signatories to the letter that led to the formation of the ASF in 1956 of which SSS was a foundation member. Ben played a leading role in the conservation
campaigns working to save the Bungonia Caves, bringing the region into the public arena, despite some opposition, to help protect the regions. He was part of the SSS team that produced the "Bungonia Caves" book, a mammoth but comprehensive undertaking designed to assist the "KEEP BUNGONIA GORGEous" campaign. [Adapted from Australian Caver #152 and elsewhere]

**1980 John R. Dunkley** - John's award was recognition for his extensive speleo-writings, administrative work within the ASF and participation in several early expeditions, particularly to the Nullarbor Plain. He has written numerous articles on historical, economic and conservation aspects of cave usage. He co-edited the "Caves of the Nullarbor" [1967] and edited "The

Exploration and Speleologeography of Mammoth Cave, Jenolan" [1971]. As a driving force behind the SRC, he has participated in and contributed to the production of several other publications. He has visited many cavernous regions of Australia and overseas but his main interests remain Jenolan, Wombeyan and the Nullarbor Plain. [Compiled from ASF Newsletter #71, "Caves of the Nullarbor" and elsewhere]

**1983 Vince Kinnear** - Vince became interested in caves shortly after he and his late wife arrived in Chillagoe in 1959 to run the post office and telephone exchange. He commenced the exploration and restoration of Royal Arch and Donna Caves. A result of this work was his appointment as honorary ranger of the then unmanned National Parks of the region. This was later converted to a permanent position. Vince established contact with other speleologists throughout Australia and assisted their exploration of the Chillagoe area. He presided over the inaugural meeting of the Chillagoe Caving Club in 1973. [Condensed from Australian Caver #98]

**1983 Dr. Kevin Kiernan** - A geomorphologist by training, Kevin's award acknowledges his multitude of general and technical papers on Tasmanian karst. He has worked tirelessly for the conservation of karst and other important regions, firstly as an individual, then secretary of the Lake Pedder Action Committee and finally in 1976, as the founding director of the Tasmanian Wilderness Society. During 1976-81, he rediscovered the 20,000-year-old Aboriginal sites in caves on the Franklin River that contributed to the region being protected within the Wild Rivers National Park. [Compiled from "Lake Pedder" and elsewhere]

**1985 Dr. Albert Goede** - For services to cave exploration and scientific studies of caves. He was involved in the exploration of many Tasmanian caves and karst areas. His scientific interests included the collection of cave fauna from Tasmanian caves and a study of their geographical distribution. He also initiated hydrological studies and water tracing in the Ida Bay and Junee-Florentine areas. His examination of a bone deposit in Beginners Luck cave led to the discovery that aborigines had lived in the Florentine Valley under ice-age conditions some 21,000 years ago.

**1987 Barry Loveday** - Awarded for dedicated service and leadership, over many years to the cause of high-quality cave surveying projects in Western Australia. This was largely a family affair that is still continuing. Not content with just producing detailed cave maps, Barry undertook an even more ambitious project, that of area surveys, a series of scaled tropographic sheets [of the Leeuwin-Naturaliste Ridge in the first instance] stretching several metres, superimposed over cave outlines indicate possible trends and extensions. His work has also inspired other generations of cave surveyors. [Adapted from Australian Caver #118 and elsewhere]

**1988 Dr. Julia M. James** - [Certificate of Merit 1983] - Julia descended on the Australian caving scene from England in 1965. She received her award for distinguished contributions to the standing of Australian speleology, within Australia and overseas, in both sporting and scientific fields. Among her numerous achievements, she was one of the pioneers of vertical caving and cave chemistry, has led or co-led major caving expeditions to New Zealand, Mexico, Australia and the remote highlands of Papua New Guinea. She has also produced a succession of first-class publications and inspired numerous fellow cavers and colleagues. [Adapted from ASF Newsletter #71, Australian Caver #119 and elsewhere]

**1993 John Bonwick** - [Certificate of Merit 1984] - John has made a continuing contribution to speleology over a long period of time. He has been involved in many leadership roles, introducing potential cavers to the best and highest standards of caving leadership and practice; has acted as a moderating influence, (described as a "ballast") on the NSW caving scene and pioneered the photo-tagging of cave entrances. He is also known for the commercial development of electron ladders during the 1960's and the design and fabrication of other specialised speleological equipment. [Adapted from Australian Caver #133 and elsewhere]

**1993 Ernst Holland** - Ernie is one of the most creative and innovative cave managers of Australia. He has been a driving force in vastly improving caver/management relationships at Jenolan and other areas, much more than most cavers realise. Ernie played a major role in the formation of the Australian Cave and Karst Management Association [ACKMA], was its foundation president and as such, worked strongly for good relations with the ASF. As a caver, Ernie has been involved in discoveries at Jenolan, the NSW sandstones and elsewhere. [Condensed from Australian Caver #133 and elsewhere]

**1995 Brian Finlayson** - The award was made in recognition for his work in Australian karst research, pivotal role in encouraging and supporting karst investigation by others and in linking professional research with club-based speleology. Brian was a member of UQSS in the 1960's and VSA since 1979. His leading research has included the study of underground streams in granite rocks and the synthesis of the geomorphology of the Buchan karst. His commitment to promoting the exchange of ideas in speleology includes organisation and participation in several karst workshops. [Condensed from Australian Caver #138]

**1995 Dr. Grant Gartrell, Dr. Rod Wells** - This joint award specifically recognised their roles in the discovery, interpretation and preservation of what is now known as the Victoria Fossil Cave at Naracoorte, SA. The Fossil Chamber was first entered in 1969. Grant and Rod recognised the potential value and significance of the site and were active over many years to ensure its protection and proper management. The site has since proved to be one of the most significant accumulations of Pleistocene sub-fossils in the world and was given World Heritage status in 1994.

Rod has continued to lead and co-ordinate research on the fossil deposit and has been widely recognised as making a major contribution to our understanding of the Pleistocene period in Australia while Grant continued his passion for exploration and discovery of new caves. Grant also played a leading role in the exploration of the Sellicks Hill quarry cave and efforts to preserve it. [Condensed from Australian Caver #138]

**1997 Dr. Robert Armstrong Osborne** - The award was made in recognition for his contribution to Australian karst research, especially the evolution of NSW cave systems and in particular, the Jenolan System. Recognition is also given for his assistance given on numerous occasions to cavers involved in conservation campaigns and to raising public awareness of the importance of cave studies.

**1997 Neil Anderson** - Neil began his caving career in the early 1960's although it was only after he and his wife Carol moved to Canberra that his activities expanded. He has been involved in exploring areas such as Wee Jasper, Coolemen Plain, Yarangobilly, Wyanbene and Bungonia as well as further afield in Tasmania, Northern Territory, New Zealand and Thailand. His negotiating skills established sound relationships with Northern Territory land managers. A past president of CSS, amongst other committee positions, Neil is perhaps best known for his long-term role of CSS Equipment Officer and co-host of weekly get-togethers lasting nearly 20 years that contributed greatly to club cohesion. [Condensed from Australian Caver #149]

**1999 Henry Shannon** - [Certificate of Merit 1982] - An intellectual force in speleological matters virtually since the beginning of his caving career with the Sydney University Speleological Society in 1959 and continuing with the University of Queensland Speleological Society from 1963 still going with the Northern Caverneers [Tasmania] since 1981. He has made contributions in documentation, exploration, mapping, hydrology and conservation efforts in all Australian states, New Zealand and Papua New Guinea, but most particularly, he is one of those who bled over the conservation battles of Texas caves, Bracewell and Mt. Etna writing up much of the earth science components that supported the conservation cases.

**1999 Norman Poulter OAM** - [Certificate of Merit 1993] - The award was made in

recognition for his long-standing contribution to research, conservation, restoration and management of caves and karst in Western Australia. His photographic skills have contributed to permanent displays in three museums, illustrated books, magazines, promotional and educational literature as well as public talks on cave conservation. He raised awareness of cave fauna in all cave systems and the need to protect them. An advocate of track marking, he manufactures low-cost track marking materials for distribution throughout Australia. [Condensed from presentation addresses and elsewhere]

Abreviations

| | |
|---|---|
| ASF | Australian Speleological Federation Inc. |
| CSS | Canberra Speleological Society Inc. |
| CEGSA | Cave Exploration Group South Australia Inc. |
| SA | South Australia |
| NSW | New South Wales |
| SASS | Sub Aqua Speleological Society |
| SRC | Speleological Research Council Ltd. |
| SSS | Sydney Speleological Society Inc. |
| VCES | Victorian Cave Exploration Society |
| VSA | Victorian Speleological Association Inc. |
| UQSS | University of Queensland Speleological Society. |

Acknowledgment is given to John Dunkley, Dr. Albert Goede, Lloyd Robinson, Henry Shannon and Nicholas White for their assistance in the compilation of these summaries.

## APPENDIX B

### Publication list - incomplete

1. Irving, S compiler, Smith, E compiler, and Walker, J compiler, 1958, Sedimentary basins of Australia: a glossary of nomenclature.: Bureau of Mineral Resources, Geology and Geophysics. Record, v. 1958/80. 35 p.

2. Smith, E M, 195?, Lexicon of Oceania: Bureau of Mineral Resources, Geology and Geophysics, Canberra. Contributions covering New Guinea, Bismarck Archipelago, Solomon Islands and certain other islands.

3. ---, 1957, Lexicon of the stratigraphy of Tasmania: Bureau of Mineral Resources, Geology and Geophysics, Canberra. 155p.

4. ---, 197?, Notes on prospecting and mining in the Australian Capital Territory and environs: Bureau of Mineral Resources, Geology and Geophysics, Canberra. 18p.

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1959 Bergman, G.F.J "Gustav Weindorfer of Cradle Mountain" - private publication, Hobart pp 29

1960 Anon. The Very Latest #4, November.

1961a Anon. "Cave Condensations". The Very Latest #7, March/April.

1961b Anon. "Page 2 Personalities". ASF Newsletter #12, June.

1962 Anon. Report of Director of Mines 1961. [notice of Edith Smith's appointment as geologist].

1962 Young, G. "Canberra Speleological Society" The Very Latest #25. Reprinted in TVL Vol. 11 page 6

1964 Jennings, J. Geomorphology of Punchbowl and Signature Caves, Wee Jasper, NSW. Helictite 2 (2), pp. 57-80

1967a Anon. "Death of Edith Smith" Speleo Spiel, September. 21st. Anniversary edition pp. 1-2.

1967b Anon. "Club News" Speleo Spiel November pp. 2

1967c Anon. "Death of Edie Smith" [in Miscellaneous Notes] ASF Newsletter #38 page 5.

1967 Blainey, G. "The Peaks of Lyall" 3rd. edition. Melbourne University Press. Aus 67-2016 pp 12-16.

1967 Jennings, J. "Edie Smith" The Very Latest Vol.3, #3 September/October, pp 1-2.

1967 Young, E. & G. "Edie Smith" The Very Latest Vol.3, #3 September/October pp 2-3.

1968a Anon. "Minutes of ASF Committee Meeting", Orange NSW, Jan. 27-29.

1968b Anon. "The Edie Smith Award" ASF Newsletter #42 pp 3-4.

1968c Anon. "Departmental Bulletin" Geology Department, University of Tasmania pp 25-26 * The "Bulletin" makes mention of Edith working on Permian polyzoa but Dr. H.J. Harrington (2000) [formerly of AGSO] maintains that the term should be bryozoa as it is firmly entrenched in common geological terminology.[polyzoa and bryzoa are synonyms. Both are used in geological literature CEB ed]

1968d Anon. "Edith Smith" ASF Newsletter #42 pp 2-3.

1969 Anon. "Sudden death of Major R.E. Smith" The Advocate [Burnie newspaper] 2-6-1969 page 3

1970 Anon. "Minutes of ASF Committee Meeting", Jan. 24-25, 1970".

1973 Anon. "Sundry Notes" ASF Newsletter #59 p. 2.

1975 Anon. "Famous Australian News Pictures" Macmillan. ISBN 0 333 17560 3. page 80

1977 Burn, David 1798-1875 "Narrative of the overland journey of Sir John Franklin Makaness, G.1882-1968 and Lady Franklin and party from Hobart Town to Macquarie Harbour". Edited with notes and commentary by George Makaness. Printers: DS Ford, Sydney

1983 Ammer, Christine "The A to Z of Women's Health". ISBN 0 89696 173 7 pp 25-26

1993 Anon. "Chronicle of Australia" Chronicle Australasia P/L ISBN 1 872031 83 8 page 666

1994 Dunn, Bob, Brush John eds. "The Very Best of 40 Years Under the Earth" An underground history of the Canberra Speleological Society Inc. 1954-1994. "The Very Latest" Vol. 11 October

1994 Cooper, B.J., Branagan D.F. eds "Rock Me Hard ... Rock Me Soft" A history of the Geological Society of Australia Incorporated. ISBN 0 909869 89 8 page 69
1996 Wilkinson, Rick "Rocks to Riches" The story of Australia's national geological survey. ISBN 1 86448 009 2 page 229

PERSONAL COMMUNICATIONS -

1999 Goede, Dr. Albert Member, former Tasmanian Caverneering Club Inc. member Southern Tasmanian Caverneers Inc.
2000 Bacon, Carol, Managing Geologist, Industrial Mineral & Land Management Mineral Resources Tasmania [formerly Tasmanian Mines Department].
2000 Banks, Dr. Max, Geology Dept. University of Tasmania [retired].
2000 Bartlett, Margaret, Former co-worker, Bureau of Mineral Resources, ACT.
2000 Brown, Cathy, Member CSS, geologist Australian Geological Survey Organisation
2000 Cox, Margot, Former member CSS.
2000 Dickens, Greg, Technical Officer, Industrial Minerals & Land Management Mineral Resources Tasmania [formerly Tasmanian Mines Department].
2000 Doutch, Fred, Former member CSS, formerly Bureau of Mineral Resources, ACT
2000 Farrow, Alex. Librarian, State Library of Tasmania.
2000 Gee, Dr. Dennis Former co-worker Tasmanian Mines Department. Currently - Director, Northern Territory Geological Survey.
2000 Galbreath, Margaret & Ron, Former members of CSS
2000 Goede, Dr. Albert, Member, former Tasmanian Caverneering Club member Southern Tasmanian Caverneers Inc.
2000 Hamilton-Smith, E. Prof., Victorian Speleological Association Inc.
2000 Harrington, Dr. H.J., Formerly of Bureau of Mineral Resources, ACT.
2000 Jones, Dr. Peter, Former co-worker, Bureau of Mineral Resources, ACT. Currently - Dept. of Geology, ANU.
2000 Leaman, Dr. David, Former co-worker, Mines Dept., Tasmania. Currently - Leaman Geophysics [Tasmania]
2000 Lindsay, Dr. John Former member CSS. Currently - Research School of Earth Sciences, Australian National University.
2000 Lynga, Pauline, Former member Sydney University Speleological Society, Canberra Speleological Society
2000 Purchase, David, Former member of CSS.
2000 Robinson, Lloyd, Illawarra Speleological Society
2000 Ryan, Barbara, Former member of CSS
2000 Smith, Kenneth, Edith Smith's nephew. [son of Ronald]
2000 Smith, Ronald, Edith Smith's brother.
2000 Wells, Allan, Former student, University of Tasmania, former co-worker, Bureau of Mineral Resources, former member CSS.
2000Young, Graham & Evelyn Former members of CSS, formerly BMR staff (Evelyn)

All source material used for the compilation of this biography will be deposited in the ASF Library.

