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EDITORIAL.

This journal, the seventh produced by SUSS, has been planned to emerge in all its glory just prior to the Inaugural Meeting of the Australian Speleological Federation, to be held in Adelaide in December, 1956. The Programme for this Meeting, the plans of the Federation, and the complete list of member Soc ieties, will all be included in a Federation publication, and accordingly are not given in this journal. However, it is not out of place to include some comments on the Federation and SUSS participation.

The Federation is designed to bond together Australian speleos with the aim of improving individual and collective speleological activities, and it is the sincere hope of SUSS that this and other aims of the Federation will meet with all success in the future.

The interest of SUSS members in the Federation is best incidicated by the fact that twentyfive of them will be making the 2000 mile journey to the Conference. The present activities of SUSS are summarised in a following article, and it is worth repeating the point which is made there that SUSS, as a University Society with a constant passing stream of undergraduates, is as yet of necessity not as stable a concern as other Australian societies which have firm foundations of members untroubled by the vagaries of examiners.

This year SUSS has been fortunate in having a strong body of enthusiastic undergraduates, and the results of their activities are set out in the following pages in the varied Jenolan reports. The intensity of their work is well indicated by the fact that they discovered two new caves in the vicinity of the much-frequented Mammoth Cave.

Included in this journal also are several very interesting and informative articles by speleos from groups other than S.U.S.S. thus following the happy precedent established in previous issues. If one may single out an individual report, that by the Cooranbong speleos has been reproduc ed in full, due to the excellence of its coverage and partly to the fact that this is the first report issued by this new group.

Since more than thirty copies of each issue of SUSS are now sent overseas to groups and individuals in many countries, it has been thought desir able to include foreign-language abstracts of those articles of a general interest.

Finally, I wish to acknowledge with thanks the help given in preparation of this journal. Mr G.E. Hewan, Headmaster of Cranbrook College, has assisted by supplying a duplicating machine, and Mr. Thomas Draper of SUSS has given invaluable help in production of the photographs.

B.J. O'B.

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STATE OF THE SOCIETY.

The formal inauguration of the Australian Speleological Federation in December of this year has led indirectly to a review of the activities of the Sydney University Speleological Society over the past years, to a survey of its plans, and an elucidation of its future hopes. It is therefore not out of place to set out briefly here the 'History of SUSS' and the present state of the Society.

The Society was formed by a group of University undergraduates and by other interested folk late in 1948, so as to place on a formal basis the previous speleological activities of certain members, and, more important, to carry out and promote the investigation and preservation of Australian caves, and to group together people interested in these aims. The steady growth of the Society since then and the promotion by it of the Australian Speleological Federation would seem to indicate that the Society has adhered to the original enthusiastic aims of its foundation members..

In May, 1950 SUSS published its first journal, and this present publication is the seventh to be produced. The purposes of the journals are to provide information and basis for discussion for both local and overseas speleologists, and the reader should accept this journal in the light of those aims.

Since the year of its foundation SUSS has explored and investigated upwards of twentyfive cave areas in New South Wales, as well as a number in other States. Some of these systems, perhaps, have received a disproportionate share of attention, but this has been due in general to their relative accessibility and promise, rather than to lack of interest in other areas. During this time a number of interesting and some very beautiful caves were found, although the paucity of written records hasadded difficulty to thorough investigations.

During the passage of years, also, the scientific work carried out by SUSS members has steadily grown, though not to the fullest extent possible. This latter may be due in part to the relatively high proportion of undergraduate members whose minds must needs be occupied fully by examinations, so that any prolonged studies are difficult to carry through. In time, and with the growth of a 'graduate' body in the Society, it may be anticipated that the varied interests of this body will ensure participation in most fields of speleological activity.

The Society has now reached the stage which one may regard as natural for a University Society in such a field of endeavour, with the members dividing gradually into three categories. Firstly, there are the enthusiastic (and generally young) members who revel in the thrills and adventure provided by the sport of caving, who continually long for fresh fields and caverns new, but to whom caving as such is stuff enough.

The second group comprises those members, mostly with a few years caving behind them, to whom entering a cave just as a cave is not sufficient. To these members, before it is worthwhile to go caving, there must be some reason for particular interest in the region - either the cave offers unique caving sport or is unknown territory, or else it has some features of particular scientific interest to them.

Contrasting with these groups is a third one, consisting of folk who may be termed caving dilettantes. These are cavers who have rarely been in a true exploring party (much less have led one) and who have neither the interest nor enthusiasm for any speleological activities. These will go away for many weekend trips and be content to follow in others' footsteps into andthrough caves. To some of them caving is fun because it is somewhat rare, and it matters little in which cave they wander. To others, it just offers an opportunity to 'get away from it all'.

Strict classification of mankind rarely succeeds in keeping sharp boundaries, and this is indeed fortunate. We have not yet reached the brave new world where members of the general population can claim truthfully or accurately 'I'm glad I'm a Beta', and this uncertainty is even more pronounced when it comes to classifying the speleologist, for he is in most cases a rare bird and supreme individualist. (Let the reader consider his fellow-speleos, and ponder!)

Accordingly, the boundaries between these groups are not always drawn sharply, and some members may contrive to be a happy mixture of sport plus scientist. Others will have their moments, when they fluctuate from one group to another. But, in general, this classification will serve.

In spite of one's preference for one group or other, every member of the Society (provided, of course, that he is a financial member!) has a useful function to perform, and this needs no further elaboration here. To my mind, the compleat speleo is one who combines science with sport in nearly equal proportions, but I have no inclination towards condemnation of extremists in one or the other sphere. I would merely remind the extreme scientist that science is by n o means the be-all and end-all of l ife, and my advice to the 'sporting caver' would be to taste the extra savour resulting from scientific dabblings in caves, and then decide his future activities.

Over the next year or so, the future outlines of SUSS' growth may well be fixed. It is the responsibility of every member to decide what these shall be, and to contribute towards this future in his own manner.

BRIAN J. O'BRIEN,
President.

SUMMARY OF WORK DONE AT JENOLAN CAVES IN 1956.

This year has seen an average of one trip a month to Jenolan with excellent results. Early in January 1956 Ted Faunce and Alex Jones discovered the Casteret Cave, which was explored by three trips subsequently during April, May and June 1956. (Report 69). There are still definite possibilities for further exploration and mapping, as no one has yet established the position of the Casteret with relation to the nearby Foz Hole and the Mammoth. In May 1956 John Hinwood, Kelvin Stillman and Alex Jones discovered the Foz Hole which was fully explored on two later trips led by Ted Faunce and John Hinwood. (Report 70). The possibilities for further exploration in the Foz Hole seem rather small. New members of the Society, who were introduced to caving on two trips for prospective members, one led by Adrian Hunt and the other by Warren Peck, assisted greatly with the work in the Casteret and Foz Hole. Both these caves had never been entered prior to their discovery by S.U.S.S. members.

Some observations have been made by Adrian Hunt of cracks and rock movements in the Aladdin Cave. Under Adrian's leadership, also, a sink hole between the Playing Fields and the Mammoth has been partly excavated. As yet a break through has not been made, but further digging work will probably be carried out. The cause and effects of flooding in the Mammoth were observed by Warren Peck (Report 71). The widespread interest taken in our work was reflected when members of our Society supervised two trips to Jenolan by Senior Scouts. (Reports 73 & 74).

Trickett's map of the River Cave wasbrought up to date following the examination of the cave by two parties under Warren Peck (Reports 72 & 73). It appears that there are considerable possibiliti for further work of an exploratory type. One party made a close examination of the rare Heligmites that occur in this cave. Another group, under Keith Renwick, examined the Brachiopod fossils in the Glass Cave. (Report 76).

One of the most pleasing features of this year's work at Jenolan is the keen scientific interest taken in aspects of caving which are normally overlooked - the identification of fossils, the collection of cave fauna and some research into certain geological phenonomena associated with caves. It is hoped to include in the next journal a paper on the Geology of Jenolan, which will bring to light some new facts that were not k nown to the authors of the standard reference written in 1915. (C.A.Sussmilch and W.G.Stone - "Geology of the Jenolan CavesDistrict". Proceedings Royal Society of N.S.W. 1915).

WARREN PECK,

Records Officer.

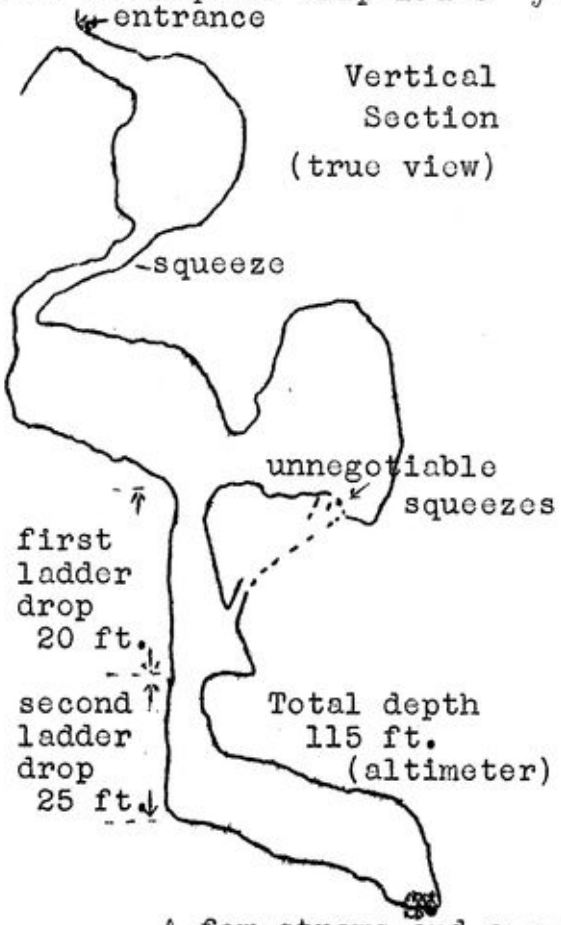
EXPLORATION OF THE FOZ HOLE AT JENOLAN.

JOHN HINWOOD.

This cave was discovered on W. Peck's trip on 4th-5th May, 1956 by K. Stillman, A. Jones and J. Hinwood while they were resting after exploring the Casteret Cave.