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# Scientific Publishing: where do cavers fit?

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## Abstract
As a heterogeneous group of people, who are interested in caves and karst, cavers often want to publish material. The range of publications available includes local caving magazines and newsletters, specialist speleological publications and scientific journals. This discussion will explore the main types of such publications and discuss their respective roles and requirements in the Australian context.

## Introduction
Cavers are a diverse group of enthusiasts and have many reasons for publication. These include reporting trips for exploration details, social reporting, publishing cave descriptions, cave documentation, scientific descriptions, conservation issues and professional scientific publication. There are possibly other reasons as well each caver will have different reasons for publication.

## Types of Publications
As there are many reasons for publication there are also different types of publication. These are not **better or worse** than each other rather than each performing a **different** purpose. For example: a paper of great scientific importance written up to be acceptable for *Nature or Science* is an inappropriate type of writing for *Australian Caver.*

This paper will describe and discuss the various types of publications with examples and include some discussion of their values and the types of writing and editing appropriate. As well as writing for these publications, cavers should be reading them and referring to them. However, we all need to be aware of the level of accuracy implied in each type.

## A diversion: Scientific methods
A short diversion about scientific method and issues of fact and interpretation is needed to give some context to the overall discussion.

Science is not merely the collection of facts. Although some facts are clearly not changeable - this grass is green, this mineral has a hardness of 4, this material is composed of these components - most science involves the interpretation of a collection of such facts to present and interpretation on how something formed.
The main **methods of procedure** are

1. The experimental method (used by chemists and physicists) as controlled experiments;
2. The normative method where the researcher observes events and evaluates observed processes with a view to establishing content relationships or norms (used by biologists, microbiologists, and hydrologists). In this case description and analysis are important (dependent variable Y varying proportionately with independent variable X).
3. Where neither control nor evaluation of variables is possible, the researcher records the observations accurately (geologists and geomorphologists use this one extensively) and then gives an interpretation.

**Interpretation** can be defined as the art of presenting the meaning of scientific facts. As such interpretation explains and elucidates scientific observations. The bare observations are not enough; we need to have the explanations of them in such as way as to give the facts context. In the case of karst the age of a particular speleothem is often of interest. However the raw date has only limited value unless it is interpreted as to its context in terms of climate of that time and the

accuracy and precision of the date. In the future, a more accurate or precise date may become available and a new interpretation then needed.

A constantly changing pattern of hypotheses, theories and facts is the reality of science. These have different degrees of accuracy and permanency. Hypotheses are ideas, which are still to be proved. A hypothesis is usually based on assumptions, and so some knowledge of the subject is useful, and will change as it is proved or not. New ones are developed and are in turn subjected to proof. Not all scientific research will have hypotheses as sometimes so little is known about a particular problem or situation that it is impossible to develop a meaningful hypothesis. Hypotheses are by nature very specific and part of a scientist's work is to develop a pattern that will organise the experimental or observational data into a comprehensible whole. Such a pattern is defined as a theory. However a theory can only take into consideration the data that exist at the time the theory is formed. Making a prediction based on this theory and carrying out further work to see if the prediction holds true can test it. One of the values of a theory is to suggest such new work. If the new data is not consistent with the theory, the theory must be discarded or revised. In all science therefore, a theory is never proved for all time. It must constantly be able to account for all the new evidence that arises.

Interpretation also needs to be appropriate. The presentation of cave and karst information can be in many forms and should be tailored for the audience. For most karst managers it is to the general public; for karst scientists it is to other karst scientists and perhaps to managers, and is thus audience specific. Science and interpretation are therefore closely linked. The balance between scientific interpretation which is appropriate for a particular audience and the accuracy of the science is not easy to maintain but is something we should all aspire to. ACKMA members in particular, are intensely interested in interpreting the understanding of caves and karst. The challenge is to maintain accuracy and the excitement of knowledge when maintaining balance between the karst scientists, managers, cavers and the general public.

In theory there is probably little in the above section not understood or agreed with. However things are never that simple. As the two most common elements in karst are Calcium and Stupidity (Tom Aley, pers comm., 1999), the potential for misinterpretation and inaccuracy is immense.

There are a number of examples of theories and interpretations that have not been modified in the light of new information. This is particularly a problem in the geological and geomorphological aspects of interpretation. For some reason there is a tendency for geological theories to continue in interpretive material long after they have been modified and or disproved by earth scientists. The same level of inaccuracy in the biological sciences is not tolerated and new and updated material is incorporated into interpretive material more readily. e.g. the age of the Grampians still is quoted as Carboniferous when for over 15 years it has been known on the basis of (then) new Fission Track Dating techniques as being older than the Devonian and they were then interpreted as being of Ordovician/Silurian age. New information is showing it as possibly even older. Similar interpretive information on the biology is much more up to date.

An important component of this is that no-one is immune: anyone who thinks they are, is fooling himself or herself. The issue is therefore one where we have to keep working at it; all of us; constantly. I believe it is important that we all accept that we have more to learn and that we should not feel guilty about past mistakes - they are past. We should try to improve. We should not be defensive with regard to improvement. Therefore the case studies/examples used here should be taken as constructive criticism. They are used so that we can learn from our mistakes not just ignore them.

Each of these problems occurs to various degrees. They need to be identified in order that their influence is minimised. It is unlikely that they can be completely eliminated. The most effective way of managing them is to be aware they occur and constantly work against their pernicious

influences! There are six main situations where misinterpretation and inaccuracy enters the karst interpretation scene. These are:

1. Failure to absorb and use new ideas and interpretations of new data and the ongoing use of seriously out of date, and incorrect information and interpretation.

2. Failure of communication by scientists, management, guides, interpreters, cavers and speleologists.

3. Tendencies to blame lack of resources, time, funds, libraries etc., rather than think our way through such problems.

4. A failure to update signage/notes/interpretation/tours and the retention of out of date material when new ones are developed.

5. Myth and misinformation creep.

6. Bioscience/earth science differences and scientific education problems.

I am all sure you can think of case studies on this. There are some classics in Victoria, e.g. The "Petrified Forest" at Cape Bridgewater. We should be aware that quoting something that was an interpretation from known data from the 1960's does not mean that it still holds. One other example could be Joe Jennings' work on the paucity of karst in Australia, which needs a serious look at it. Just because Joe said it does not mean his interpretation continues to hold up in the light of new information and it is a long time since this question was really looked at. It is also not a slight to the memory of a great Australian karst scientist. He reinterpreted data in his work and updated material eg age of landforms and that was one of the things that made his work so good.

I have made this digression because I believe it relates to how we view publications.

## Types of publications

The types of publications we should all be using are: club newsletters, club journals, caving journals, speleological scientific journals (some refereed and some not), speleological monographs, unpublished reports, conference preceding/proceedings, refereed scientific journals and books. Each of these has advantages and disadvantages as a place to publish or obtain material. Club Newsletters give information to club members whereas club journals may give more interpretive material. These often republish material from the more scientific or more detailed material e.g. I am periodically asked for permission to republish in club newsletters and journals, material previously published in Helictite. This is good as it spreads the information further.

What sort of articles are the best to publish in each? This depends on the type of article. Detailed and complex discussions of dates of dune limestones and their relation to the formation of karst in southern Australia are not an appropriate article for a club newsletter. It is better published in a refereed scientific journal. On the other hand, an entertaining account of an exploration trip to a karst area is not suitable for the same refereed scientific journal and is entertaining reading in a club publication or Australian Caver. If there is important scientific work coming out of the exploration this should be written up as a separate article for the science publication. In many cases there is useful information and description in the club publications and these then should be referenced in the more scientific work. A good example of this is material published in Nargun on McEacheran's Death Trap Cave in the Lower Glenelg River area. A very interesting article on the palaeontological work in the cave has been published in the Australian Journal of Earth Sciences and the Nargun article is appropriately cited in it.

## What is refereeing?

Refereeing is peer review and it has both pluses and minuses. On one hand it means that authors have the benefit of constructive criticism and the work has been subjected to review by people with some understanding of it. On the other hand refereeing can slow down publication and has been used by some unscrupulous people to stifle new ideas and discourage new work . Editors in particular need to be very wary of the last problem. The choice of referees is often one of the hardest tasks of an editor! Nevertheless, refereeing does imply that other workers in the same field agree that the work is worthy of publication. This may stimulate debate and further understanding of the problem.

## What role do editors play?

Editors are a most important part of any publishing. They dispense encouragement to writers, give constructive criticism, fix the grammar and spelling and chose the range to articles that make a publication interesting to read. Their role is many faceted and includes seeing if the article fits the type published in this journal (including whether the journal is overdosed with that topic!), organising referees (if that is appropriate) and giving feedback to the author as well as the actual editing. This actual editing means checking that there is nothing in the articles that may be libellous or slanderous, making sure the grammar, spelling, style, and syntax are correct, writing the editorial and liasing with the production and distribution system. In many cases the editor is also the person who chases up new material. This means that the editor makes sure the whole journal fits together. Anyone who has edited the club journal knows that is a fascinating, sometimes exhilarating but also often tedious, time consuming and often frustrating task.

## Types of Publication

A short summary of the types of publications follows. This is not exhaustive and I have tended to use the examples best known to me but many other examples exist

### Club Newsletters

Club Newsletters are the backbone of written material for many caving clubs and many cavers. They are not refereed but are usually have had their grammar and spelling fixed up if necessary. They include quite a lot of social material and most of the caving articles are descriptive. THIS IS IMPORTANT. Some of the best basic descriptive cave and karst material is found in club publications but cavers need to be careful they distinguish between description and interpretation. An example of such a publication is The *Doline* (Caving Club of Victoria).

### Club Journals

These are often similar to the newsletters but include longer articles. They are often more carefully edited but are not refereed. Many of the same issues apply as for the club newsletters. An example is *Nargun* Journal editions (Victorian Speleological Association).

### Caving Journals

These are non refereed but edited caving journals. They include news, politics, descriptive articles, expedition reports, techniques, and terminology. They have often more detailed speleological information but because they are not refereed have a different position in the publishing stakes for professionals. In the past, publication in these may have been regarded positively by professionals but with the increasing professional pressures on publications, scientists cannot afford to publish material here Examples include *Australian Caver, Descent, NSS News,* and *ACKMA Journal.*

### Speleological scientific journals

These are significantly different from the previous type although some of these are refereed and some not. These are not the most prestigious of scientific journals and many academics want and need to publish in the more discipline based journals eg Earth Surface Processes, Zeitschrift fur Geomorphology, Australian Journal of Earth Sciences, Australian Journal of Botany etc. However the speleological journals are refereed and edited and publish a range of science and social science material. Articles are usually not very long and the journal will usually take articles on any

speleological topic although these must be written up according to the journal's criteria. Examples include *Helictite, Cave and Karst Science,* and *NSS Bulletin* (now called *Journal of Cave and Karst Studies*).

**Speleological monographs**

These are not always refereed but are very useful. They are often reports for particular areas or expeditions. They are usually edited and sometimes produced with fancy printing and graphics. They are often hard to find after they cease to be very recent. An excellent example is J. Dunkley *Caves of Thailand* (Published by the Speleological Research Council)

**Unpublished reports**

These are often reports for Government departments and/or grants such as the recent vegetation report for NSW central area done by Peter Dykes and John Dunkley. These are useful but because they are not refereed the information has not been given the imprint of acceptance from the general scientific community. They are not really edited except for spelling and grammar. Many government departments produce these type of reports but unless the material is written up and published in refereed journals or as a fully published book, they have no more scientific status than any other unrefereed material. People producing these should be encouraged to write them up for full publication.

**Conference precedings/proceedings**

These vary a great deal and can be useful. They are usually not refereed but are edited although this varies from conference to conference. Some international ones are refereed. ASF Conference proceedings are a good example.

**Refereed scientific Journals**

These include generalist journals such as *Nature* and *Science* but are generally discipline based. The different disciplines use slightly different formats but they are all refereed and tightly edited. It is often difficult to be published in these journals and the lead-time is usually in years rather than months. An example is Australian *Journal of Earth Sciences*.

**Books**

Books are highly variable. They can be a full book e.g. J.N. Jennings (1985) *Karst Geomorphology* or D. Gillieson (1996) *Caves*; or they can be an edited book of a series of articles/ chapters from different authors eg Klimchouk et al (2000) *Speleogenesis*. The main difference between a book and a monograph is that a book is usually professionally edited and larger. They are very useful for cavers but you need to realise they are usually compiled from a combination of the author's own work in conjunction with other work. They are also often dated by the time they are published and the latest research is always in the journals.

## Conclusions

Publishing can be a very satisfying experience. It can be quite a buzz to see your work in print but it is more than just writing something and it will be printed in that format without alteration. People should not get upset if editors want changes or say they need material written in a particular way. Everyone needs to be aware of new research and whether the information been replaced or modified by newer work and whether the material has been refereed. Cavers have a very real stake in publishing accurate and interesting material and it is important to be aware of the variety of publishing formats and their various advantages and limitations. Nothing is every perfect and part of success is being able to build new information on previous material.

# The Nullarbor - Fuel Stove Only?
# A Discussion Paper

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Over the last 30 years, visitation to the Nullarbor Plain, particularly the Western Australian sector has been steadily increasing. Whereas, it could be speculated that visitation was once confined to the late Spring - early Autumn period, casual perusal of literature suggests that caving expeditions now take place at any time of the year. Even winter excursions to the Nullarbor can be quite mild in comparison to other parts of the country at the same time of year.

Quite apart from the stress this places on certain cave environments due to intense activities within those caves [eg. Mullamullang, Thampanna], the surface environment can also be stressed through degradation of ground cover and habitat destruction. This may have a direct/indirect effect on caves and all levels of cave fauna.

The Nullarbor Plain is an arid, sparsely vegetated and populated region with an approximate average annual rainfall of 255mm per year. This "figure" is derived from averaging the [average] rainfall figures from the following points - Mundrabilla Stn. 235, Madura Stn. 266, Balgair Stn. 274 and Nullarbor Roadhouse 245mm/yr. Compare this with the average annual rainfall for Perth 869, Adelaide 550, Hobart 623 and Sydney 1219mm/yr. [Source: Bureau of Meteorology] While the majority of the Nullarbor interior is vegetated by low saltbush and bluebush - from which it derives its Latinised name, the coastal limestone strip is moderately forested. Most caving activity, and thus camping, occurs within or close to the forested section.

It has been traditional for campers in modern times to have campfires for warmth and to a lesser extent these days, cooking. Cavers are no exception. However, it could be argued that cavers [most likely the majority of Nullarbor long-stay visitors] who persist in having frequent campfires are having an impact on the surface environment of the Nullarbor Plain and hence, cave fauna through the depletion of surface fauna habitat and erosion.

The principle land use of the Western Australian sector of the Nullarbor is grazing. While grazing can and does have a periodic impact on vegetation, it is mainly confined to grasses, saltbush and bluebush. Dead or fallen timber is largely unaffected. Anecdotal comment suggests that better rangeland management in recent times has seen the incidence of land degradation by domesticated animals [at least in relation to grazing, not hoof action] diminish.

But what are the possible effects of Nullarbor campfires? High on the list would be the risk of wildfires which has prompted some leaseholders to ban campfires on their properties at certain times of the year. [No wildfire has ever been attributed to cavers] The largest effect of campfires however, could be depletion of habitat for fauna that live in and around [dead] standing and fallen timber [close to caves]. This fauna would either directly or indirectly provide nutrients for cave fauna when they are either washed in during wet weather, fall while venturing too close to an entrance or become prey to cave-based predators.

Dead standing and fallen timber on the Nullarbor is usually small, not abundant, and becomes desiccated under the extremely arid conditions so, when burnt, is quickly consumed, thus requiring larger quantities than would be otherwise devoured over the same timespan in the more temperate regions of Australia where fuel is larger and more plentiful. With the tendency for cavers to camp [or be directed to camp] in specific areas close to caves, standing or fallen timber in the immediate area can quickly become exhausted, especially when "pyromaniacs" who insist on huge nightly bonfires are involved. Timber is then "imported" from further afield during the

course of excursions to more distant caves whilst still based at the original campsite. This in itself could cause problems through unwittingly transporting "foreign" fauna from one region to another quite apart from the fact that the supplies would most likely have been gathered fairly close to the visited cave/s thus potentially compounding the problem.

Such a scenario has been long recognized in Tasmanian areas of high visitation, where multitudes of backpackers in National Parks depleted standing and fallen timber [habitats] and caused erosion over vast areas, especially along the Overland Track between Cradle Mountain and Lake St. Clair. The reaction of the managing body to the combined risk of habitat destruction, erosion and wildfires was to [build lengthy boardwalks and] declare these regions "Fuel Stove Only" areas.

Should the caving community be more aware of the effect they can and do have on a region and consider doing the same with the "timber impoverished" Nullarbor Plain - or other areas throughout Australia for that matter? What does "Fuel Stove Only" mean?

Basically, my understanding is that it means what it says - portable fuel stoves [gas or liquid] are the only authorised cooking source, standing or fallen timber is not to be used for open campfires or cooking. As most cavers now carry portable fuel stoves in one form or another, there is rarely need for any type of campfire other than the periodic boosting of sagging morale.

It is not unusual to cave in areas with active picnic/campfire bans. In WA's Leeuwin-Naturaliste Ridge the local council implements an automatic fire ban from October to March in order to minimize the risk of wildfires. The WA Department of Conservation and Land Management "enforces" the non-collecting of [dead] standing or fallen timber [for picnic/campfires by provision of mill off-cuts] in National Parks of the L-N Ridge [and elsewhere, fire bans permitting] on the grounds of fauna habitat protection. There are probably restrictions in other parts of the state or Australia for the same or similar reasons. Other land managers overcome the fire risk/fuel type by the provision of gas or electric barbeques, either free or coin operated. Are clubs aware of any restrictions in their regions of activity?

The purpose of this discussion paper is to draw speleologist's attention to a situation I believe has developed in various areas on the Nullarbor Plain in recent times. The Nullarbor is not well endowed with [dead] standing or fallen timber, timber that provides habitat for fauna. As frequent visitors to an arid region where recovery from degradation must be considered extremely slow, we should be more aware of our collective effect on the overall environment and temper our use of the Nullarbor's meagre timber resources by having fewer campfires or none at all? Surface fauna deserve to have their habitat protected just as much as the more sensitive troglobitic fauna. Should we therefore seriously consider instigating a "Fuel Stove Only" policy at either society or ASF level?

Such a move on the Nullarbor and perhaps in similar regions elsewhere, could only serve to enhance the standing of caving societies amongst land managers throughout Australia.

Effect of localised campfires:

1. Risk of wildfires,
2. Destruction of local fauna habitat by denuding areas of fallen or standing dead timber,
3. Depletion or elimination of cave fauna by the destruction of prey species habitat,
4. Erosion of soils "close" to some caves, through timber gathering [or parking],
5. Importation of fauna [contained in timber] to an area where they do not exist,
6. Depletion or elimination of local fauna by the importation of a more successful or aggressive species.

# Explorers, Surveyors, Missionaries and Travellers: the first chapter of Australian speleological history 1788-1838

*John Dunkley*

## Introduction

This paper chronicles early accounts of cave visits and limestone occurrences in New South Wales, placing the discoveries in the context of exploration, survey and settlement of the colony. In particular it acknowledges the presence and contribution of some secondary players: the Assistant Surveyors, independent travellers, and missionaries. The period covered extends to about 1836, in which year alone Thomas Mitchell was adding to the annals of Australian exploration probably the most significant and certainly the most thorough examination of this continent's then largely unrecorded surface that had been recorded to date. In that period the European newcomers made their way from the eastern catchments to where the rivers flowed west and south, settlers and squatters fanned out beyond the limits imposed by the boundaries of the Nineteen Counties, and most of the cave areas now known in New South Wales received their first recorded visits. Much of the interest in caves and limestone during this period took place on the very frontiers of white exploration and settlement.

The sequence of explorers, surveyors, amateur scientists and travellers is the same succession we still see in a newly discovered cave or karst area the world over. The explorers pushed the boundaries of geographical knowledge, published journals, received the accolades and commended themselves to posterity. The surveyors and minor expeditionaries plodded afterwards, filling in the empty spaces, opening the country to settlement and making more detailed records of resources. The occasional peripatetic traveller, adventurer, scientist or missionary appeared here and there, exploring caves.

A search for limestone may have been almost as great a motive for crossing the Blue Mountains as was the search for new pasture. The limestone deposits and caves of New South Wales, particularly the Central West, have been known since the earliest period of European exploration and settlement beyond Sydney, and a number were associated with the names of early European explorers: Lawson, Oxley, Cunningham, Hovell and Hume, Mitchell, and Sturt. The Central West is of particular interest: the first discovery of limestone in Australia (Evans at Limestone Creek, Belubula River, 1815), the first record of European limestone cave exploration (Lawson in Limekilns Cave, 1821), perhaps the first European cave tourist (Lesson at Limekilns, 1824), the first cave illustrations (Earle at Wellington, 1826), the first published cave map (Henderson at Borenore, 1830, published 1832) the first scientific work carried out in caves (Henderson and Mitchell at Borenore and Wellington, 1830), and the first limestone quarries (Limekilns ca. 1820).

Although smaller areas e.g., Bungonia (Crabb, 1998) have been chronicled in some detail, the only wider account of interest in limestone in the first years of the colony was a paper published by Ted Lane in 1975. The present paper began life as the historical background to a National Heritage Trust study of Karst in the Central West of NSW by the Australian Speleological Federation Inc. (Dunkley and Dykes, 2000). In this expanded paper I have concentrated on aspects previously unrecorded or obscure, and endeavoured to place the whole in a wider historical perspective of the early settlement of the colony. Some expanded sections and the appendices incorporate material not previously published in or readily available from speleological and other literature, and Tasmania has been included because it was not separated from New South Wales until 1825. I see the findings of explorers, scientists, travellers and even

historians as a spiralling sequence: new discoveries are made in previously 'known' areas, and old interpretations are revisited, rejected, enlarged, or discarded.

**Before the First Fleet**

An exhaustive review of the significance of caves in the prehistory of Australia and their use by the traditional owners of Australia has been provided by J. N. Jennings (1979) and will not be repeated here. In a broader canvas, Mulvaney and Kaminga (1999) placed in context evidence of the significance of cave sites in our understanding of Australia's prehistory. Advances in research on Australian prehistory and late Quaternary vertebrate palaeontology have depended overall in significant measure on the evidence provided by caves, crucially in some directions, subordinate in others, and this contrasts with the modest importance of caves for the Aboriginal inhabitants themselves. As a general rule, Aborigines did not live in the deep and dark recesses of caves, but camped at the entrance and only ventured further for special reasons. Rockshelters are somewhat more common sites, and in the sandstones of the Sydney basin there are thousands of such prehistoric occupation sites, many of them still uncatalogued.

## The Search for Limestone

### *Sandstone caves and shell middens*

Small caves and rockshelters abound in the Triassic and Permian Sandstones of the Sydney Basin, and their utilisation by the aborigines was mentioned in some of the very earliest accounts of the first settlement (e.g. Officer, 1789; Hunter, 1793; Collins, 1798). An Officer noted that *"Several huts, formed of boughs, had been seen; but in the greatest extent up the country that was ever made, small bodies of natives were noticed under hollow banks, and in caverns. They generally fled as the English parties approached, and when these places of refuge were examined, heaps of rushes and long dried grass appeared to be their beds."* Collins was scandalised: *"in their huts and their caves they lie down indiscriminately mixed, men, women, and children together..."*.

So caves around Sydney Harbour were certainly utilised by the original inhabitants and perhaps intermittently by the first white settlers, for the middens were mined for shells by the new settlers. Located on prime real estate or in parks, some caves were reclaimed by destitutes during the Great Depression and occupied as recently as the 1960s.

The settlement at Sydney Cove was plagued from the outset by a lack of limestone for making mortar. That observant recorder of the First Fleet, Watkin Tench mentioned that *"One of the greatest impediments we meet is a want of limestone, of which no signs appear … to find limestone many of our researches were directed. But after repeated assays with fire and chemical preparations on all the different sorts of stone to be picked up, it is still a desideratum"* (Tench, 1791). As early as March 1791 Governor Phillip was complaining to the Secretary of State for the Colonies that *"The want of limestone still obliges us to confine our buildings to a certain height, for although the clay is of a strong, binding nature, we cannot with safety carry the walls of those buildings more than twelve feet"*.

Nearly a year later Phillip was still complaining to Lord Grenville, noting that *"Your Lordship will readily conceive of how much consequence it would have been to the settlement had two or three hundred tons of limestone been sent out, and which might have been done, if those ships found it necessary to bring so much shingle ballast; for the limestone might with little trouble have been changed for the stone of this country"*. Two days later he wrote to the Secretary of the Navy along the same lines: *The great inconvenience attending the want of limestone has been pointed out; and if it was necessary for those ships to bring ballast, limestone might have been*

*put on board, and would have been easily changed for the stone of this country, and which I hope the Board will order to be done on any future occasion.*

As it was, lime was for many years obtained from sea-shells found in abundance along the coast, some of them aboriginal middens in Sydney Harbour, which were burnt at Iron Cove. Supplies were located on King Island and Port Dalrymple in Tasmania, and later near the Derwent and on Norfolk Island, but it was evidently more economic to utilise those from the Hunter River, Port Macquarie and Richmond River.

The problem of limestone for building continued to exercise the mind of later Governors, for example Hunter in 1796 and Macquarie in 1810. Indeed, in 1811 the Government advertised for contractors to supply good building lime. The explorers of the route across the Blue Mountains and beyond either had orders or were well aware of the importance of recording discoveries of limestone. Thus Governor Macquarie reported direct to the British Government on Surveyor Evans' discovery in 1815 of high quality limestone at what is now Cliefden and Walli. In 1829 Robert Mudie discussed the problem at length (see Appendix 1) and well into the 1830s Thomas Mitchell was directing his Assistant Surveyors to record outcrops of limestone, both for resource exploitation and for his interest in cave bone breccia. In the light of this we can understand why Mitchell's journals contain numerous references to limestone and caves, and why, in a journal chronicling the day-to-day march of exploration he went out of his way to include references to caves which he had visited at other times, for example his descriptions of visits to Cheitmore Cave and the Big Hole.