It is situated approximately 30 feet from the Casteret - on the hill above the Mammoth Cave about 150 feet above McKeown's Creek. The entrance was hidden by bushes and is a small opening below a 10 feet high cliff.

Initial exploration was by J. Hinwood who descended on a log and explored as far as the top of the first pitch requiring ladders. On a subsequent trip led by E.A. de la Faunce and including the three above, the bottom was reached with the use of 100' of rope and 60' of ladder. An attempt to dig out the rocks at the bottom proved futile, although a curren of air comes up through them. On this trip a hole in the wall across from the ladder drop was noticed.



John Hinwood then led a trip on which a bridge was made from a numbe of 6 ft. logs hauled into the cave and lashed together on the slope above the drop. The bridge was crossed by Hinwoo and Griffiths, with the assistance and moral support of Stillman and Williams. The hole opened as surmised, into a cave with almost no exits. One at floor level led, via impossible squeeze holes to the foot of the first drop, and othe were unnegotiable squeezes at floor level through closely packed rock.

An attempt was made to dig out a squeeze on the slope above the ladder drop but this proved futile. The only hope for future work lies in digging out the loose rocks at the very bottom, an arduous and probably unrewarding task.

A few straws and a number of dead formations occurred from above the first drop to the cavern across the drop; this latter also contained much old flowstone and a number of large shawls.

CAVING POTENTIAL IN SOUTH AUSTRALIA.

A.L.HILL & J.D.TAYLOR.

Until quite recently it was thought that the only caves which existed in South Australia were the Tourist Caves at Naracoorte and the then notorious Caves of the Nullarbor Plain, attempted only under extremely arduous conditions. But this was a long way from the truth. Since the inception of the Cave Exploration Group, enquiries to country districts and research into old Records have shown that South Australia is as well endowed as other States with cave syst ems, scattered all over the State. The distribution of these systems is such that it is possible to classify them into both geological and geographical zones.

Generally speaking, there are three main cave forming limestone types of Cambrian Pre-Cambrian, Tertiary and Pleistocene times in the State. The first of these constitute the very ancient sediment ary rocks of the Flinders Ranges extending down to the Adelaide area. They are extremely compact and jointed and are found at all angles of repose, from flat to vertical. The Tertiary limestones occur widely in the Nullarbor and South East portions of the State where this material was laid down in vast shallow basins. The bedding still remains horizontal and the rock itself is generally poorly consolidated. In the South East and on Kangaroo Island, these basins are overlain with Pleistocene dune limestone which is no more than a very poorly consolidated limesand in which are limited areas of secondary limestone. Hence caving in these areas can be extremely hazardous. The common cave limestones of the Eastern States, Devonian and Silurian, are not found in South Australia.

Geographically now from the accompanying map it can be seen how the State is broken up into natural zones which correspond reasonably well with the geological areas previously described, and as an aid to methodic recording of information, this classification is invaluable.

S - The South East.

The caves in this part of the State occur in the thick basin of Tertiary limestone and the overlaying Pleistocene limestone consolidated dune ranges. These dunes provide such excellent sites for caves that one is called the Cave Range. Some of these caves are quite extensive with a wealth of formation but as previously stated, due to the crumbly nature of the rock, are often very dangerous. The extensive caves of the Naracoorte area occur in the more substantial Tertiary rocks as do the caves in the Mt.Gambier are However, the shallow depth of water table 10'-30' below the surface greatly limit the Mt.Gambier caves until cave diving methods are int roduced. Poaching into Victoria there are several small but beautiful caves in the cliffs which form the banks of the Glenelg River. The Princess Margaret Tourist Caves occur here, and Cave exploring along the Glenelg necessitates the use of a boat, a very pleasant though often not very profitable pastime.

Y.-Yorke Peninsula and Adelaide Region.

Although limestones of Cambrian and Pre-Cambrian age are common in the Adelaide hills, n o caves are known. The story is different on Yorke Peninsula and at Curramulka in 250' thickness of Cambrian , there are two main systems. On a hill above the town is an intricate maze of passages - very extensive, but dry and dead. Descending the 100' well in the centre of the town is another extensive system, this time wet caves. A new quarry between these two is uncovering small holes and the chance of more systems in the area is quite strong. As Curramulka, 130 miles from Adelaide, is our nearest caving area, much exploration has been done there, yet the job is by no means complete.

The south coast of the Island has many limestone dunes similar to the South East and these c ontain several cave systems. Most notable is Kellys Hill where last year a party spent more than 500 hours systematically exploring and mapping, yet failed to find the caves limits. More caves have since been found nearby and further caving potential areas are at Mt. Taylor and in the Flinders Chase Reserve.

F - Flinders Ranges.

Though the limestone beds of Cambrian and Pre-Cambrian ages are thin, the inclin ation of the beds has produced the development of vertical shafts and linear chambers as in the Mt. Remarkable and B uckalowie Creek caves whereas the flatter beds of Oraparinna and Holowilena areas contain systems which consist of a rectangular maze in one plane.

E - Eyres Peninsula.

Little investigation has been carried out here, but many promising reports are at hand particularly in the Lake Hamilton district.

N - Nullarbor Plains.

This vast basin i s l iterally riddled with caves. Capt. J. Maitland Thomson during the past years has examined hundreds of these and there have been quite a few articles published on this area.[1] Some of these caves are of fabulous proportions such as Weebubbie and Abrakurrie and quite often extend down to the water table, but rarely does one find formations - alive or dead.

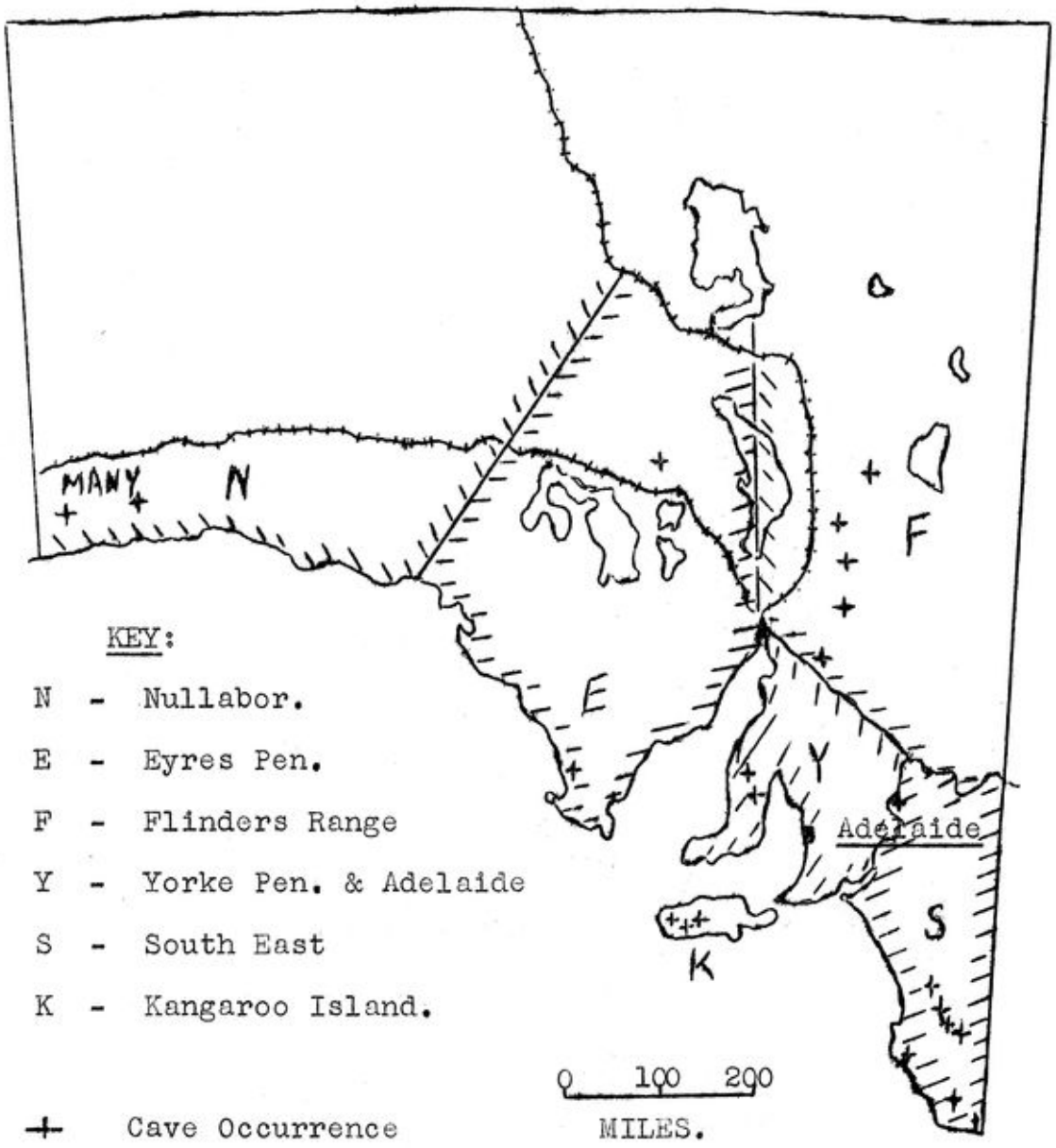
. . . . .

Obviously South Australian caving is in its infancy. Every expedition to the Nullarbor inevitably results in the discovery of several previously unknown sinkholes, and almost weekly the Group hears of the rumoured existence of another cave in the areas closer to Adelaide.

1) See "Walkabout" May, 1947; Nov., 1952; Feb., 1956.

Time and distance have been the two obstacles to date in following up reported cave occurrences and although investigation work is being carried on with a quickening pace, the time when the supply of new cave occurrences begins to fail is beyond estimation.

Indeed, we have every reason to believe that the borrowed adage - "The m ore caves you know, the more caves you know you don't know" bears more truth than most of us realise in South Australia.



FOSSIL REMAINS IN SOUTH AUSTRALIAN CAVES.

DAVID TAYLOR.