## *First reports of limestone and (sandstone) caves*

At the outset we have to recognise that until quite late in the nineteenth century, no significant distinction was drawn between what we would now refer to as *karst* caves in limestone, and artificial grottos, rockshelters and shallow sandstone caves. Both limestone and caves were regarded as significant more for their contents than for any consideration of genesis or aesthetics.

Reporting of the first limestone in the colony is sometimes attributed to Ensign Francis Barrallier. Less well known is his early record and passing use of a cave, albeit in sandstone, and the significance of this in later relocating his route. A French emigrant, engineer to the colony and aide-de-camp to Governor King, Barrallier in 1802 and 1803 made three short explorations of the Burragorang Valley country west of Picton, bounded by the Nepean, Warragamba and Wollondilly Rivers. Limestone was evidently on the minds of his superiors, for on 2 October 1802 Governor King wrote of Barrallier's first trip: *"The officer I sent to endeavour to pass the mountains has returned from his first trial with little hope of effecting it, or making any new discovery, except a very imperfect limestone and a better kind of iron ore than has yet been found* (King to Hobart, 30OCT1802).

Barrallier must have talked up his discoveries, as explorers do, for a month later, on 1 November George Caley wrote to Joseph Banks that *"I was informed that he had discovered a new river, limestone in great abundance, iron almost pure, and had been 50 miles or better in a western direction, but of all this I have doubts"*. Possibly based on earlier interpretations of his route, some writers (e.g. Battye, 1984) believed that Barrallier was writing about the prominent limestone bluffs at Church Creek. This is not possible, because:

1. Although limestone was recorded on his *first* expedition, this ended at Tonalli Peak, some 14km east of Church Creek. Caley and King wrote of it before the second expedition. The "imperfect" limestone he saw therefore lies east of the Wollondilly River.

2. His comprehensive report on the second expedition does not mention limestone.

3. Recent researchers (e.g. Andrews, 1998) have argued persuasively that on the second expedition, Barrallier descended to the Kowmung River via Byrnes Gap and Cedar Creek, not via Kowmung Gap and Church Creek as earlier researchers assumed, and that he did not ascend the Kowmung upstream of its junction with Cedar Creek. This being so, he did not see Church Creek.

**Barrallier's Cave**

However, Barrallier did discover a cave, albeit in sandstone; indeed the location of the cave is of historical interest because it supports evidence in favour of his route to the Kowmung. His journal for 25 November 1802 records that:

*"At six o'clock in the evening I found myself at a distance of 2 miles from the western passage. I was here obliged to ascend a very steep hill on the summit of which I found a cave large enough to contain twenty men. I was then half a mile from the passage, and I sent two men in order to discover it, instructing them to ascend the mountain at the north of this passage. The rain compelled me to seek a shelter for myself and my men in the cave which, the natives assured me, was the home of wombats. I waited till 7 o'clock in the cave for my two men …".*

Barrallier's exact route has been the subject of academic debate for a century - possibly attributable in part to mistranslation from his original French – but is of more than academic interest because he went so close to finding a route across the mountains. All writers mention Barrallier's cave, but until 1993 no cave fitting his description was known. The question was, where is it?

Cambage (1910) assumed it was just below Kowmung Gap and that Barrallier then descended to the Kowmung River via Church Creek, a route supported on different grounds by Brownscombe (1992). Else-Mitchell (1938) argued that he travelled via Byrnes Gap and Church Creek. None of the proponents of the Church Creek route pointed out the obvious fact that if this had indeed been the route, Barrallier's comprehensive journals would have noted the prominent limestone cliffs. While these writers had relied variously on journals, maps and their own bushwalking knowledge of the area, not until the 1990s was real effort made to locate the cave, and as a result two were located close to Byrnes Gap. The site promoted by Macqueen (1993) is probably not that used by Barrallier, for in 1998 Alan Andrews, an experienced surveyor himself, argued a better case for the one he discovered. Located 4km NNW of Yerranderie, above a tributary north of the Tonalli River, this cave is about 10m long and 3m wide, commodious and comfortable enough for camping.

Whichever is correct, this is the first identifiable cave described in the literature of early Australia.

Beyond this cave Barrallier passed through Byrnes Gap, noting more sandstone caves: "*The width of this passage is about half a mile; its sides are perpendicular. The mountain is very steep and full of caves which are the homes of various wild beasts which go there in crossing the swamps near by."* The next morning he descended Cedar Creek to the Kowmung River. Had he followed the Kowmung upstream at this point he may have seen the limestone on Church and Lannigans Creeks, and possibly found fame as the discoverer of a route across the Blue Mountains. But it was in flood from the previous night' rain, and on his own account and accompanying map, he turned downstream at that junction and was finally defeated in attempting to ascend Christys Creek.

## Explorers beyond the mountains, and the first reports of limestone caves

Most of the early inland explorers recorded limestone and caves, which was to be expected: they were chosen because they were meticulous observers and recorders. From the Colonial Office, Lord Bathurst issued a set of standing instructions specifying that an explorer should, so far as possible, make careful written observations of the animal, vegetable and mineral potential of the country passed through, to preserve specimens where feasible, and make drawings or detailed notes where it was not.

That they were well aware of the importance of finding deposits of limestone was highlighted by independent observers such as Rene Lesson (see below). Furthermore, an 1820 review of Oxley's journeys noted that *"in their way they discovered, not a gold nor silver mine, but (what is infinitely more valuable to the colony, and had never been discovered there before) plenty of good limestone"* (Quarterly Review, Nov. 1820, p. 424). Later, Thomas Mitchell issued explicit instructions to some of his Assistant Surveyors, for example when briefing John Rogers in 1830:

*8 …You will also note particularly where limestone occurs in all your Survey and this you will tint on your Map by a grey made by mixing blue and red together shewing something like the extent of the limestone rock"* (ref 487 in Major Mitchell's map) (Mitchell to Rogers, 24/7/1830, 4/6909, AONSW). These instructions explain the early and rapid recording of so many limestone deposits in the NSW Central West.

**'Firsts' in the NSW Central West**

Quite a few 'firsts' relating to limestone and caves in Australia thus took place in the Central West of NSW. Except for Barrallier's passing, vague reference to *"imperfect limestone"*, the first stratified limestone in Australia was located by Deputy Surveyor George Evans, at Limestone Creek (Walli) on 24 May 1815 (Evans, 1815). The significance of this find is evident from Governor Macquarie's report to the British Government that *"Among other things he (Evans) has brought Specimens of Lime Stone, which prove to be of the best quality, and will of course be of Infinite Service whenever Colonization shall take place there."* (Macquarie, 1816)

Wellington Caves and Borenore Caves are the sites of several 'firsts' or 'near-firsts' for Australia. In 1830 Thomas Mitchell and John Henderson independently carried out the first scientific investigations of caves. In conjunction with a dissertation on his theories of the origin of the red earth and bones, Henderson's (1832) published sketch plans (without a scale) of 'Boree Cave' (i.e. Tunnel Cave, Borenore, BN-25) and of 'Wellington Cave' (i.e. Mitchell Cave WE-5) are our first published cave maps. His notes also include a diagrammatic cross-sectional sketch of the Arch and karst at Borenore. Mitchell's work was not published until 1838 and includes professional surveys of 'Large Cave' and 'Breccia Cave' at Wellington, the former being the present Cathedral Cave which is shown to tourists, the latter now known as Mitchell Cave (WE-5). Finally, Mitchell's accompanying *"Geological Sketch of the Wellington Valley"* is the first geological map of surveys, and marks the *"Entrance to large cave"* and *"Cave containing Breccia"*.

**William Lawson, Rene Lesson and Alan Cunningham**

Not well known is that William Lawson, the surveyor of Blaxland, Lawson and Wentworth fame, can be credited with the first written record of a limestone cave visit in Australia when he visited Limekilns Cave for five hours on the night of 9 November 1821. Ken Pickering (1971) described Lawson as Australia's first speleologist, but this first recorded entry to a limestone cave scarcely qualifies him as a speleologist, a status better deserved by Thomas Mitchell. Lawson wrote:

*"Here is a curious cave through a solid rock of limestone. Its entrance is very narrow. At nine o'clock at night I took four men with 3 candles and proceeded into at about 100 yards. At the end*

*is a fine pool of clear water. In many places for several yards together I was obliged to creep on my hands and knees. The inside of the cave is very curious and well worth seeing. I got some fine specimens. Came out at about one o'clock in the morning."*

This is probably the cave referred to in the Sydney Gazette of 6 October 1821, which reported *"A cave, of considerable dimensions, has been recently discovered in the neighbourhood of Bathurst; and some very beautiful specimens of stalactites have been sent to town, which were procured in it. We hope shortly to be able to lay before our Readers a more particular description."* No more particular description was forthcoming, and various writers have ascribed this report variously to Abercrombie or just possibly Jenolan (e.g. Havard 1934), while Lane (1975) considered it could refer to either Wellington or Limekilns. However the candidacy of Limekilns is enhanced by its proximity to Bathurst (25km compared to 73km to Abercrombie and 150km to Wellington), the fact that Lawson's visit was barely a month later, and the fact that both Lawson and Lesson (1828) mentioned its then fine decoration.

Whatever the case, within a few years Limekilns may have been the destination of our first recorded cave tourist. From 17 January to 20 March 1824 a French corvette stood in Port Jackson (perhaps for repairs) during a 3-year long scientific expedition around the world. The expedition's doctor, Rene Lesson seized the opportunity to travel to Bathurst, barely a decade after the city was established. In February 1824 he observed:

"*To the south-west, well beyond Mt Molle, there has been discovered the mineral substance of which New (South) Wales seems deficient, limestone, of which the English experience the greatest necessity in the construction of their buildings, since the coast does not produce enough shells to satisfy needs. This substance was highly desired, and it was not without sharpest satisfaction, that the cave was found to the north of and sixteen miles from Bathurst, (and) whose vault is hung with thick stalactites of a calcareous alabaster, providing a highly regarded lime.*

He continued: *"The way through it is covered with splendid thick stalactites of calcareous alabaster as white as sugar. The lime derived from it is very adhesive and consequently rated highly; only it is very expensive"*. Whether this account was based on a personal visit or on hearsay (for Lesson was in Bathurst barely two or three days), it appears likely from his description that the area was already being used as a limestone quarry, a surmise supported by the name Limekilns on Cunningham's 1823 map (see Field, 1825). On 28 April 1823 Cunningham also recorded and named limestone at Apple Tree Flat, near the head of the Cudgegong River: *"we halted in a vale beneath a part of the boundary hills, which was studded with limestone of an excellent quality"*

**John Oxley**

Notwithstanding Evans's accomplishments, when it came to more ambitious exploration, Governor Macquarie selected John Oxley, Surveyor-General since 1812. Wellington Valley was first recorded in August 1817 by Oxley, who on a further expedition in 1818 recorded: *"The hills bounding the east side of Wellington Vale being found of the purest limestone, of precisely similar quality with that found at Limestone Creek"*. He went on to cross the Bell River to the present site of Wellington Caves, noting high quality limestone as being quite common, although there is no record of caves. Oxley also provided the first records of Wombeyan Caves while searching for pasture land for John MacArthur shortly before his death in 1828.

**Charles Sturt**

Curiosity, perseverance and meticulous recording are among an explorer's stock-in-trade, but their interest in caves varied. Charles Sturt, for example, was peremptorily dismissive of caves he visited at Molong: "*The caves into which I penetrated, did not present anything particular to my observation; they differed little from caves of a similar description into which I had penetrated in*

*Europe…I am not aware that the remains of any extinct species have been found, or that any fossils have been met with in the limestone itself".*

This being in 1828, it appears that cave bones had already been added to the list of resources to be recorded, and by implication caves were of little significance if they lacked such contents.

**To the south – Mark Currie**

In 1823 Captain Mark Currie was despatched from Moss Vale by Surveyor General Oxley to explore country south-west beyond the frontier, then at Lake George. Currie's party encountered limestone at Limestone Plains, Michelago and possibly Rosebrook before he turned back just north of Cooma. Near Michelago on 5 May he *"Found lime-stone and iron-stone where we camped, the former in great abundance".* Three days later he discovered London Bridge, *"a natural bridge of one perfect Saxon arch"* and became perhaps our second recorded visitor to a limestone cave. By late 1824 the Limestone Plains on the present site of Canberra had been settled.

**Hamilton Hume & William Hovell**

En route from Sydney to Port Phillip, on 28 October, 1817 W.H. Hovell and Hamilton Hume recorded limestone in the valley of the Murrumbidgee near Wee Jasper, observing *"several large and deep holes, apparently the outlets of some considerable subterranean cavities; rich, probably, in the organic remains of these regions".* They went on to describe the limestone and its characteristic dip slopes.

**George Bennett**

An amateur natural historian with other interests in anthropology, biology and even animal history, Bennett was in Australia in 1829 and 1832, on the latter occasion retracing the steps of Hume and Hovell, roughly along the line of the modern Hume Highway. On 11 October 1832 he made a one-day, 30-mile detour from Yass to Wee Jasper and back, noting the affinity of the kurrajong tree for the limestone, and mentioning that *"some caves have been lately found in the limestone rocks about this selection; and since the valuable discovery of fossil bones in those at Wellington Valley, by Major Mitchell and others, limestone caverns have become one of the colonial lions; these, therefore, were pointed out to me as objects of great curiosity; I found them however very small, and they did not repay the trouble of getting into them"..*

At least until construction of Burrinjuck Dam, it seems these caves were on the original Cavan Run, part of the property now owned by Rupert Murdoch. In 1940 Potter was still able to identify the tree on the river bank at Cavan indicating the spot where Bennett crossed the river, beyond which was *"amongst limestone rocks a cave which would not admit a man erect".* In Bennett's time the Murrumbidgee was the acknowledged limit of the colony.

On the return journey to Sydney, on 19 November he visited "Gudarigby" property, made an excursion to "Narrangullen" and visited "Gudarigby Caverns" at Cave Flat, now normally flooded by Burrinjuck Dam and better known to divers than speleologists. By lighted torches his party picked its way through the cave *"at a guess, one hundred and twenty yards, or even more …".* His accompanying sketch is our first cross-section cave map. Bennett went on to become the first Secretary of the Australian Museum in Sydney.

Another traveller (anon., 1838) arrived in Yass on 26 April 1837 and next morning set out: *"the ladies in a cart, with tents, beds and bedding, provisions &c and the five gentlemen on horseback. We arrived at Cavan at half-past four, intending to proceed at once to the mouth of the cave, and there to encamp all night, having been told that they were distant only four miles from Cavan".*

However, the distance was more like seven or eight miles so the party stayed at Cavan and set out again at seven on the morning of 20 November to explore the caves (see Appendix 2). This appears to be one of the earliest accounts of a purely tourist excursion to caves.

**Robert Townson**

Possibly the first notable cave visitor to visit Australia, Robert Townson (1762-1827) reached Sydney in July 1807. Well qualified in medicine, chemistry and natural history, Townson's account (1797) of his travels in Hungary includes accounts of visits to Aggtelek and Silica caves in Hungary in 1793. He arrived in Australia with promises of grants of land and money for scientific equipment but, apparently thwarted by Governor Bligh, Townson was instrumental in his deposition, and it was not until 1810 that Macquarie granted him 1000 acres near Campbelltown. In a short biography of Townson, Trevor Shaw (1997) suggested that this experience diminished his enthusiasm for scientific matters; certainly there is no record of any further interest in things exploratory, scientific or speleological. Sometime between 1825 and 1827 the first white painter of Australian caves, Augustus Earle produced a portrait of Townson, now in the Mitchell Library in Sydney. He died in 1827 and is buried at Parramatta.

## Australia's first speleologist?: Surveyor-General Thomas Mitchell and his Assistant Surveyors

*Under pressure from the increase in free settlers, in 1826 Governor Darling found it necessary to adopt a scheme whereby settlers could select land prior to survey, but then have it at once surveyed, valued and sold. To limit its extent he set a boundary beyond which land was not to be sold or let – the boundary of the Nineteen Counties. The problem was, existing maps of the Colony simply lacked substance. An accurate survey of the nineteen counties was urgently needed, but there was little comprehension of the magnitude of the task, and indeed it did take much longer than the Governor envisaged.*

The man of the moment was Major Thomas Mitchell. Appointed Deputy Surveyor-General in February 1827, by the following year he was Surveyor-General following Oxley's death, was expanding his staff of Assistants, and had commenced a survey of the land within Darling's limits. He deployed the men, inspected them in the field, examined all the ground he could, collated the results and, six years later, published a superb map of the Nineteen Counties. And in this role and that of an explorer on the expeditions of 1836, he explored, described, surveyed, studied and wrote scientific articles on caves and their contents in widely scattered parts of New South Wales. He was possessed of boundless self-confidence and a strong ego along with energy, determination and perseverance, a strong intellectual curiosity, and an urge to publish his discoveries. All the qualities of a speleologist. Others may have been in caves before, and some, as we show below, may have published scientific investigations before him, but Mitchell was in fact Australia's *first speleologist*.

**Mitchell's interest in limestone and caves**

Historical accounts of Mitchell's contributions to cave science in Australia have been published (Foster, 1836; Lane and Richards, 1963; Osborne, 1991). The present paper will not repeat this but will place it in a wider perspective, examine the additional contribution of his Assistant Surveyors in the context of the Map of the Nineteen Counties (Mitchell 1834b), and discuss his driving motivation, including his relationship with Governor Darling and Dr John Henderson.

Mitchell's attention to caves has been attributed to his involvement in the intellectual fervour following discovery of the Wellington bone deposits by George Rankin in 1830, although I will argue elsewhere (Dunkley in prep.) that rivalry with John Henderson played a part also. Certainly his *Journals of Three Expeditions* devotes an entire chapter to the bones, but none of this was an integral part of his exploratory mission and the chapter is a retrospective compilation, not a narrative journal like the rest of the book. Further, he had been caving earlier, for example at Bungonia in 1828 (probably the Grill Cave). This was before the bones were located, so that discovery may have been no more than a precipitating factor.

Several motives therefore seem to lie behind his interest in limestone and caves:

1. Topographical surveying: in his role as Surveyor-General, he knew that the only way to properly divide the Colony was on a topographic basis, and the first great need was to record that topography.

2. Limestone resources: even 40 years after settlement, the importance of supplies of limestone for building was still exercising the mind of the government as new towns were established in the interior. Furthermore, limestone gave some indication of soil better than that produced in the sandstone country of the Sydney basin, as Mitchell himself noted: *"It is only where trap, or granite, or limestone occur, that the soil is worth possessing, and, to this extent, every settler is under the necessity of becoming a geologist…"*

3. Intellectual curiosity: Mitchell had a personal interest in the great paleontological debate emanating from the discoveries at Wellington Caves

4. Rivalry: the intellectual debate over the significance of the bones produced a fervour of interest, and Mitchell's ego demanded he investigate before others had an opportunity. In particular, I believe Mitchell was determined that his views would prevail over those of John Henderson and that this was the reason for the haste with which bones were despatched to London, and why he devoted an entire chapter of his *Three Expeditions* … to the bone saga.

**Mitchell and the Wellington Bones**

The Sydney Gazette of 25 May 1830 published a letter dated May 21, signed "L" (attributed to Dr J. D. Lang), announcing that George Ranken of Bathurst had *"in a late excursion to Wellington Valley … visited and explored a remarkable cave about two miles from the settlement, the existance of which had been known for a considerable time and the entrance of which is in the face of the limestone range"*. It went on to describe Ranken's discovery (in Breccia Cave) of *"a vast quantity of bones of various sizes and generally broken, some strewn on the floor of the cave, but the greater number embedded in a sort of reddish, indurated clay along its side"*.

Foster (1936) tells us that Surveyor-General Thomas Mitchell had fortuitously been about to leave Sydney to examine work on the Great West Road to Bathurst. Indeed, he left only four days after the Gazette's announcement, joined Ranken in Bathurst, and on June 23 they hastened towards Wellington.

Mitchell left Sydney only four days after the Gazette's announcement. Foster (1936) tell us that this departure was fortuitous and that his motive was to examine work on the Great West Road to Bathurst. However, I argue below that there was another more pressing motive. Whatever, the Surveyor-General joined Ranken in Bathurst, and on June 23 they hastened towards Wellington, On June 26 investigations commenced in the Breccia and Cathedral Caves and a third cave which *"did not reveal any bones"*. On the following day they made a hard and fruitless ride of 45 miles

to investigate a report of another large cave north of the Macquarie River. On the 28th Mitchell made his well-known survey of "the bone cave", and for the next few days mixed business with intellectual pleasure, on the 30th examining another small bone cave east of Wellington Valley, and on the first three days of July combining some surface surveying during the day with sketching the cave at night. Packing the bones carefully, he left for Molong on July 4th, reached Bathurst on the 9th and Sydney on the 24th. On August 14th Dr Lang left Sydney for London with preliminary details which he forwarded to Robert Jameson, Regius Professor of Natural History at the University of Edinburgh and they were published in 1831.

By 13 October Mitchell had written a paper and despatched it to London where it was read to the Geological Society on 13 April, 1831, a date he was at pains to remind readers of in publishing his studies more accessibly in 1838, as a whole chapter in his *Journals of Three Expeditions ….*

**John Henderson and Thomas Mitchell**

But in the same month of June 1830, a John Henderson also turned up in Wellington, then a small military garrison on the frontiers of white settlement. In a historical survey of scientific studies of the red earth and bones, Osborne (1991) devoted a few paragraphs to Henderson's work, but his very existence had apparently escaped the notice of Foster (1936), Lane & Richards (1963) and Augee (1986) in their comprehensive papers on Mitchell and Wellington. No-one has remarked on the curious juxtaposition of these first two scientific studies on Australian caves (but see Dunkley, in prep.).

Henderson wrote:

*"From Van Diemen's Land I proceeded to New South Wales; and continued to reside at Sydney for several months. With the view of examining the Geological formations of the country, and comparing it with Van Diemen's Land, I made another pedestrian excursion, in a westerly direction, into the interior of the country. Having arrived at Wellington, which is about 240 miles from Sydney, I remained there for some time, in order to observe the phenomena attending the deposition of those fossil remains which have lately been discovered in the Limestone Rock. Having, at the request of General Darling, prepared on his account, a collection of these for transmission to England, I addressed him a Report on the subject; and the one here published, has been prepared from my notes, which I happened to have retained in my possession".*

This account is dated at Wellington, July 1st, 1830, but from the last sentence, must have been rewritten later. It is clear both from his own statement above, and from his detailed descriptions, that some time was required on site. Henderson must have moved quickly to have left Sydney after the Gazette account appeared on 25th May, travelled to both Boree and Wellington (surely not entirely a *'pedestrian excursion'*!), carried out some excavations and written up the results by 1st July.

Like Mitchell, Henderson had realised the significance of the account in the Gazette. He too was interested in the megafaunal fossils. They each spent time in a tiny village on the frontiers of white settlement, at most only days apart and quite probably at the same time. They each examined Boree (Borenore) Caves for evidence of red earth and bones, Henderson during the same trip, Mitchell apparently some years later (although he claimed in 1838 to have discovered them *"during a cursory visit to them some years before…").* Although it is not stated whether he really wrote it there, Henderson's account is dated at Wellington the very day (July 1st) on which Mitchell sketched the Altar in Cathedral Cave. Henderson published his account in Calcutta in 1832. Mitchell's first paper was published in 1831, his comprehensive report in 1838.

Yet when Mitchell and Henderson did finally publish their accounts, neither mentioned the other. Not a single word. On the evidence presented, it is simply not credible that they failed to meet in Wellington on or about July 1, 1830. Even had they missed each other on site, one would

surmise that they would make a point of meeting in Sydney. It was a relatively small place and Henderson was a man of some means and relative leisure, being on extended furlough from India. He had access to the Governor, who he says requested him to gather a collection of bones *"for transmission to England"*. He would therefore surely have found the time to discuss his theories with the Surveyor-General. That they failed to meet during sojourns in the Wellington and Sydney of 1830 defies belief. So, what is the explanation?

We know from Henderson's account that upon returning to Sydney from Wellington, he unsuccessfully petitioned Governor Darling to assist him in an endeavour to travel (at his own expense) on explorations beyond the Nineteen Counties and in particular west of Wellington (Henderson op. cit, pp. ix-xi). We also know that on the day before the Sydney Gazette item (i.e. 24 May, 1830), Mitchell had written to Colonial Secretary Hay in London, seeking permission to organise an expedition through the centre of Australia to the west coast. This lapse of protocol certainly did not endear him to the Governor.

Further, Henderson's book markedly deprecated both the professionalism of the Surveyor-General's Department and specifically the wisdom of expending public money on the road to Bathurst, and presumably these views were known at the time of his visit. In this light, perhaps, upon learning of the bones, and no doubt aware of the Governor's request to Henderson about collecting some, Mitchell used the power of his office to decide he urgently needed to inspect the road to Bathurst, visit Wellington to plan the survey, and simultaneously seize the opportunity to boost his profile and credentials in the home country. On returning, quite probably Mitchell's ego did not allow him to associate with someone who had designs on exploring country he wanted to examine for himself, who had confided those intentions in and sought support from the Governor, who had criticised his administration, and whose views about the bones were at odds with his own anyway.

It is a matter of record that Mitchell and Darling never got along with each other. For example, shortly after Mitchell's return to Sydney in July, Darling was complaining to Colonial Secretary Hay in London that: *"The attention of the Surveyor-General, who seems injudiciously anxious to do everything himself, is so much occupied in the Road Branch, that, to say the least, the more important duties of his Office* (i.e. the trigonometrical survey – JD) *cannot be attended to in the same degree as if that Department had not been placed under his superintendence"*. Darling was often critical of Mitchell's tardiness in producing his map (e.g. letter to the Under Secretary for the Colonies on 28 May, 1831 – Historical Records of Australia XVI, p.222), and before the end of the year he did attempt to strip Mitchell of responsibility for Roads and Bridges. A few months later Darling was himself dismissed, and in the process attempted to secure the dismissal of Mitchell.

**Mitchell and Boree (Borenore) Caves**

Mitchell found time to visit Boree Caves briefly for the same purpose of bone hunting, at the very beginning of his Australia Felix expedition, on 18th March, 1836 (Mitchell 1838, pp. 6-7), and after Boree, to scour Oakey Creek for the same purpose. His diary states that the time for cave exploration was available *"as it was necessary to grind some wheat with hand-mills, to make up our supply of flour, I was obliged to remain a day at Buree; and I, therefore, determined on a visit to the limestone caves, by no means the least remarkable feature in that country"*. However, George Rankin was fortuitously at hand, having accompanied him from Bathurst and together they spent a full day in exploration:

*"The limestone occurs chiefly in the sides of vallies* (sic) *in different places, and contains probably many unexplored caves. … I had long been anxious to extend my researches for fossil bones among these caves, having discovered during a cursory visit to them some years before, that many interesting remains of the early race of animals in Australia were to be found in the deep crevices and caverns of the limestone rock. … I was anxious to ascertain, by a more*

*extensive examination of the limestone country, whether the caves containing the osseous breccia, presented here similar characteristics to those I had observed in Wellington Valley. … It may be imagined what a vast field for such interesting researches remains still unexplored in that district, where limestone occurs in such abundance"* (pp. 6 - 7).