"Bones - thousands of them. Let's dig them out and take them back to the University or Museum". That's the old cry. An imposing list of Latin or Greek names, and several cases filled with fossils is all that results from such a venture. Modern palaeontological thought and method, strives more to interrupt the story held by such deposits rather than merely cataloguing them. The questions how, when and where the organism lived are the important ones, and may only be solved by careful observation of the deposit itself.

The cave acts as an excellent sanctuary for preservation of animal remains. Difficulty of access by other animals prevents removal or destruction of the remains. This point is emphasised on Kangaroo Island, where animals including kangaroos gnaw bones in order to adjust a phosphate deficiency. Thus it is not surprising that bones of sub-recent marsupials (e.g. the Tasmanian Tiger Cat) have been found in the Kelly Hill system and no where else on the island.

Water charged with calcium carbonate tends to mineralise the bones rather than cause rapid deterioration as results from unchanged waters. Running water however has the effect of scattering the remains in the cave. Because of this dispersal it is unusual to find a complete skeleton of an individual animal in a cave deposit. A prime example of this is the fact that apart from the skull and jaws no other part of the skeleton of the marsupial lion (Thylacoleo carnifexis) is known although the teeth are commonly found in cave deposits.

"How did the animal get there?". One immediately imagines the cave as a lair of a wolf or a bear, or as the safe home of some timid animal. Foxes dingoes, Tasmanian wolf or devil do inhabit Australian caves but always remain close to the entrances. The major proportion of bones found in Pleistocene deposits are those of 'giant' marsupials, such as the Diprotodont or kangaroos. It is a little hard to visualise a lumbering Diprotodont or 8 ft. high kangaroo venturing into some deep recess of a cave. Mammals except bats seldom venture into the zone of permanent darkness except to die or escape from enimies. The Correll System at Curramulka is littered with remains of the now almost extinct rat kangaroo (Bettongia lesueri), which apparently sought refuge in the cave from the onslaught of man's clearing for cultivation.

The best bone deposits in South Australian caves are found in systems which have vertical entrances. These entrances act as natural animal traps, yet some shafts appear better traps than others. This can be related to the presence of water in the cave even during periods of gridity. The smell of water could entice a thirsty animal to the point of no return, resulting in a fall of as little as 19 ft. at Kelly Hill, of 100 ft. at the Well Cave, Curramulka. Many of the larger bones may be fractured by this fall.

Some bones are brought into the cave by running water.
In Australian caves, unlike those in other parts of the world, (especially South Africa) remains of man are seldom found. The Aborigine regarded the darkness of a cave as the abode of evil spirits. In South Australian an occasional rock chipping is washed underground. In Gray's Hut Cave at Mt. Remarkable, a bone spear barb was found associated with kangaroo bones. The wounded beast apparently sought refuge in the cave after it had been speared and died there.

Most of the Pleistocene bones found in South Australian caves are found in a red clayey mud (cave fill) which in some places is rock hard due to calcification by calcium rich waters. (Examination of material collected from several N.S.W. caves, e.g. Bone Cave, Wellington, showed that bones there are contained in a similar type of fill). This cave fill comprises insoluble products of the solution of the rock, as well as some surface derived material.

A lot of the red-brown cave fill has been washed out and flowstone and other spelian formation is caked over the red fill. Another deposit of fill may be found on top of the flowstone. This second deposit of fill consists of dark brown surface debris (soil) which contains bones. Flowstone may even cap this deposit.

The bones in these deposits may be stratified (layered) thus careful observations must be made before any material is removed. The bones in the lower layers are normally accepted to be older than those in the layers above. If possible, measurements should be taken with regard to the position at which specimens have been removed. From these observations it is possible to ascertain a variation with time of the type of animal in the deposit. This variation may be due to environment changes (e.g. climate, vegetation, topography) or to the process of evolutionary change.

A carefully measured removal of bones in the later cave fill (the dark brown earth) at Mair's cave Buckalowie Creek revealed interesting information . At the bottom of the deposit remains of marsupial carnivores such as the giant Tiger Cat, the Tasmanian wolf and Devil were found but were absent in the upper level where the only carnivores was the dingo, a non-marsupial. This substantiates other work which shows that the dingo replaced the marsupial carnivores on the Australian mainland. This is possibly due to the fact that the dingo being more intelligent was able to capture most of the available food, thus resulting in starvation for the marsupials which,before the arrival of the dingo were abundant on the mainland. Also at the top of this cave fill and in the Well Cave at Curramulka rodents (non-marsupials) are common,but dwindle with depth. Thus ,detailed investigation of cave deposits, could reveal information as to when the dingo or the rodent were first established on this continent.
Many other problems of age and habits of the giant Pleistocene Marsupials (especially the m arsupial lion,giant kangaroos,wallabies and wombats,as well as the famed Diprotodont) could be solved by methodically digging and observing the sticky mud that blocks the path of exploration in many Australian caves. This is tedious work but has its rewards when on e pulls out a perfect jaw or is able to postulate an almost watertight theory.

1.Portion of a paper read before C.E.G.(S.A.) in August,1956.

THE RELATION BETWEEN THE UNDERGROUND RIVER AND McKEOWN'S CREEK AT JENOLAN.

WARREN A PECK.

The majority of the unopened or 'wild' caves at Jenolan lie in and around the valley of McKeown's Creek, and proceeding south along this valley within the limestone belt one passes a large number of these caves, finally entering the great archway of the Devil's Coach-House and the vicinity of the tourist caves, as McKeown's Creek joins the Jenolan and the Underground Rivers.

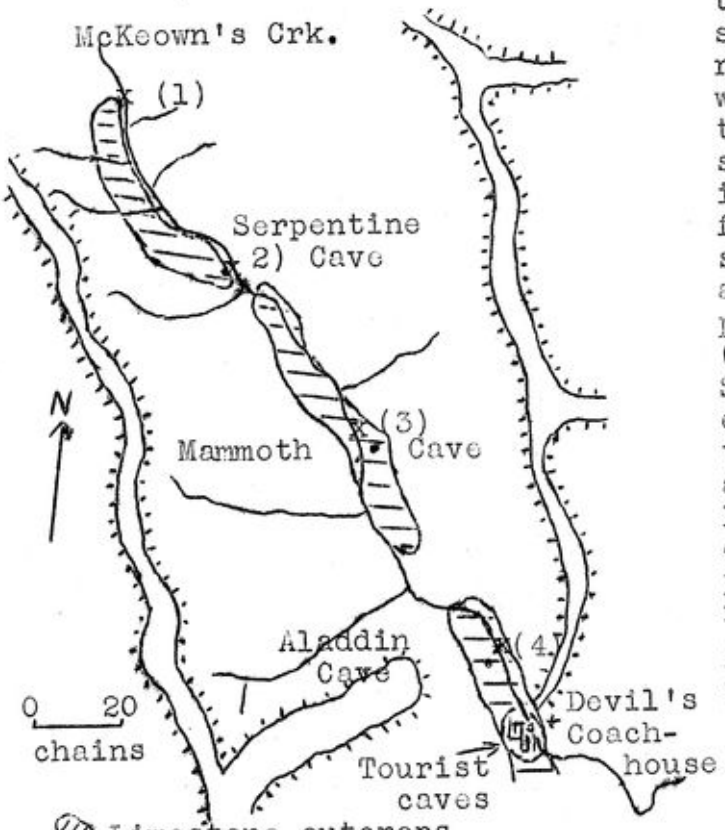
The catchment area of McKeown's Creek is nearly 10 square miles, consisting of well forested hills with an average rainfall of 35 inches per year. As the headwaters of McKeown's Creek lie outside the limestone belt, a considerable stream of water flows in the upper reaches of McKeown's Creek all the year. However, on reaching the limestone area the surface waters of McKeown's Creek make their way underground into the underground river by four known distinct routes. The first of these is nearly one mile upstream from the Serpentine Cave (see map below). Here the creek water in normal seasons disappears over a matter of one hundred yards through small boulders in the creek bed. The second channel is the Serpentine Cave itself. The third channel is a section of the Mammoth System, while the fourth is located near the Alladin Cave. Here considerable amounts of the surface water have been noticed to disappear into the creek bed within a short distance.

In normal seasons the first channel can usually cope with all the surface water in the creek. However after rain the creek may flow as far as the Serpentine, or more usually, past the Mammoth to the Aladdin. In very wet seasons McKeown's Creek may flow through the Devil's Coach House into the Jenolan River. Although water flows the full length of McKeown's Creek when the Underground River is flooded water also flows the full length of the creek without any radical change in the level of the Underground River - as has been happening at Jenolan this year. The behaviour of McKeown's Creek is not so much a function of the degree of flooding in the Underground River, but rather a function of the ability of the four channels to conduct all the surface water into the Underground River.

The first and fourth channels have yet to be investigated owing to the inherent difficulties in moving the boulders away to see what is below. The Serpentine Cave (discovered by Ted Faunce and Daryl Morgan in 1953) consists of meandering water passages which end in a vertical shaft blocked by mud. In 1955 this shaft was dug out (mainly by Ted Faunce) and further water passages were seen to continue, but a little more digging was required before an actual entry into the passages could be made. However, every time since then that the Serpentine Cave has been entered, it has contained a stream of water about one foot deep, which made the cave impassible beyond the squeeze hole. When the cave dries out some progress down towards the underground river may be achieved.

The third channel has been studied very carefully. The water enters the Mammoth via the Bow Cave and flows along a minor passage system in Central Level into the Rockpile. In exceptional seasons the water flows right through the southern part of Central Level and pours over the forty foot pitch to join the stream from the Rockpit. The water then flows along the Lower Level passage into the Underground River near the Oolite Cavern. But unlike the channel through the Serpentine Cave, this channel system is subject to blockages near the Bow Cave and the Upper and Central Levels of the Mammoth have been known to be dry while there was water as deep as one foot in McKeown's Creek , and again to be flooded with only six inches of water outside. Hence there is a possibility of flash flooding in the Mammoth without any obvious danger level or any change in the creek outside.

This possibility does not really affect Central Level as it is still possible to enter or leave Central Level at the height of a "flood", as was found in May , 1956. But the only passage leading to the Oolite Cavern, and the section beyond Lower Level river requires only a small flow of water before two bad siphons in that passage would be completely submerged and render the passage impassible. This effect of flash flooding in Lower Level should be kept in mind especially after the narrow escape of a party last Eight Hour weekend (1st October '56). On the Saturday night the Mammoth was entered and the party made a trip to the Lower Level River and the Oolite, leaving very late. By the time the cave was re-entered on Sunday morning the passage to the Oolite had been rendered impassible by a considerable stream of water. During this time the level of the creek outside remained constant at about six inches.