This is curious. Surely a major expedition would procure supplies before leaving Orange on 15 March. It is difficult to escape the conclusion that Rankin, who was not part of the expedition, had been asked to come specifically to help in the cave exploration, and that on a pretext, the expedition was delayed a day to enable them to do so and to strengthen Mitchell's stature.

Further, Mitchell's claim to have discovered bones at Boree *"during a cursory visit to them some years before"* (i.e. before 1836) has to be tested. On July 24th 1830 Mitchell had recalled Assistant Surveyor John Rogers from the Goulburn River area and despatched him to Bathurst, Molong and Wellington, *inter alia* with specific instructions to mark occurrences of limestone (see below). However, Rogers' own reports suggest he was first appraised of the existence of Boree Caves on 9 September, 1830. If Mitchell had already visited Boree, Rogers would have known. Thus, if Mitchell did discover bones there, it must have been after Henderson's visit.

**Reporting on the Bone Caves**

Neither Mitchell nor Henderson was particularly qualified academically to study the deposits. Mitchell was surveyor with some geological training; Henderson a doctor whose writings reveal a well-educated man and a sound facility with zoological nomenclature. Both had wide-ranging intellectual interests of that peculiarly nineteenth-century kind, although Mitchell was the more accomplished polymath. Mitchell had advantages to posterity in that his conclusions foreshadowed modern, post-Darwinian thinking, and he had the connections to promote his views more widely. Indeed, Darwin visited Sydney in 1836 and Mitchell continued correspondence and met him in London the following year. Henderson attributed the distribution of bones to a flood sweeping down from Canobolas, past Boree and strengthening towards Wellington, and predicted the discovery of more bones along the intervening river beds. Not exactly the Biblical Deluge, but presumably he was more strongly influenced than Mitchell by the recent publication in 1824 by Rev. Buckland of his *Reliquiae Diluvianae*. Mitchell also suggested inundation of the caves, but subsequent to rather than a cause of the distribution of bones.

Certainly Mitchell's account is more intellectually rigorous. He had the benefit of such peer review as was available (e.g. from Professor Richard Owen in London, and from Lang who nevertheless remained anonymous, presumably to avoid becoming embroiled in controversy about the Universal Deluge). He had astutely arranged for Lang to convey the preliminary account to London and for a paper to be read before the Geological Society of London in 1831, while Henderson had to be content with an obscure missionary press in Calcutta. His maps, of course, were professionally executed whereas Henderson's were no more than rough field sketches.

Just what happened to Henderson's bones is unclear. He reported to Darling that several boxes of bones *"are now ready for transmission to Doctors Fittan and Buckland of London"*. Buckland was not the best choice of recipient, and Owen (1877) does not mention Henderson in his seminal work, writing in the preface: *"The exploration of ossiferous caves has hitherto been limited to those originally discovered by Sir Thomas Mitchell"*.

That much said, Henderson was no more an opportunistic amateur than was Mitchell. A former Surgeon in the Bengal Army, he had several scientific papers to his credit and founded the Van Diemens Land Society in Hobart in 1829. On returning to India he engaged in a variety of mercantile pursuits with the East India Company, travelled incognito across the High Himalayas and Karakopram Pass to Yarkand, and died in Ludhiana shortly after his return in 1836.

**Conclusion to the Bone Saga**

So, less than a year after the discoveries at Wellington, Darling had been dismissed, Henderson had returned to India and only Mitchell was left standing, his reputation if anything greatly enhanced. Without Mitchell, Henderson's writings might now be regarded as the pioneering scientific account of caves in Australia, and recognised as first in a succession of studies of the Wellington bones. It seems very likely that Mitchell recognised an opportunity, his motive had elements of career advancement as well as intellectual curiosity, his means was his office, and all were driven by his energy and ego. Here, it seems, is a first example of intellectual rivalry, jealousy and possessiveness of a kind not unknown to later generations of speleologists and even scientists!

**Henderson's contributions in retrospect**

Thus, Mitchell prevailed over Henderson. Nevertheless, Henderson did have three other interesting, if minor claims on the history of karst science in this country (Dunkley, in prep.). His sketches of Boree and Wellington Caves were the first published maps of Australian caves, and he was also the first to comment, albeit in a rambling manner, on the supposed effects of fire or heat on limestone, erroneously attributing at least some of the product to volcanic activity:

*Sometimes its surface would seem as if it had formerly been exposed to strong heat, in which case, the rocks it forms, are of a harder texture, and assume a more rugged aspect. The first appearance of the effects of fire, exists, as has already been mentioned, on the surface of some portions of the limestone range; there would be, however, a considerable degree of doubt attached to this, if unsupported by other evidence. Secondly, when a fire is lighted in the vicinity of the limestone, it converts a portion of the superstratum of soil into a brick, very much resembling the red stratum in which the bones are found preserved*

*Fifthly, the most convincing evidence however, of the effects of fire, is to be met with, at a place called Nauregal, twelve miles from Wellington, where I discovered a hot cave in the limestone, from which warm fumes continue to be emitted. I regret much being unable, notwithstanding all my exertions, to trace further the source of this internal combustion.*

The last-mentioned site is intriguing – where is it? Finally, he appears to have been the first to draw and write abut karst topography:

*"These (limestone) hills present, generally, a smooth surface, but in certain situations, the rock protrudes in large masses, assuming sometimes, the appearance of the spires and ruins of a deserted city. This is particularly observable in the vicinity of the caves at Boree".*

**From Boree to Australia Felix**

After leaving Boree, Mitchell's most famous expedition proceeded to south-west Victoria. On this and other excursions he appears to have gone out of his way to track down reports of caves or even to return to caves which he had visited earlier, and it seems he similarly instructed his Assistant Surveyors after he was appointed. His journal records exploration of caves at Glenelg River, Bungonia, Cheitmore and Big Hole.

**The Assistant Surveyors and Major Mitchell's Map**

In 1834 Mitchell published his *Map of the Colony of New South Wales*, commonly known as the Map of the Nineteen Counties, and still regarded as a feat unparalleled in topographical mapping. Commenced in 1828, it marks almost every creek, spur and ridge of any significance in a huge arc from Moruya west to Tumut, north to Wellington and Tamworth, and east to and north of

Taree. Not quite every creek. - a few were missed by Mitchell's less assiduous Assistant Surveyors - but many maps remained the authoritative source and/or were not corrected for more than a century, following the advent of aerial photography. In some cases the corrections and additions waited until the time of bushwalkers such as Myles Dunphy whose Blue Mountains maps in turn became authoritative for the next 50 years.

A supreme egotist and not one to sell himself short, Mitchell wrote that *"A survey connecting a surface extending across 17 degrees of latitude by chain measurements, tied together and verified by triangulation, exists nowhere else, that I am aware of, on the globe"* and *"I consider it one of the most accurate specimens of constructive plan drawing ever produced of an extensive territory on the same scale"*.

About 900 local maps were prepared over 6 years at a scale of 2 inches to one mile, forming the basis for the main map. An example of one such map is that showing the location of Wellington Caves, in Mitchell (1838), ch. XV. To achieve this Mitchell drove his men hard and his letters to many contain admonishments for real or perceived failure to perform. At times it appears that even he did not fully appreciate just how difficult the country was to survey, at least until the task was completed, when he could acknowledge that
*"It is to be regretted that the public should know so little of the arduous labours of the surveyors, which have been so long and silently devoted to procuring geographical materials of a much more perfect description"*(anon – almost certainly Mitchell himself – p. 345). (On the Trigonometrical Survey ……in )

The work was undertaken with three objectives: to precisely locate land grants, to divide the colony into counties and parishes, and to plan construction of public infrastructure such as roads and bridges. From these it was expected that the permanent establishment of towns could follow more readily. The survey was done by triangulation, some of the high points being Mts Colong, Werong, Murruin (Mt Shivering) and Jenolan. Interestingly, the highest of all, Mt Bindo beside the Mt Victoria – Jenolan Caves road, was apparently not one of them.

In much of the really difficult country, particularly to the east of the Divide, as much as possible of the chaining between triangulation points was done along major high ridges, so that some significant limestone areas such as Colong and Tuglow were missed because they were deep in valleys. The course of many rivers was sketched in using an intersection method.

We have seen above that Mitchell's role in instigating scientific interest in caves in Australia, particularly at Wellington, is well documented. Recorded in his journals as an explorer, but less widely known, is the way in which this led him to follow up reports of caves throughout the colony. Even less known still is the outcome of an insistence that the occurrence of limestone and caves be marked wherever encountered by his Assistant Surveyors, who included Granville Stapylton, John Rogers, Robert Dixon, William Govett and Henry White. It is only in recent years that the endeavours of some of these have come to light (Andrews, 1992). Some kept journals, as did Mitchell on his expeditions. Stapylton's journal (Andrews, 1986) was actually written by one of his assistants but there is no doubt it is his. Mortimer Lewis wrote so comprehensively that a book could be filled with his work and it is unfortunate that his brief sojourn as surveyor (before becoming Colonial Architect) was to the north of Mudgee in an area not greatly endowed with limestone. The work of others e.g. John Rogers, can be appreciated only from a perusal of their original survey books, monthly returns and letters to and from the Surveyor-General. The monthly returns allowed one line per day briefly indicating work performed, so that references to geological features are often scanty and some observations may not be recorded for posterity. In most cases they were also the first European explorers to pass through the country they surveyed.

The survey teams included convicts of good repute who were rewarded with remissions of sentence. However, some of the surveyors, such as Stapylton had difficulty supervising the convict assistants.

**Granville W C Stapylton**

Granville Stapylton was appointed on 9 May 1829. To an extent his journey entered some of the country first explored only a few months earlier by that world traveller George Bennett, naturalist and first secretary of the Australian Museum. Stapylton recorded the location of the 'Gudarigbee' Caverns as *"entrance to large caves of limestone formation"*, on the Murrumbidgee River just upstream of its junction with the Goodradigbee. He also trecorded the location of the caves in the Goodradigbee Valley near Wee Jasper, first noted in passing by Hovell and Hume in October 1824.

After this he ascended the valley of the Goodradigbee. Unable to trace the river through the gorge south of Peppercorn Creek he traversed to the west under Peppercorn Hill and arrived at Cave Creek. He noted the underground course of the creek in this area (i.e. the Cooleman Caves), then headed south, far beyond Bennett's farthest point on the Tumut. Reaching the Yarrangobilly River junction, he passed through Lobs Hole and beyond Ravine. Just how far beyond Ravine is difficult to determine. His map would suggest that he reached to within perhaps 10km of Yarrangobilly Caves. Yet on his map, further downstream – at the location of what is now Wallace's Creek – is a note *"Limestone Rock and entrance to Caves*". Perhaps it was information from the Aborigines, misplaced.

Stapylton's journals were recorded by an amanuensis and presumably because of this, record a good deal of ill-feeling and invective directed at Mitchell, suggesting that they were narrative rather than dictated. He was killed in an attack by aborigines in May 1840, near the present site of Brisbane.

**Robert Hoddle, Big Hole and Cheitmore**

Hoddle was appointed on 1/4/29. Accompanied by Edward Knapp, he surveyed the country from Bulli and Bargo to Moruya, entirely east of the dividing range. His journals suggest that he probably passed within one kilometre of the Big Hole in 1827 (Andrews 1992) but he didn't record it. Mitchell became aware of the Big Hole some five years later, visiting it and Cheitmore Caves accompanied by a Mr Ryrie:

*"In a hasty ride which I took as far as Carwary (i.e. Krawaree), in 1832, I was conducted by my friend, Mr Ryrie, to a remarkable cavern under white marble.*
*… But still further southward, and on the range separating the country at the head of the Shoalhaven River, from the ravines on the coast, I was shown an 'antre vast', which, for aught I know, may involve in its recesses, more of the wild and wonderful, than any of the 'deserts idle' which I have since explored. A part of the surface of that elevated country had subsided, carrying trees along with it, to the depth of about 400 yards, and left a yawning opening about 300 yards wide, resembling a gigantic quarry, at the bottom of which the sunken trees continue to grow. In the eastern side of the bottom of this subsidence, a large opening extended under the rock, and seemed to lead to a subterraneous cavity of great dimensions."*

**John Rogers**

By the end of June 1830, John Rogers had for more than a year been assiduously surveying the Goulburn River. He accomplished all that Mitchell had asked for there and was ready for more. Indeed, there was more to do there, but instead of being required to continue that work he was sent to Bathurst, there reporting personally to Mitchell. On 24 July 1830 he was despatched from Bathurst with explicit instructions:

*"…3rd - The Duty on which you will immediately commence on arriving at Molong will be as follows viz – To trace the Molong River down to its junction with the Bell and the same River (Bell) to its junction with the McQuarie below Wellington Valley … to trace the River McQuarie from the junction of the Bell upwards to the junction of the Cudgegong …*(Mitchell to Rogers, 24/7/1830, 4/6909, AONSW)
….
"8 …*You will also note particularly where limestone occurs in all your Survey and this you will tint on your Map by a grey made by mixing blue and red together shewing something like the extent of the limestone rock"* (ref 487 in Major Mitchell's map) (Mitchell to Rogers, 24/7/1830, 4/6909, AONSW)

This was only a few weeks after Mitchell's personal investigations of the Wellington bone deposits. It appears very likely that both the brief to Rogers and its timing were motivated strongly by a desire to locate more cave bone sites – Mitchell was in full control of the timing and deployment of his staff and this particular region could have waited. Certainly, as we shall see, Mitchell asked him to follow up some speleological enquiries.

Delayed by the loss of a packhorse, on August 7 Rogers marked his first limestone along Molong Creek and another along the Wellington Road. Others followed on the 17th, 18th and 20th. By Thursday August 26th he located the Bakers Swamp limestone and on 2nd September two more outcrops along Burrandong Creek, and again on September 3, 6, 7, twice on the 14th, then on the 18th. On the 20th he reached the Burrandong Road, marking *"Limestone "* and *"Caves"* and on the 21st he reached Wellington Valley. Apart from the known caves, more limestone was again recorded near the Soldiers New Barracks at Wellington on September 23.

On Thursday 9 September Rogers had written: *"Plotting – Sent two Men to dig for Bones at the Caves near Wellington Valley NB informed that there are other and more extensive caves in the neighbourhood of Canobolas not yet visited by persons collecting therefrom."* On the 28th Rogers himself made the trip: *"Paid a visit to the Caves today instead of Sunday"*, and in his monthly report for September reported that:

*"Having understood that you wish to know the native name of the caves, I have ascertained those near Boree to be called Mulwang, those near Wellington seem to be sounded Welbang, and others there are above the junction of the Cudgegong called Werran-dang.*

*The natural troughs which I understood were empty when you visited the caves are now full of Water proceeding apparently from the concreted mass above".*
Rogers to Mitchell 30Sep 30 2/1574)

Just which are these *"other and more extensive caves in the neighbourhood of Canobolas not yet visited by persons collecting therefrom"?* Although they are not in fact more extensive than Wellington, this could only refer to Boree Caves, a surmise supported by the fact that although this area was not in his original brief, Rogers went there on 30th November and again on 25th and 26th December.

Mitchell's journals record that he reached Wellington *"by way of Buree and Molong"* in 1830, implying that his visit to Boree Caves preceded that to Wellington, and he did later describe bone breccia both there and in a small cavity at Molong. If this were the sequence of events, one would not expect either John Rogers' field note on 9th September, nor why he was despatched to Boree in both November and December. It seems more likely that Boree at least was not visited by Mitchell until well after the time of Henderson, and then only briefly, as he himself records in his diary for 17th March, 1836.

In summary, Rogers located and mapped limestone at Molong, Cumnock, Bakers Swamp, Nubrigyn Creek, Burran Burran, Dripstone, Boduldura, possibly Stuart Town and Finchs Cave, and sites along the Macquarie and Cudgegong Rivers. Some of the last in particular are now submerged beneath Burrendong Dam. It may have been he who told Mitchell about Boree: if so, Mitchell's investigations there must certainly have been somewhat later than Henderson's.

**Why not Jenolan? - William Romaine Govett and Henry Faucourt White**

After more than three years large blanks remained on the map in County Westmorland. Govett was charged with the portion east and south of Oberon. Approaching from the east on one expedition, he traced the course of Coxs River, noting several tributaries from the west, and marking and naming Mt Jenolan and Mt Colong. West of the Dividing Range his brief was to survey the Fish River to its source south of Oberon, and the route from the west to the headwaters of Jenolan River. Why, then, did he not proceed over the gap and down the gently sloping valley leading to the caves?

Mitchell's instructions were

*3rd – You will commence the trace of the Fish River at the place where the road from Sydney first crosses it keeping either bank upwards as you find convenient. It will be desirable to extend the survey of the main range also, so as to carry both on together, which, from the apparent parallelism I observed, you will be able to do for some distance. When one must be abandoned, you will keep the range, and trace it Southward as the ground will permit.*

*5th – As the heads of the rivers on the interior side may be of easy access – I have to request your attention also to the survey of any such which you may discover in order that they may be connected with the survey of the Abercrombie, Colborne and Campbell rivers, now in progress, and on which I intend soon to dispatch another officer.*

*6th – I am aware that this will be a difficult operation, but it is one of the most important surveys still required to complete the map of the Colony – and I rely on your ability and experience for the performance thereof.* (Mitchell to Govett, 21 Nov 1831, 4/6910, AONSW)

In the process, Govett lost a Pack Horse and his own horse, reporting that:

*I beg to inform you that as soon as I have completed the River to its sources, I shall make it a point to find the two horses lost, without which I cannot proceed on Survey to the Collong Mountain …"*
(Govett to Mitchell, 31 Jan 1832, 2/1541 AONSW

So, it appears that Mitchell's instructions and Govett's time lost in relocating the horses caused him to press south to the source of the Fish River and beyond, rather than descend the gently sloping valley which leads to Jenolan Caves. In this area, therefore, Mitchells' map shows the course of all tributaries flowing west or north to the Fish River from the Dividing Range, but no east-flowing streams.

To further explore this conspicuous blank, Mitchell directed the attention of Henry Faucourt White:

*"… you will proceed without further delay, to Burragorang and commence a survey of the country beyond the Wollondilly. Mr Govett having left an extensive portion of Country quite unexplored between the dividing range and that river - With this view … you will next trace a connection upwards from Collong to Murrum (sic) and Werong … and you will ascertain during that trace where the high range extends from it Northwards towards the lofty fixed point – shewn*

*in the tracing to accompany this letter, that range you will also trace to its northern extremities which overlook Coxs River near three remarkable conic shaped hills.*
(Mitchell to H F White 2/1/33,2/1592 AONSW)

*" … By following the extremities overlooking Cox's River, it is hoped that you will thus determine enough of the general course of that part of the river which it has been found impossible to approach on the other bank, and of which the Survey is very much required"*. (Mitchell to H F White, 2/1/33, 4/4524 AONSW)

White traced some 34 miles of ridges from Colong, and on his return wrote

*"I have traced with greatest difficulty, the range from Collong (Mt Colong) to Mr Govett's dividing range … In tracing the above range the obstacles I have met with have been very great – the ranges being formed of immense masses of unconnected rock – many surrounded by a perpendicular wall or cliff which makes them inaccessible. … I found it impracticable to get my Pack-bullocks further than Colong … That part of the ranges which is not so inaccessible is covered with a scrub, so thick, that had it not been for our Setting it on fire, I have no hesitation in saying that to have it surveyed through it would have been impossible.*
(White to Mitchell,27 Feb 1833, 2/1592 AONSW)

William Govett was then despatched once again, this time further to the north:

*"The native name of the highest ground shown in my Sketch is to be obtained if possible – Jenolan is that of a hill some miles higher on the Cox – and was obtained by Mr White* "
(Mitchell to Govett, 4 Sept. 1833, 4/5424 AONSW).

This was Govett's last assignment and it was horrendously rough country. He did not add much to the west of the Cox River and Mt Jenolan. Mt Jenolan appears on Mitchell's map but the Jenolan River is not named and only 3 miles of its course is sketched. Following the Jenolan River upstream from Coxs River would be a major undertaking, almost certainly blocked at Hells Gate in Hellsgate Canyon, about 3 miles below the Caves. However another map published in the same year (Mansfield 1834) does mark 'Jenolan C' (meaning creek, not caves).

The difficulties of surveying in this rugged country and the practice of following ridges to retain intervisibility meant that on Mitchell's final map, much of the large blank remained on the map of County Westmorland including the area near and south of Jenolan Caves. It was at least another six years before the Whalans descended the ridges and valleys of the Jenolan River and located the caves. Henry Faucourt White's traverse in 1833 from Mt Colong north-east to the Coxs River passed within 2.5km of Colong, Church Creek and Billys Creek Caves and similar distances from Jaunter and Tuglow, but for the same reason, they remained hidden and were not recorded until much later in the nineteenth century.

## Abercrombie Caves

As noted above, the Sydney Gazette dated 6 October 1821 referred to a *"cave of considerable dimensions … in the neighbourhood of Bathurst"* leading some writers (e.g. Havard, 1934; Keck and Cubitt, 1991) to conclude that it referred to Abercrombie Caves. This is not impossible; certainly Keck and Cubitt assembled strong evidence of the early settlement of the district to the north. However Abercrombie is some way beyond settled land, well south of the road from Sydney, and scarcely *"in the neighbourhood"* of Bathurst, which is 73km north and had been established only 6 years earlier. The only recorded contemporary exploration in the district had been Evans' journey 40km to the north-west in 1815, and Throsby's in 1819, equally distant to the east (Cambage, 1921).

Thus, as evidenced earlier, Limekilns is a rather more likely source for the Gazette's story. According to Geoff Bates (1982), early rumours of a cave system near the Abercrombie River first appeared around 1825, but no source is given either for this statement or another, that at that time early settlers and stockmen referred to a place called "The Bridge", an early name for the Abercrombie Caves. It may well be that the first white visitors were bushrangers, and both Bates and Keck & Cubitt compiled comprehensive accounts of that era. Had the caves been widely known earlier than 1830, it seems likely that Thomas Mitchell would have found an excuse for inspecting them. By 1834 the first tourist party had arrived and Abercrombie was visited by several travellers during the following years.

## The Missionaries at Wellington Valley

> *"Behind them were the conquered hills; they faced*
> *The vast green West, with glad strange beauty graced;*
> *And every tone of every cave and tree*
> *Was a voice of splendid prophecy"*
>
> (Kendall, quoted in anon 1924)

We have seen that the Wellington Valley was first recorded by John Oxley, and that he crossed the Bell River to the present site of Wellington Caves, noting high quality limestone as being quite common.

A military outpost was established at Wellington in 1823 for the control of bushrangers and from then until the late 1830s the valley was at the very frontier of white settlement in New South Wales. Although the first authenticated reference is a letter written by Hamilton Hume on 4 December, 1828, the caves were known before then. A long-time inhabitant of the area, Robert Porter later wrote a book claiming that a convict named John Saville had first been shown the caves by aborigines in 1823. Though not implausible, this story has never been authenticated and the book has elements of legendary folklore. However the caves were certainly known by 1826, when the painter and traveller Augustus Earle produced a series of interiors and exteriors (Hackforth-Jones, 1980; Hamilton-Smith, 1997).

In 1830 the Church Missionary Society in London determined to establish a mission in New South Wales, at the frontiers of white settlement. They chose Johann Handt, a Swiss Lutheran who had seen service in Sierra Leone and Liberia, and he arrived in Sydney on 26 June 1831. Plans became mired in bureaucracy for 14 months, for the government seemed in no hurry to honour its promise to finance the venture. Handt used the time to find a wife, was married by Samuel Marsden on 4 July 1832, and eventually left Sydney on 18 August with supplies to establish the mission, taking 46 days to reach Wellington Valley. Over the years he kept a meticulous diary from which we know he toured Wellington Caves on 19/11/1832, 10/7/1833 and 24/9/1835, hosting respectively a Mr Fisher, Mr Betts (son-in-law of Samuel Marsden), and James Backhouse and George Walker (see Appendix 3). The head of the mission, William Watson also diarised a visit on 6/11/1838 when he hosted the Rev. J. Taylor who stayed four days *"to examine the state of the Mission"*.

Marsden's interest in the Wellington experiment arose possibly because he had many years earlier adopted aboriginal children and had assisted in the establishment of missions throughout the region. He may have harboured other motives, perceiving as he did a link between missionary activity and trade. It is not clear whether he ever visited the caves. James Backhouse had been despatched , among other things, to establish branches of the Society of Friends (Quakers), and he travelled extensively throughout eastern and southern Australia. In Tasmania Backhouse supported the racist, possibly genocidal activities of George Robinson who believed Aborigines would respond to Christianity only after they had been stripped of their land and culture. In their lack of compassion, his writings are curiously similar to those of the Wellington

missionaries. In comprehensive diaries he described cave visits at Mole Creek, Norfolk Island and Wellington. Of the page devoted to the last he said: *"Some bones are said to have been found in this cave, but I saw none, neither did I perceive any traces of fossil remains in the limestone."*

Taylor, Marsden and Backhouse were all energetic, educated, influential observers, but the Wellington missionaries reveal no suggestion that they harboured any curiosity or intellectual interest in the caves. They apparently visited the caves only as a break in routine, and then only as a courtesy to visitors (see Appendix 3). In keeping with other diary entries, their cave descriptions are impersonal, even terse in places. They do not reveal whether either the missionaries or indeed the more widely travelled and educated Backhouse even appreciated the wider interest in the scientific contents of the caves. Nowhere is there mention of Thomas Mitchell, for example, even though the period in question followed closely on his visits. If they did know of Mitchell, they may well have eschewed his interpretation, as it cast doubt on biblical tradition. Taylor's notes (Taylor 1836, quoted in Osborne 1991) include several pages describing caves and their bones, but Watson's diary says no more than that *"We found a few bones which we supposed were those of a Kangaroo"*.

Dominated as they are by a single-minded, evangelistic and curiously impassive devotion to the task of saving souls, the other diary entries reveal minds not open to recreational or enquiring diversions from the task at hand. Indeed, overall, the diaries say little about life beyond the day to day drudgery, Watson lamenting that *"It is impossible for our friends who are surrounded with all the comforts and polite appendages of civilised society can form anything like an adequate idea of the drudgery and attendant on this mission"*

The Mission faltered and eventually failed in the early 1840s. It could hardly prove viable when official policy condoned extermination and Aboriginal survivors still had access to traditional and other food sources. By then, as it happens, barely 50 or 60 of the original Tasmanians described by Backhouse were still alive.

On all four occasions the cave tours were made on the occasion of guests arriving from Sydney and elsewhere. We may suppose that 160 years ago, just as today, a visit from friends and acquaintances provided the opportunity for a break in routine and perhaps a picnic.

## Van Diemens Land, Victoria and Norfolk Island

Van Diemens Land colony was separated from New South Wales in 1825, and as in New South Wales, surveyors were among the first to record limestone and caves. As early as 1827 Henry Hellyer described and sketched Rocky Cape North Cave, a raised sea cave 80 feet long and up to 10 feet high in Precambrian quartzite on Rocky Cape (Middleton, 1990). This site had long been utilised by Aborigines, and was excavated as early as 1912.

Although, as noted above, John Henderson's pioneering establishment of the Van Diemens Land Scientific Society failed, the focus of 'science' did move for a period to the island colony. Governor Arthur was no champion of science despite his patronage of the Society, but his successor Sir John Franklin was more sympathetic, fostering a new Natural History Society in 1839 and even a scientific journal. The emphasis remained on natural history and there was no parallel interest in caves, but both Governors visited caves at Mole Creek during their incumbency, establishing a precedent for vice-regal visits which became a pattern in other states.