Map by W.A.P. (after O.Trickett)

In the event of becoming trapped in Lower Level by a flood of this type, one should stay near the Oolite Cavern until it is possible to leave. There should be enough air for a considerable time, and it is doubtful if the water would ever enter the Oolite. Rescuers outside could lower the Underground River level by blocking off the water entering the Bow Cave, thus permitting escape.

A considerable amount of work remains to be done on the hydrology of Jenolan. The relation between the river in the Serpentine and the Mammoth Rivers has yet to be ascertained. The gradient of both underground rivers requires investigation while no records exist of work on the southern side underground system.

REPORT ON TIMOR CAVES.

OFFICIAL REPORT OF MEMBERS OF THE COORANBONG SPELEOLOGICAL ASSOCIATION WHO VISITED TIMOR CAVES AUGUST 23-26,1956. THE PARTY CONSISTED OF FOUR MEMBERS, AND A TOTAL OF EIGHTEEN HOURS WAS SPENT UNDERGROUND DURING THE PERIOD IN ADDITION TO MANY HOURS OF SPECIMEN AND DATA COLLECTION AND TRIANGULATION

Location and General Description.

The Timor (Isis River) Caves are located in the Isis valley, in the most northerly section of the Hunter Valley (County Brisbane) Parish Crawney) The Isis limestone forms a broad anticline across the valley, is inter-bedded with tufferaceous strata, and intruded with sills and dykes. The main development of limestone extends north-west from Isaac's Creek for about three miles, and the caves are located in this area amidst heavy limestone outcrops. The cave entrances lie at different elevations on a steep hillside facing roughly an easterly direction and overlooking Isaac's Creek. Pot holes of considerable depth are common in the upper portion of the hill though many of these are filled with leaves.

The area is approached by a gravel road from Blandford, from which the Caves are distant 22.1 miles. The last 1.6 miles is a track through private property and is probably not negotiatble in wet weather. The Caves are situated in or adjoining a Government reserve (Water Reserve 6) and suitable camping areas are available.

Historical.

In 1867 Water Reserve No. 6 was taken over by the Government, but it is doubtful if this Reserve extends to the area in which the caves are situated. As far as we know Cave Nos. 2,3,4, and 6 are definitely not within the bounds of the Water Reserve and are apparently within private property. (See maps of Cave Locations herewith). Little interest was taken in Timor Caves until 1923-24, when the caves were officially explored and some drillings were made in the floor of the First (top)Cave to ascertain the possibility of extensions. It was generally recommended that the Caves should not be developed but should be locked, due to vandalism.

Temperature and Humidity.

In the First Cave the temperature was found to be 57 .2 F and humidity 89%. Cave No. 2 reported a temperature of 60.8 F. and a humidity of 94%; while the Fourth Cave showed 62.6 F and 100% humidity. Temperatures and humidity of other caves were apparently similar but not recorded.

Outside temperatures at comparable periods varied from 23.F at 6.00 a.m. on Aug.26 to above 52 F during theday. Humidity recordings outside the caves were much lower than the interiors,33% being typical.

Surveying.

Due to difficulty in locating bearings from the entrance to the First Cave, a cairn of stones approx. 18" high was erected by our group on the highest point on Cave Ridge, having a bearing of 18 N of E on Watson's farmhouse. The entrance to the First Cave is 251 feet 10 E of S from the cairn, just below the crest of the ridge and shadowed by a Moreton Bay Fig Tree.

In order to enable bearings to be taken for the three lower Caves (Nos. 2,3,4) a base line 4 chains 29 feet long was measured 40 E of N from the Fourth Ford on the Isaac's Creek track along the bank of the creek opposite the h ill of the caves to a particular tree - a Casuarina Glauca.

CaveNo. 2 has a bearing of due East on the crossing and of 15 E of S on the tree. Cave 3 has a bearing of 70 E of N on the crossing and of 40 E of S on the tree. Cave 4 has a bearing of 80 E of N on the ford and of 50 E of S on the tree.

The top hole (indicated on the map as Cave 5) is located just below the brow of the ridge 28 yards within the reserve fence dividing the caves reserve from Secold's property. It is on the same side of the ridge as the other caves, and approachable only from the North side.

Cave No. 6 is located a few yards directly East of the fifth crossing of Isaac's Creek, and is the only kn own cavern on the e astern side. It is only a minor cave, but does contain wet formations.

Dimensions of Caves.

The dimensions of the floor of the First Cave are as shown on the map, the main cavern being roughly 125 feet long, averaging 45 feet wide, and having a m aximum height of 26 feet. However, in the passage to the right the height from floor to ceiling was 34 feet at points above and below the steep descent. In all cases, heights were measured by dydrogen balloons. Depths of holes in this cave are indicated on the map, but the total depth of one shaft is not yet known, and is believed by locals to extend for a very great distance.

Throughout the First Cave hollow sounds were heard in many places by striking the floor. These sounds were heard in varying degrees of intensity, and were most prevalent in the passages extending below the m ain cavern. The sounds could indicate extensions or caverns below, but it is thought possible that cracks or cavities in the limestone floor filled with silt may cause vibration, and hence the hollow sounds. This latter possibility is, however, still only a theory, and we have hopes of investigating this further.

The top hole (Cave 5) is approached by a shaft 20 feet deep. Once again a lack of time prevented a detailed exploration of this cave, but it appears to hold possibilities, as four passages branch from the entrance chamber. Maps of the Second and Fourth Caves have been prepared by our group, but these are not precisely accurate in orientation or linear scale.

Geological.

The hill is an anticline of limestone in basalt country.. Specimens of Amydgaloidal Basalt were found by the Creek, the vesicles being filled with calcite crystals. Along the Creek where the basalt seems to meet the limestone, marble boulders were found, delicately grained in pink and grey. The interior of the caves was found to be mostly eroded along jointing and bed planes, as clearly following the joint lines. Though reputedto be dry and devoid of secondary ornamentation, there was evidence of moisture and present deposition continuing in all caves entered. The top cave (No.1) is mostly dry and discoloured,but there are some dripstone formations, particularly at the lower levels. Both the Second and Fourth Caves consisted of two clearly defined sections with reference to presant deposition of moisture. The parts of these caves nearest the entrances were dry and u nadorned, being almost completely dead, with few new formations, but in both these caves small passages lead away into comparatively smaller series of caverns where adornment andpresent deposition is very noticeable. There was considerable water gathered into pools of apparently constant level in the Fourth Cave, but some other pools of water in the same cave seem to have been merely the results of the recent exceptionally wet season (as known from earlier visit to caves).. In the Second Cave there was evidence of previous pools of water which are now dry. In none of the caves was there found a running stream of river,though there is reason to believe that such exists in the lower but now inaccessible parts of the hill.

From the appearance of parts of the Second Cave there are strata of silt between the strata of limestone. These have become impregnated with calcite by the action of water, and in some places their grotesquely washed formations form a rather unstable ceiling to the caves. In one place a large block had recently fallen fromthe ceiling of a cave, having been eroded along the joint planes until an unstable silt strata had been reached. Several other blocks were noticed in the inner recesses of the Second Cave, well eroded on all joints but not yet fallen.

Colouring of formations varied from clear white to pink, lemon, yellow-orange red-brown, dark red, and dark brown. This betrayed the presence of iron and possibly m anganese impurities in the water,but the blue-green formations in the entrances to some of the caves are merely due to algae.

The formation s werestalagmitic and stactitic depositions of varying form and colour. Extensiv e shawls of any delicacy were rare, but some very fine flows were observed in the lower caves. Of interest was the existenc e in the Second Cave of a group of stalactites capable of producing musical notes when struck. An unusual feature observed in only one small section of the Fourth Cave was a growth of triang ular calcite crystals very similar to Dogtooth Spar. Extensive growths of helictitds or "mysteries" are the most arresting ornaments of the Fourth Cave, several transparent exarples of this unusual growth being present.

The afterglow of c alcite was observed in the Fourth Cave, but not in the other caverns, except in small crystalline formations.. The glow lasted for at least three seconds after the Electronic Flash and appeared in all instances to be of a bluish colour. It was particularly noticeable in the "dogtooth spar".

In the caves all crystalline specimens were found to exhibit the phenomenon of after-glow. However, when specimens were tested with an ultra-violet lamp of 3,300 -3,700 Angstrom units, only a colourless variety from one portion of Cave Four showed fluorescence. The other specimens appeared to reflect only such an indeterminate light that they could hardly be classed as fluorescent. An interesting point was the total absorption by the amydgaloidal basalt of the ultra-violet light so that it, including the amydgaloids of calcite, appeared to have a black velvety surface, a most unusual feature, even in the dark room, lit only by the ultra-violet lamp.

Analyses.

The Creek water was hard, and fed, according to local report, by one or more springs emerging from the limestone anticline in which the caves are situated. On alaysis, the water of the creek was found to contain .05 gm. of dissolved solids per 100 ml. of water. These solids were found to consist mainly of calcium compounds, with some ferric materials and a trace of magnesium.

Analyses of the limestone of the district showed that apart from the macre constituent of calcium, there were traces of magnesium and iron, with a slihgt trace of manganese.

The caves and holes reputed to contain foul air or carbon dioxide were tested with litmus and a candle. I n all circumstances there was found no evidence of abnormal air conditions, though it would appear that the deep hole at the extremity of the main passage to the First Cave contains an abnormality which caused a persistent headache to a member of the party lowered down the passage. A similar result was experienced by two members in another hole. Unofrtunately no investigations could be made with litmus or candle in these holes but the most likely explanation seems to be that there is possibly an excess of Carbon Dioxide in the lower parts of these shafts, especially since heavy breathing was stimulated. Reports from local people seem to indicate that abnormal conditions are present at least at intervals in some of the caves, owing to the fact that combustion at times cannot be supported in the cave interior Further investigation seems necessary here.

Botanical.

The hills are covered with fodder grass, and are mostly cleared. On the Caves Hill was found growing some specimens of Eucalyptus Geniocalyx, Eucalyptus Muello ians, Persoonia Salicina, Opuntia Aurant iaca, Ficus Macrophylla, Zanthorrhoea Arbutorea, possibly some Mirbelia Speciosa, together with some unidentified shrubs including apparently some wild roses. Camphor Laurels are also present, and Casuarina Glauca grows along the Creek. In one section of the second cave large tree boots penetrate through the cavern with smaller subsidiary roots.

Biological.

Bats were observed in all caves, particularly in the Second Cave. Despite continuous darkness in the cave interiors, bats were found to be most active at night. No unusual or wingless insects as previously reported were found; indeed the only insects in the large top cave appeared to be two blow-flies. Some fungi were observed growing in apparently total darkness in a recess in the First Cave.

Recommendation.

In view of the valuable nature of the formations of these caves, particularly the lower ones, it is recommended tha t they be locked until such time as their development will allow supervision of other than qualified speleological investigators. The caves as far as accessible are not exceptionally extensiv e but there appears excellent possibility of extensions in all caves, pa rticularly the lower ones.

WOOF'S CAVERN, COLONG.

Recent work in the Colong area by the Manly Rover Scouts has established that this well-nigh legendary cavern, which contains formations far superior to those in the rest of the Colong system, still remains accessible. This group has now clarified the doubts resulting from some earlier expeditions [1) 2)], which had seemed to indicate that rock-falls had sealed the entrance. However the Scouts have confirmed the fact that fairly recent falls have occurred in the vicinity.

Since the situation is clarified now, it is expected that the full reports and maps by Jack Cummings will be included in the next issue of SUSS.

References: 1) SUSS 2, 2, p.22 (1955)
2) SUSS 3, 1, p.19 (1956)

JENOLAN NOTES:

A survey of S.U.S.S. activities at Jenolan in 1956 is given elsewhere in this Journal (p.6). However, it may be noted here that, besides the material printed in this Journal, full reports have been written on the Casteret and Serpentine Caves (by Keith Renwick and Ted Faunce), on a certain amount of activity among the bats at Jenolan (by Alan Crook), and on the snail-shells in the Casteret. It is hoped to treat these reports in "SUSS" in due course.

LETTER TO THE EDITOR.

University of Sydney,
5th November, 1956.

Dear Sir,

I would like to express some opinions of the last journal (S.U.S.S. 3-1). Firstly I noted that the Editor had written 10 of the 19 printed pages. This, to me, seems somewhat disproportionate, considering the drastic editing of articles written by others.

Secondly, I consider insufficient space has been given to exploratory work performed by other members of the Society.

(a). An interesting 400 word report and sketch map of Colong Caves, dealing with the Lower Level (Woof's Cavern), was dismissed in a few lines at the bottom of page 19.
(b) A 600 word report on Yarrangobilly Caves, including details of a new discovery, writt en by Ted and Jenifer Anet, was edited to the extent of 500 words being omitted, and published at the bott om of page 15.
(c) The discovery of a large extension to the Rho Hole (Jenolan) appeared briefly near the foot of page 17.
(d) A report by Adrian Hunt on a recent discovery at Jenolan appeared near the bottom of page 17 . A grade 4 survey map of the new extension was not published.

If drastic editing of reports is the policy of the Society, let us edit all reports to the same degree. These four reports, mentioned above, occupied 38 lines of type. Three reports of equal interest, written by the Editor, occupied no less than 181 lines of type and were treated very fully.

In conclusion, I feel a change in Editorial Policy is required.

Yours sincerely,

WARREN PECK,
Records Officer.

(I feel that no published reply to the above letter is necessary, but I would recommend the reader who wishes to consider it seriously to refer to the journal in question before pronouncing judgement.

However, in response to his apparent desire, I have reproduced in the following pages Mr. Peck's "Reports on the River Cave" in a completely unedited form, although I have taken the liberty of making some changes in the spelling. B.J.O'B.).

THE RIVER CAVE SYSTEM, JENOLAN.

WARREN PECK.

1). July 28-29,1956.

Present. David Beach, Brian J. O'Brien, Doug Denning, Henry Fairlie-Cunningham, Rob yn Mackay, Rob Merick, Lindsay Parker, Margaret Pawsey, Warren Peck, Avril Searle and Ray Smith.

Aim. To clear up the confusion that Trickett's Map of 1903 created and to locate areas for future exploratory investigation.

Reference. Trickett's Map of the River Cave (Department of Mines Report 1903) as amended. The passage numbers of the side passages are indic ated on the map.
Passage No. 1. The entrance is a narrow cleft at floor level 20 f et high near the northern end of the River Styx. It was the passage from which the River System was first discovered.

Passage No. 2. A previous party is known to have entered it from the Styx by boat, and on leaving the boat followed it for some way before being stopped at a 15 foot deop.
Passage N o. 3: The entrance is a small hole about 6 feet above the floor directly opposite the iron ladder on the tourist track. It contains a crystal pool with floating masses of calcite. A squeeze beside the pool gires access to a fairly la rge cavern. Further work, such as opening possible squeeze holes, could be carried out here.
Passage No. 4: is entered a little to the south of the entrance to No. 3 and contains an iron ladder going down to a pool of water which is occasionally dry. During a dry spell this passage should be examined.
Passage No. 5 is a sink on the right of the tourist track midway between the River Junction and the Baal Junction. It also ends in a pool of water which filled a 2 foot high passage, and is believed to dry up during dry weather. Some progress could be achieved dur ng a dry spell.

It is interesting to note here that there is no similarity between Trickett's survey and Cook's survey of the passage between the River Junctionand the Baal Junction. A survey of this area is planned for the near future to ascertain which one is correct. Several side passages run from near the Baal Junction and these require further investigation.
Passage No. 6 containing a fifteen foot drop, is entered a little to the south of the B aal gate. The drop was not descended.
Passage No. 7 entered directly opposite the Orient Junction, also ends in a drop (not descended) but contains a mud-blocked side passage.
Passage No. 8 is entered at the foot of the stairs which rise to the Grand Stalagmite and contains a pool of water about four feet deep beyond which the passage continues.
Passage No. 9 is entered opposite passage No. 8 and contains another side passage (no.10) which contains muddy pool rims about

six inches high. A hole runs from No.10 to the Grand Stalagmite Cave while No. 9 joins the passage just beyond the Grand Stalagmite and No.10 finally joins No.14. Passage No.11, entered by a squeeze at the top of a mud bank, contains a low cave (about 10' x 10') with no further side passages.
Passage No.12 is a little south of No.11 and ends blindly.
Passage No.13 is entered halfway up the mud slope and runs into Passage 14.
Passage 14, which can also be entered just to the left of the White Temple, contains a small rockpile which could be dug through and ends in a mud bank. Further work here should be carried out.
Passage No.15 ends in low chambers of great beauty containing a fantastic display of Helictites and Heligmites (Helictites growing upwards from the floor) flowstone, shawls and roof crust. Some holes cannot be entered without large scale damage to the formation, which is amongst the finest at Jenolan. Passage No.15 is a steeply sloping tunnel ending in an eight foot drop with further progress blocked by mud.

Although there were obvious signs that people had been there before us, there is no guarantee that all the passages have been fully explored. There are three very promising places that would repay some hard work: the first is the rock pile and mud bank at the end of passage 14, the second the numerous holes in passage 15, and the third, the mud blocked passage 16. Passages 14 and 15 are headed for the Bottomless Pit while Passage 16 is running towards the Temple of Baal. I think work in any of the three passages could result in a discovery. The mud bank in 14 occurs in a level section of the passage and could possibly be only a few feet thick.
Passage 15 is the highest part of the whole River System (excluding Mons Meg) and is south of the Orient System.
Furthermore, holes in it all trend upwards. The mud in Passage 16 is possibly at the bottom of a U shaped tube and may not be very thick either.

Conclusion. Much more work of a systematic nature is required. The possibilities are considerable, and the reward could be a second Orient Cave or a second Temple of Baal.

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2). 1st October, 1956.

Present: Brian Casey, Ted Faunce, Warren Peck, Paul Rose and four members of the Lindfield Senior Scouts under Owen Sandell.

Aim: To explore passage No. 2 in the River Cave, which is entered opposite the tourist track across the River Styx.

As the way to this passage lay across the River Styx, an inflatable boat owned by Owen Sandell was used to gain access to the passage. On entering, it was found to be a narrow winding river passage 3 feet wide and up to 20 feet high. The boat was left at the entrance and further progress was made by bridging. The passage continued for about 40 feet before a mud bank covered by flowstone rose out of the water to provide a solid floor. The passage was finally blocked by flowstone 45 feet further along. The passage is heading for the Mafeking Cavern (Lucas Cave), which by

Trickett's survey is only 80 feet from the Styx.

Thirty feet from the entrance and high up in the northern wall, is a small passage which gives access to another high narrow river passage. Entry to this river passage was made by a twenty feet ladder descent. The second river passage was blocked by flowstone after a short distance. The tot al length of the small passage and second river passage was 50 feet. The relation between the water in this second passage and the r est of the underground system has yet to be ascertained. There are no possibilities for further work in this a rea excepting, perhaps, underwater exploration.

An attempt to find the passage marked on Trickett's map as "splendidly ornamented corridor" near the end of the Queen Esther Caverns followed. A shaft was located but we did not have the equipment to descend. The shaft lies straight above the Baal Junction and a search was made at the Baal Junction for a possible connection. A promising hole a few feet north of the Baal Gate was found to give access to a small ascending shaft. However, after climbing about 16 feet it was found to end overlooking the Baal Junction switchboard. A search was carried out but no other possibilities at the Baal Junction were found. This shaft (17 on the map) in the Queen Esther Caverns should be investigated further.

Note: The water temperature in the Styx was 53°F while the air temperature at the Styx was 56°F.

WHEENEY CREEK CAVES & HAEMATITE STALACTITES.

KEITH RENWICK.

During a Bushwalkers search and rescue practice in April at Wheeney Creek, a tributary of the Colo River, sandstone overhang caves were found which contained glow worms and haematite stalactites.