Probably the earliest documented reference to caves is that by Thomas Scott who recorded that in 1829 Governor Arthur visited a limestone cave at Circular Marsh, most probably Wet Cave.

The peripatetic James Backhouse toured the colony extensively in 1833:

*Passing over a few more hills, we came to some small limestone plains, called the Circular Pond marshes, from a number of circular basons (sic), that seem to have formed by the draining off of the waters, with which the whole are sometimes covered, into subterraneous channels. Some of these ponds are full of water, the outlets below being choked with mud, others are empty, and grassy to the perforated bottoms. There are also some cavernous places. We fixed our quarters for the night under the shelter of a wood, and by the side of a place resembling the bed of a deep river, that commenced and terminated abruptly: the water, which at some seasons flows through it, evidently finds ingress and egress through a bed of loose gravel. …*

*26th. We explored a few of the caverns, the entrances of some of which resemble doorways, and open into a grassy hollow. At the end of a long subteraneous passage, into which I descended with a torch of butning bark, there was fine, clear stream of water, three feet wide and equally deep, emerging from one rock and passing away under another. The limestone was of a bluish colour, imbedding iron pyrites – between the Circular-pond Marshes and the Moleside Marshes, some elevated land occurs. The latter takes its name from the Moleside River, which also becomes subterraneous in some places.*

Backhouse also visited caves at Wellington (NSW), as noted above, and on Norfolk Island. Of the latter he wrote of a visit on 4 June, 1835: *"We went to see a singular little cave, not far from the Commandant's house. In this place, two men who absconded, a few months since, concealed themselves in the day-time, and for a considerable period, eluded detection. The cave is in rugged limestone, that forms two low hills, the flat, and the reef on the south of the Island … The cave was near to a lime-kiln, and was concealed by a stone, drawn over its mouth".*

We have already seen that Thomas Mitchell noted the limestone at Glenelg River is western Victoria in 1836. Following routes south from the Monaro Plains, settlers probably reached Buchan, Victoria by 1838 (Daley, 1960) but records of the period are scanty.

## Conclusion

From the time of the first white settlers, it had taken 25 years to cross the Blue Mountains and a little longer to find limestone. The next 25 years, from 1813 to 1838 was the first great period in Australian speleological discovery. Most of the significant karst areas now known in New South Wales were located and in some cases explored for caves. Elsewhere, as in Tasmania, the occasional traveller described a cave visit, but after the Wellington bone saga there was no scientific interest in caves or their contents for many years. At the close of Australia's first half-century, settlement had only just commenced in what is now Victoria, Queensland, South and Western Australia.

In Australia as elsewhere we remember the original explorers, and indeed a few were the first recorders of limestone. But we should also celebrate the achievements of the assiduous Assistant Surveyors. In most cases they too were the first whites, travelling under difficult conditions in country so rugged that it remained untouched for another century or longer. The contributions of John Rogers in particular deserve greater recognition, while the enigmatic John Henderson was a pioneering writer on cave science.

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Abbreviations: JRAHS = Journal of the Royal Australian Historical Society
AONSW = Archives Office of New South Wales


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## APPENDIX 1

**(from)**

Mudie, R. (1829): *The Picture of Australia exhibiting New Holland, Van Diemens Land, and all the Settlements, from the First at Sydney to the last at Swan River*, London: Whittaker, Treacher

"Of limestone, near Sydney, there is none, and none has yet been discovered so near as would pay for the long land carriage. There is, however, a substitute, which answers for architectural purposes, in the vast heaps of shells that are found on the shores of some of the inlets. These shells are found in great quantities: and it need hardly be added, that when they are burnt they make a very pure lime. On approaching the mountains southward, mountain limestone makes its appearance. It is found in beds of great thickness, of a greyish colour, and in some instances so compact, that it may pass for an inferior species of marble. The limestone strata occur again, on the west side of the mountains, at Bathurst, and they are found also in the elevated plain near the sources of Hunter's river. In both of these places the lime occurs in the common form of limestone, or carbonate, and also in that of plaster-stone, or gypsum; but both are at too great a distance from the coast for being of any great value, except in the neighbourhoods where they are found. Calcareous rocks have been seen on so many parts of the coast, that it is by no means improbable that there is a great deal of limestone in the central parts of the country."

**APPENDIX 2**

**Visit to Caves at Cavan (Wee Jasper), 26 April, 1837**

(from)

Anon. (1838): *A Month in the Bush of Australia: Journal of one of a Party of Gentlemen who recently travelled from Sydney to Port Phillip, with Some Remarks on the Present State of the Farming Establishments and Society in the Settled Parts of the Argyle County*, London: J. Cross, 54pp.

(Tuesday, 25th April) We had intended going this afternoon as far as Cavan, the estate of late Mr E.W. Riley, and to visit the wonderful caves on the Murrimbidgee *(sic)* and return here to dinner, but have abandoned these intentions until tomorrow, when we are promised the company of the ladies. …

*C. O'Brien's, Yass, Wednesday forenoon , 26th April* – Here we are, detained, I am sorry to say, by the annoying circumstance of the loss of horses … It was not until eleven o'clock that we ready to start. Just then arrived Mr McAlister, and with him Mr McFarlane and Mr G, Stewart, police magistrate, from Goulburn, which delayed us some time. The ladies in a cart, with tents, beds and bedding, provisions &c and the five gentlemen on horseback. We arrived at Cavan at half-past four, intending to proceed at once to the mouth of the cave, and there to encamp all night, having been told that they were distant only four miles from Cavan, but we now ascertained they were seven or eight miles off, and that it was impossible we could arrive there before dark, we therefore determined to remain at Cavan all night. When we had dined, the gentlemen walked out to examine the improvements, &c about Cavan; these are not very extensive.

…We spread our beds on the floors, &c at Cavan, and I slept soundly until near daylight yesterday. I was the first of the party to awake and get up, and having dressed, and seen the horses fed with such food as we could get, got the whole party afoot, and by seven o'clock we were on our way to the cave, which we did not reach until past ten. We then lighted a fire, had breakfast on the ground, for which we had all abundant appetite, an afterwards we proceeded to examine the caves. The entrance is a narrow fissure, a little way up the side of a hill, rising out of a deep valley, and is so covered by rocks that no one would be led to suppose there was any opening; the cave soon opens however, and for some space its floor slopes inwardly, and a few dozen yards brings us to a spacious and lofty chamber; the walls and roof are of uneven surface, and presenting fantastic shapes and appearances, but there are here few stalactites. Its further extremities seem closed by rocks of limestone, encrusted by the substance, once liquid, but now hardened, which constitutes petrifications. Over and through amongst these, a very rugged, and, especially for ladies, a very difficult path, we scrambled for some considerable distance. Sometimes we had to go through very small apertures on hands and knees, at other times had to surmount high rocks. Sometimes the caves opened out into spacious apartments, wide and lofty, at other times they were narrow and low. Here and there we met with stalactites and with pools of water. The most beautiful specimen of the former is called Ebden's altar, and is really very pretty. A mass of crystalized, though opaque, stalactites, in colour and appearance somewhat resembling alabaster, hangs over a mound of the same material, and is altogether a very picturesque object. We did not explore, I should think, one-half of the various caves or branches, nor do I suppose that one-half of them are yet discovered, as it is most probable that a great part of the hill is perforated, but we saw enough to give us, I should think, an idea of the whole, and the caves are certainly worth visiting; they are not, however, as far as yet discovered, so fine as many cavities of the same nature, to be seen in other parts of the world, and are thought more wonderful by the native colonists, than they would be by travellers accustomed to inspect extraordinary works of nature and art. These do not appear to contain any breccia or other organic remains, as do the caves at Wellington. From the caves we proceeded homewards to Yass, stopping at Cavan to refresh, and it was nearly eight o'clock 'ere we reached this, having travelled at least thirty miles during the day.

(from)

## Appendix 3

The Missionaries at Wellington Valley
(from)
Hilary M. Carey and David A. Roberts (eds.) (with original design by Peter Davey) (1995): *The Wellington Valley Project. Letters and Journals relating to the Church Missionary Society Mission to Wellington Valley, NSW, 1830 - 45. A Critical Electronic Edition.* 1995.

### Monday, 19, November (1832) (Handt)

"We and our visitors took a ride to Mr Fisher's this morning, and the latter being desirous of seeing more of the country, we went afterwards to a subterraneous cave, 3 miles from Wellington. This cave is on a plain, in rocky ground. The nearest mountain is about a mile from it. Its entrance is insignificant and descent steep. The height inside is about 40 feet in some places and the width twice as much. In length it is about the same as Salisbury Square in London. In the middle of the cave there is a formation of rocks resembling an altar with a pulpit. Close to this formation, at the left side, the lofty rocks seem to be of a crystalline substance, and as their outside form was like icicles, they resembled much a large organ with various tubes. The rocks were in many places of a crystal appearance. We went as far as we could, and where we could not walk, we crept along, as at steep places we were obliged to do several times, till we came to an abyss, which at it proved by throwing down stones, was filled with water. When we came up, I found that my hat, which I had left outside, was burned to cinders, as Mrs Watson's bonnet and veil, and some other little articles. We had made a small fire outside the cave, before we entered it, in order to kindle the torches which we would take with us, but, during the time we had been in, the fire had rapidly spread towards our things; and had we not appeared just at the moment we did, would have destroyed all we had left outside."

### Wednesday, 10 July 1833 (Handt)

"There are more Blacks here than usual. Some of them were curious to see our little boy. Mr Betts from Parramatta, Son in law to the Rev. S. Marsden, paid us a visit today. Went with him to the cave, where we found the air, being winter here at present, very warm. Besides the curiosities mentioned under date the 19th of Nov. 1832, we discovered many bats sticking to the rocks, which had taken their shelter in the cave from the cold."

### Thursday, 24 (September, 1835) (Handt)

"Took a walk to the Cave with James Backhouse and George Walker, our visitors. Met with several Blacks, and talked to them: fell in also with one of the Boys, who went away on the 21st instant, and brought him back. The old sick woman, mentioned under date the 8th, was worse this evening. Mr Backhouse prepared her some medicine, which, being sweetened, she took without reluctance. She is more susceptible, when spoken to about spiritual things, than I found many of the men."

### (November) 6. (1838) (Watson)

"Rev. R. Taylor wishing to see the Caves at the end of the valley, we formed a little party for that purpose. We descended to a considerable depth, assisted by ropes and torches. The stalactites we saw are very large and beautiful. We found a few bones which we supposed were those of a Kangaroo. We were prevented proceeding so far as we wished for the want of more torches."

## Appendix 4: EARLY ACCOUNTS OF LIMESTONE AND CAVES IN NEW SOUTH WALES – A summary

| AREA | Lime-stone | cave | Earliest records |
|---|---|---|---|
| Abercrombie | 1820s | | See text for discussion |
| Apple Tree Flat | 1823 | | (now known as Queens Pinch) Cunningham |
| Bakers Swamp | 1830 | | Rogers |
| Big Hole | | 1832 | Mitchell, Ryrie |
| Boduldura | 1830 | | Rogers |
| Borenore | 1830 | 1830 | Henderson (probably known earlier), Rogers |
| Bowan Park | 1830 | | Rogers |
| Bungonia | 1822 | 1824 | Harper, Cunningham, many other contemporary reports |
| Burran Burran | 1830 | | Rogers |
| Burran Burran | 1830 | | Rogers |
| Cave Flat | 1824 | 1824 | Hovell & Hume, Bennett, see also Wee Jasper, Taemas |
| Cheitmore | | 1832 | Mitchell & Ryrie |
| Church Creek | | | Sometimes incorrectly attributed to Barrallier |
| Cliefden | 1815 | | Evans |
| Colong | 1893 | 1896 | Scrivener (?) according to Battye |
| Cooleman Plain | 1829 | 1875 | Stapylton (underground streams), Gale (known earlier) |
| Crawney Pass | 1852 | | Clarke, but possibly |
| Cudgegong | 1830 | | Rogers, Cunningham (?) |
| Cumnock | 1830 | | Rogers |
| Dripstone | 1830 | | Rogers |
| Finchs | 1830? | | Probably Rogers |
| Geurie | 1830 | | Rogers (?) |
| Jenolan | 1838? | 1838? | ?According to tradition by C & J Whalan |
| Jerrara | 1818? | 1832? | Throsby & Meehan; Bennett |
| Limekilns | 1821 | 1821 | Lawson, probably first recorded limestone cave |
| Limestone Plains | 1823 | | Currie |
| London Bridge | 1823 | 1823 | Currie, possibly second recorded limestone cave |
| Michelago | 1823 | | Currie |
| Molong | 1830 | | Rogers (possibly earlier) |
| Mt Fairy | | | no record, probably known in early days of settlement |
| Nubrigyn Creek | 1830 | | Rogers |
| Queens Pinch | | | See Apple Tree Flat |
| Rosebrook | 1823? | | Probably Currie |
| Stuart Town | 1830 | | Probably Rogers |
| Taemas/Narrangullen | 1824 | 1829 | Hume, Stapylton, Bennett |
| Timor | 1820s? | | Referred to in Mudie 1829 |
| Tuglow | | 1884 | H & C Wilcox according to Trickett in 1897 |
| Walli | 1815 | | Evans |
| Warroo | 1820s | | See Wee Jasper & Taemas / Narrangullen |
| Wee Jasper | 1824 | 1829 | Hume, Stapylton, Bennett, anon. |
| Wellington | 1818 | 1826? | Oxley, see text for discussion |
| Wombeyan | 1828 | 1828 | Oxley |
| Yarrangobilly | | 1834? | |
| **Van Diemens Land:** | | | |
| Circular ponds | (1833) | 1829 | (Backhouse), Scott, but probably known earlier |
| Chudleigh | | 1833 | Backhouse, but known earlier |
| **Norfolk Island** | | 1835 | Backhouse, but almost certainly known much earlier |
| **Victoria:** | | | |
| Glenelg River | 1836 | | Mitchell |
| Buchan | 1838? | | earliest records of settlement |