The glow worms were in an overhang near the river which flows through a damp sheltered gorge. Such damp and shady conditions are the most favourable for their survival. Several specimens were collected by Noel Frazer and sent to New Zealand for identification. The uncommon fly was observed emerging from the pupal stage.

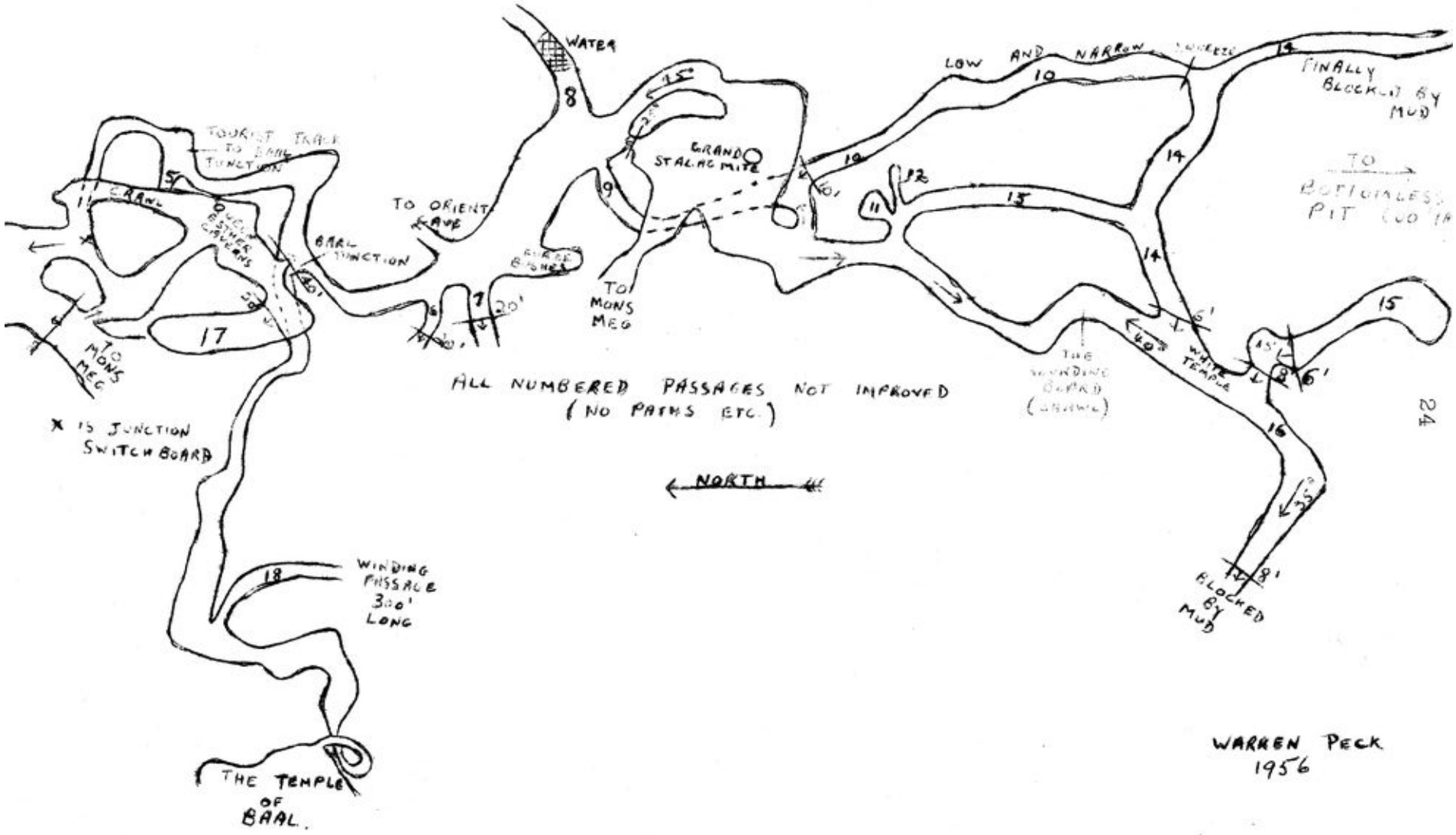
The caves containing the haematite formations were about 50 feet above river level on a side creek. The overhang was packed with formations larger than any so far noted by myself. Stalactites were up to 12 inches in diameter and 2 to 3 feet long, while shawls 1 in. thick were also present. The colour of the outside of the formations is dark rusty red to black, while their internal structure consists of well defined concentric rings rather similar to the annual rings of a tree. According to Dr. Dalhunty of the Geology Dept, soluble salts of iron, mainly sulphates, are picked up by water percolating through the sandstone. On reaching the air on the cave roof compounds oxidise and precipitate to build up a layer of Haematite or iron oxide. Stalactites or shawls are built up in the normal way and stalagmites with central craters containing pools of water form on the floor.

THE RIVER CAVE JENOLAN

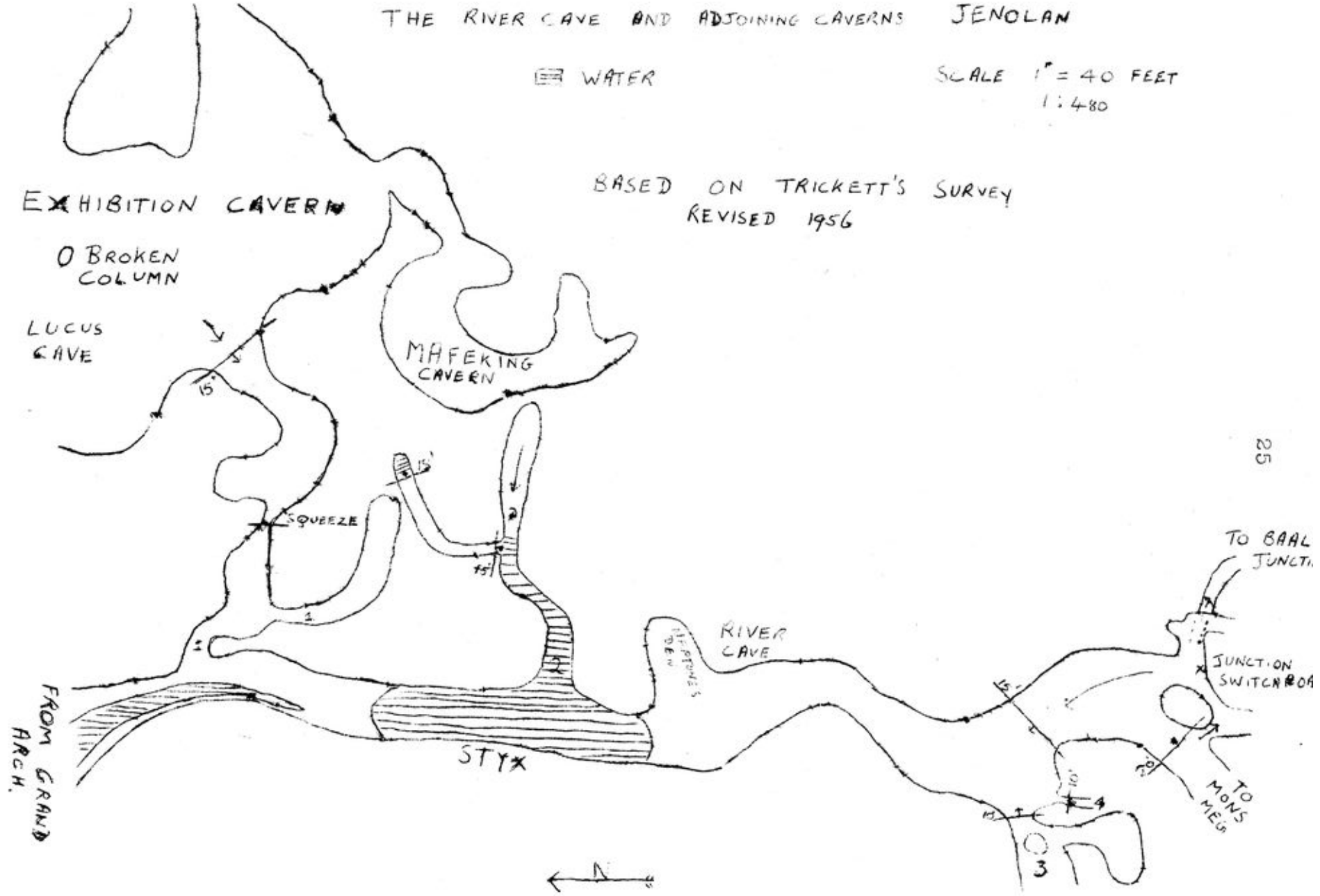
SCALE 1" = 40 FEET
1: 480

BASED ON O. TRICKETT'S 1904 SURVEY

REVISED 1956



WARREN PECK
1956


THE RIVER CAVE AND ADJOINING CAVERNS JENOLAN
WATER
SCALE 1" = 40 FEET
1:480
BASED ON TRICKETT'S SURVEY
REVISED 1956
EXHIBITION CAVERN
O BROKEN COLUMN
LUCUS CAVE
MAFEKING CAVERN
SQUEEZE
RIVER CAVE
STYX
FROM GRAND ARCH.
TO BAAL
JUNCTION
JUNCTION
TO MONS MEG
3
N
W PECK

ADDITIONS TO S.U.S.S. LIBRARY.

Heather Adamson, Librarian.

Since the last S.U.S.S. journal in February, '56, the S.U.S.S. Library has received several additional items. Besides the varied reports and maps from the Australian speleos, other publications and papers have found their way to the Library and most of these are listed below.

1). 'Britain Underground', a book by Norman Thurber (donated by Lieut. Trevor Shaw of CRG.)

2). 'Biological Aspects of Cave Conservation ' and other papers by Bro. G. Nicholas of NSS.

3). Papers on the Caves of Western U.S.A. by Dr.Bill Halliday of NSS.

4). Assorted papers on the caves and limestone of Western Australia (by courtesy of W.A.Tourist Dept.)

Then follow one or more issues of the following periodicals:-

5). 'Die Hohlen' - journal of Verband osterreichen Forschung.
6). Other publications of the Austrian Institute of Speleology and articles by Dr. R. Saar.
7). Rassegna Speleologica Italiana.
8). Communications of Sydney Speleological Society.
9). Yugoslavia Speleological Proceedings.
10). Moroccan Speleological Society Proceedings.
11). N.S.S. News. U.S.A.
12). N.S.S. Bulletins.
13). Hungarian Academy Proceddings
14). South African Spel. Soc.
15). New Zealand Spel. Soc.
16). Cave Research Group, (Great Britain). Newsletters and Biological Supplements.
17). Proceedings of the University of Bristol Spel. Soc.
18). The British Caver.
19). Proceedings of the Polish Spel. Soc.
20). Wessex Cave Club Journal.
21). Paris Match. No. 368 (April '56).

The above items and the rest of the S.U.S.S. Library are available on application to the Librarian.

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ABSTRACTS OF INTEREST.

1). Histoplasmosis.

Nestling in the Paris Match of April,1956, accompanied by Grace Kelly in 'Les Maries de Monaco', and by two Russians 'B & K, chez les gentlemen', is an interesting article 'Tout Ankh Amon: Non Coupable'.

In 1922 the magnificent tomb of the Pharaoh Tout Ankh Amon was discovered in the Valley of the Kings in Egypt. The tomb yielded a remarkable series of specimens of the twentieth dynasty and, incidentally, the 'Curse of the Pharaohs'. The latter was deemed to be consequent upon the desecration of the tomb, and seemed to be borne out by the r ather strange and quick deaths of 23 of those involved in the excavations. However, the researches of several South African scientists now seem to indicate that some of these deaths may have been due to histoplasmosis, a virus disease borne by certain bats, which can infect humans, resulting sometimes in serious illness, and also, according to the researchers, death.

Some South African speleos have been infected with the virus in their caving ventures, and a recent article in the NSS 'News' by Gene de Bellard on histoplasmosis shows that the Venezuelan speleos have similar problems.

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2). 'The Origin of Helictites' by George W.Moore, NSS Occasional Paper No. 1. Jan.'54.

Although this paper has been in SUSS Library since early in 1954, it is thought a summary will prove of interest to some of our newer members.-

The author provides a useful survey of various notions on the origin of these 'mysteries', or at least such notions as have been recorded in print. (He does not appear to have heard of the cave-guides and tourist-coach drivers who ascribe Jenolan helictites to 'eucalyptus oil' - the details of just what part of the oil plays in helictite growth are left for the finical specialists to clarify). He has studied helictites using polarised light, and has been able to indicate what he considers to be the characteristic features of these formations.

Growth follows deposition of wedge-shaped crystal units about the orifice of a central canal, the shape of these increments resulting in a rotation of the c-axis of successive units and a curvature of the helictites. However, a tendency to curvature in the opposite sense results from the faster rate of growth of a calcite crystal along the direction of the c-axis. 'The physical variables which control the relative importance of these two factors, and therefore the direction of growth, are believed to be the rate and periodicity of flow through the tube'. (It may be noted here that a calcite crystal has a characteristic geometrical shape (a rhombc hedron) and the c-axis represents a certain direction in this geometric model).

B.J.O'B.

WALKIE-TALKIES IN CAVES.

BRIAN J. O'BRIEN.

Late in 1955 members of S.U.S.S., in co-operation with the V.H.F. Group of the Wireless Institute of Australia, carried out investigations into the use of mobile radio transceivers (walkie-talkies') in caves at Jenolan. [1] On the first expedition to Jenolan, it was found possible to exchange conversations between parties deep inside the Glass Cave and on the 'Playing Fields' outside and 1/3 mile distant. Intra-cave reception up to 400 feet was found possible, but this was erratic and strongly dependent upon the cave surroundings.

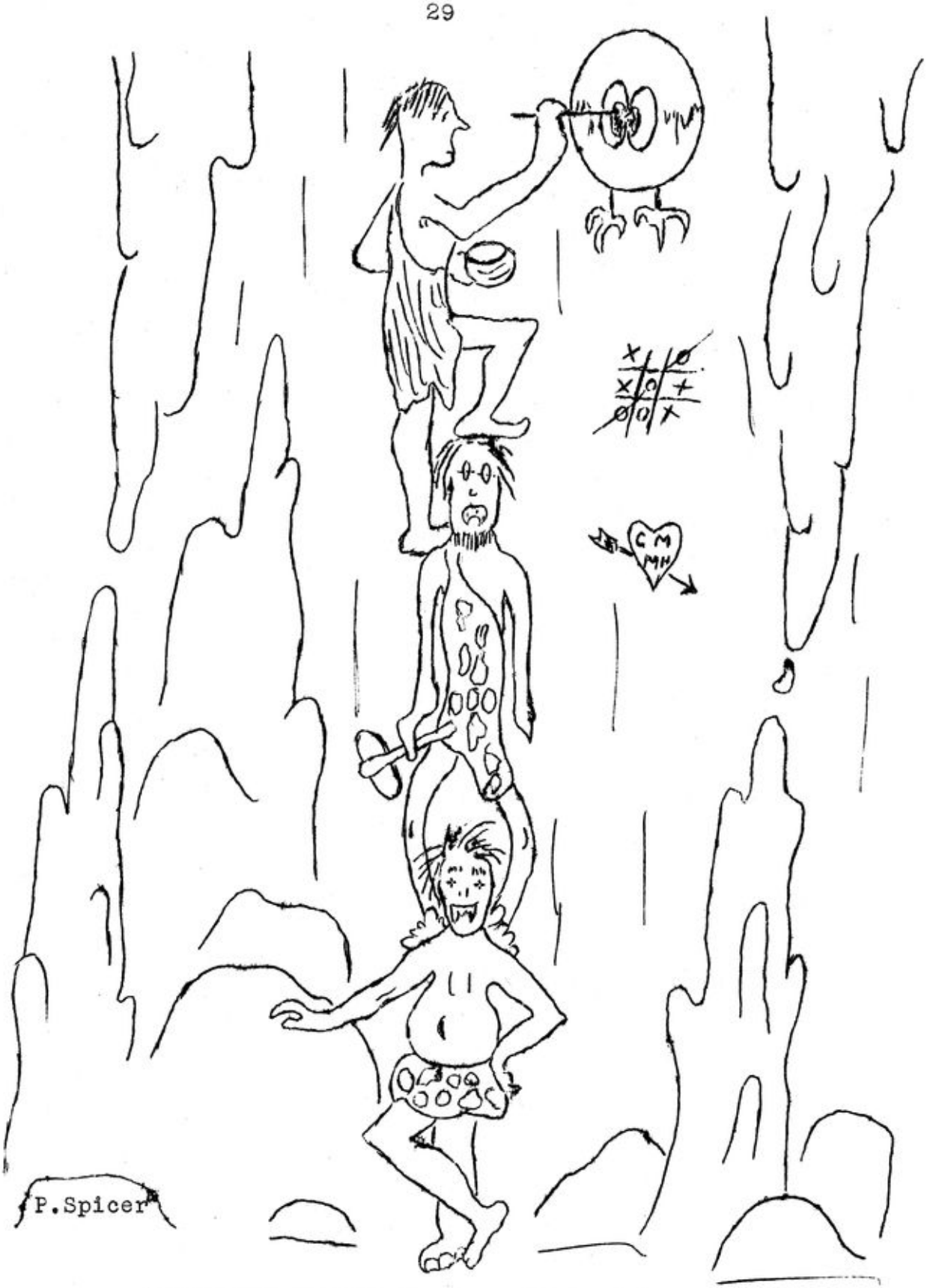
In 1956 a large group from the Wireless Institute went to Jenolan with Chris Wallace and the writer. About six mobile (car) units and six walkie-talkies, all operating around 144 Mc/s, were stationed at various positions around and inside the southern tourist caves, and were controlled by one central car outfit. All the cars were equipped with directional antennae with about 1 degree resolution.

Walkie-talkie sets were taken into the caves, and started transmitting from certain positions marked on maps of the system possessed by all parties. The mobile units then beamed onto the maximum signal direction, and marked this direction on their maps. The maps were subsequently collected, and the estimated positions of the walkie-talkies plotted by triangulation, and compared with reality. Promising correlation was noted in most cases, but inexplicable effects were also present - at one stage B.J.O'B. with his accompanying walkie-t alkie was plotted as perched over the Blue Lake, whereas he was quite confident he was in the Lucas Cave.

No direct contact was possible between the walkie-talkies (0.4 watts) when in the B aal and Lucas Caves 1000 feet apart, but by relaying messages to the stronger (6 watt) units outside, a simple test message was asked and answered by the two cave parties.

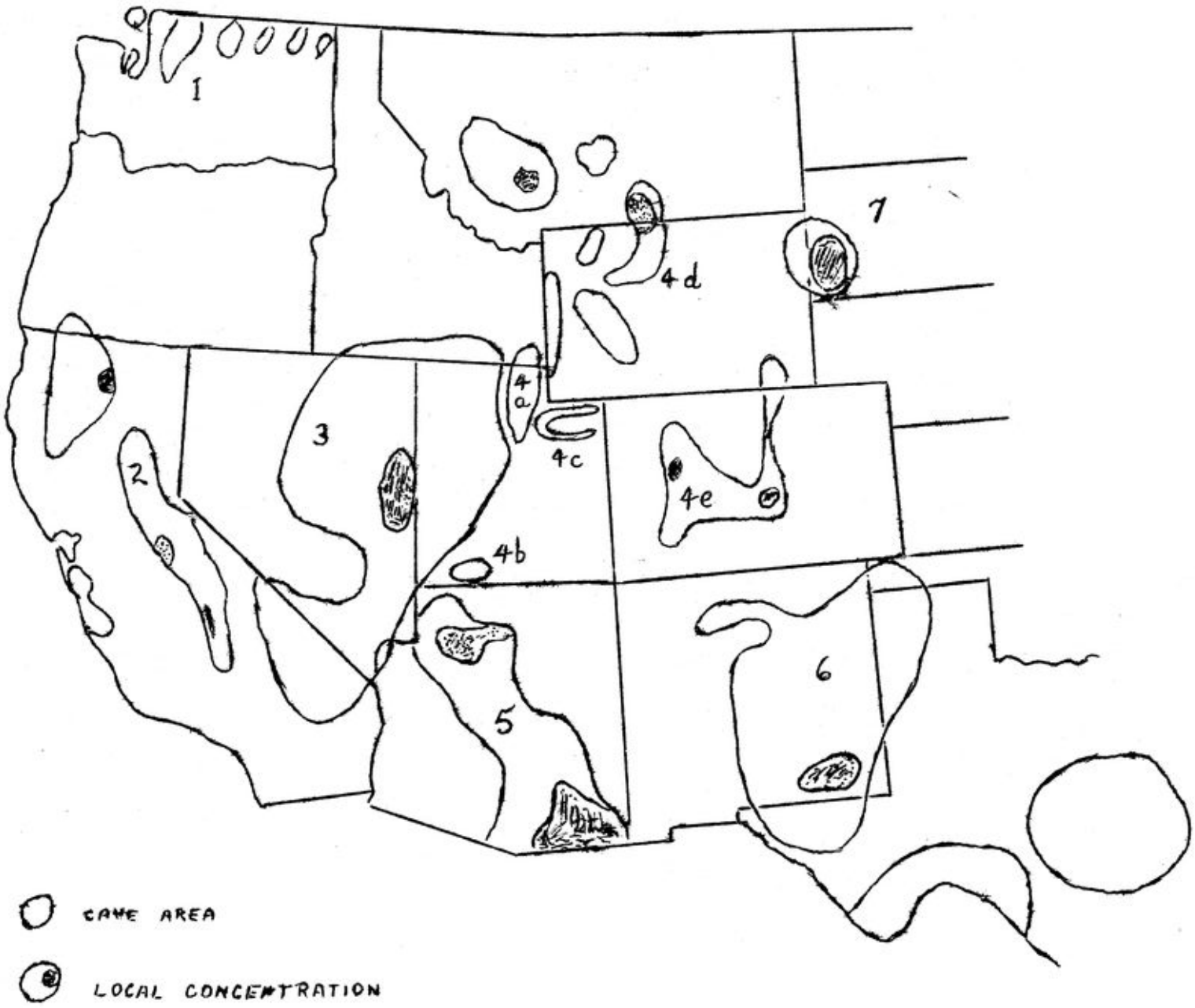
Results from the investigations remain tantalising - it would seem that accurate map-plotting of walkie-talkie parties within caves is possible in at least some cases for distances of 1000 feet. In certain cases, as a result of polarisation shift, a simple horizontal directional antenna may give strange results. The caves on the weekend of the last test were exceedingly we t and partly flooded - far from ideal conditi on s for transmission of very high frequencies. The most outstanding feature of the work seems to be that reception is much m ore dependent on the immediate cavern environment of the receiver than on what lay between the transmitter and receiver. Further investigations will be carried out when opportunity permits.

1). SUSS 3, 1, p.14 (1956).



This will puzzle those speleologists - they will think either we were a race of giants or else that the floor has subsided !

LIMESTONE CAVE AREAS IN WESTERN U.S.



CAVE AREAS OF THE WESTERN UNITED STATES.
A CURSORY INTRODUCTION.

WILLIAM R. HALLIDAY. 1)

Perhaps nowhere in the world do caves occur under such a variety of conditions as in the Western United States. Due to the tremendous geomorphological alterations of the different geographical provinces, the speleoliferous limestones vary from horizontal to vertical, and in age from pre-Cambrian to Pleistocene. In addition to solution caverns in limestone, gypsum and perhaps salt, probably every other type of cave is found. Lava tubes are numerous. Littoral caves are prominent not only along the Pacific Coast, but on the shores of Pleistocene lakes in the Great Basin. Sandstone and other rockshelter caves are often of major archeological importance. Travertine caves of both depositional types of origin show several types of speleogenesis. Talus caves are often of surprising size and interest. Even major glacier caves are locally prominent.

In terms of limestone solution caverns, the Western United States divides itself into a number of general areas, as follows:

1. The Coast Ranges and Cascade Range.
2. The Sierra Nevada.
3. The Basin Ranges.
4. The Rocky Mountain areas.
   a. The Wasatch Range.
   b. The Southern Utah Plateaux
   c. The Uinta Mountains.
   d. The Montana-Wyoming groups.
   e. The Colorado area.
5. The Mid-Arizona zone.
6. The Texas-New Mexico areas.
7. The Black Hills.

The Coast Ranges contain relatively few limestone caverns despite their great length. Where limestones occur and caves are rumored, their extreme ruggedness has often prevented real penetration and investigation. North of Santa Cruz, Calif., several fairly small caves are present in metamorphics. The Cascades and their eastern division, the Okanogans, are little better.

The Sierra Nevada is the leading cave area of the Pacific States. North of Yosemite Valley, the caves occur, in the reported Carboniferous Calaveras formation, to the south, in heavily metamorphosed limestones believed probably of Jurassic age. In both cases, the beds occur as roof pendants. While their characteristics vary greatly, in general development they tend to unusual depth for American caves, with several reaching the 100-200 meter depth group. Density varies greatly. Many are isolated, but particularly in portions of Calaveras County and the Sequoia National Park area they are densely grouped.

1) Technical Note No.30, Salt Lake Grotto
National Speleological Society. Dec.'54

The ranges of the eastern and southern parts of the Great Basin present perhaps the greatest geomorphological differences among western cave areas. In these vast expanses of tilted, intermittent Paleozoic limestones, local effects in a distance of a mere mile or two alter the roomy, stalagmite-blocked passages of Lehman Cave, Nevada to the bare, tortuous crawlways of the Baker Creek cave system. While perhaps the majority are in Cambrian limestone, some occur in limestones of every division of the Paleozoic, and even in pre-Cambrian limestones. Possibly the longest is 2300 foot Cave Valley Cave, Nev., although new discoveries in Model or Lehman Caves, Nev. may well surpass this figure. Probably the deepest is Cave of the Winding Stair, Calif., about 330 feet. Speleothems are often dramatic and even unique. Cave bubbles, folia, mammillaries, fascicular forms and the unparalleled calcite blades and other bizarre of Crystal Cave, Utah, are but a few of the marks of this vast area, where the caves are sparse, but remarkable.

The Rocky Mountains are a heterogenous and ill-defined group of ranges. Speleologically, it seems best to subdivide them rather bizarrely:

1. The Wasatch Range forms part of the western border of the Rockies. Its caves have little in common with one another. Most are in Mississippian or Cambrian limestones, but Logan Cave, Utah, which together with Minnetonka Cave, Idaho is one of the two longest (2500 feet) is in Ordovician limestone. In the majority, the bedding is moderately to heavily tilted. Neff Canyon Cave, following dip joints and a fault pseudodip-joint, will probably exceed 500 feet in depth when fully mapped.

2. The Markagunt-Paunsaugunt region of the southern Wasatch Plateaux is marked by a number of small solution caverns in the lacustrine Wasatch formation, said to be of Tertiary age. All are essentially horizontal.

3. The Mississippian flanks of the Uinta Mountains are an excellent potential caving area, but are poorly known due to their inaccessibili The limestones generally dip moderately, but Sheep Creek Cave is a horizontal two-level cave in vertical limestone with a stream on the lower level. Big Brush Creek Cave's tiny passages after the two 300 foot entrance rooms are an intriguing problem.

4. Limestone caverns in the Montana-Wyoming area appear to occur very sparsely unless the basic geology of the area is studied. In Montana, irregular limestone outcrops which contain a number of caves, including deep Lewis and Clark Cavern with its massive stalagmites, occur in a zone extending from Yellowstone to Glacier National Parks. The Snowy Mountains are known to include several caves, and the Pryor Mountains and their Wyoming prolongation contain even more, although becoming progressively sparser to the southwest. These last are in Mississippian limestones. The west slope of the Grand Teton Range and parts of other ranges along most of the western border of Wyoming are fair "cave country", as are the Wind River Range and an ill-defined area just east of Yellowstone National Park including Shoshone Cavern.

5. In the Colorado area, limestones occur very irregularly, and thus the caves tend to occur in isolated groups. Much of the area has received no satisfactory speleological study, but it appears that the majority of the caves are in Mississippian limestones except on the "eastern Slope" in Colorado and extreme southern Wyoming.

6. A curved zone in mid-Arizona, stretching from the northwest to the southeast corner and encompassing primarily "high country" is quite speleoloferous. Most of the caves are in Mississippian limestone (Redwall and Escabrosa) and many are of large size although they are generally quite scattered. Colossal and Crystal Caves in the south-east are perhaps the largest, but some in the Grand Canyon area can challenge them.

Since the cave regions of Texas have been reported in considerable detail in N.S.S. Bulletin 10, they will be merely outlined here as follows:

1. The Edwards Plateau contains the great majority of the significant caves of Texas.
2. The Big-Bend-Devil's River area contains "numerous small caves".
3. The Carlsbad area, primarily in New Mexico, but extending into the western tip of Texas with a few small caves, is one of America's greatest caving areas, but one with uncertain limits at this writing. The Area immediately surrounding Carlsbad Caverns is riddled with caves many of them of great size. Carlsbad itself, of course, is the supreme American cave, with a known depth of 1100 feet, and with a single room some 1800 feet long, 100 to 300 feet wide and up to 285 feet high that may be the world's largest. Despite the presence of additional explored and unexplored passages, however, the total length of Carlsbad passages are exceeded by Mammoth Cave, Ky., and perhaps other caves. The speleological potentialities of this state have not been properly surveyed, but limestone caves are reported in the ranges on both sides of Santa Fe and east of Albuquerque, at Fort Stanton, near Artesia and elsewhere in the eastern part of the state except the extreme northeast corner.

Many caves are known in the ring of Mississippian Pahasapa limestone which encircles the Black Hills of South Dakota. Probably largest is Wind Cave, with aboutta mile of mapped passages and "10 miles explored". Characteristic of this area is the occurrence of calcite scalenohedrons and rhombohedrons throughout most of the caves, and of boxwork. In general, stalactites and stalagmites are poorly developed, although Rushmore Cave is a notable exception.

It is hoped that future studies will better delineate the nebulous outlines of some of these areas which may have been over-extended in an attempt to include almost every western cave reported to date. This is a tremendous caving area, but one of equally tremendous distances and difficulties of terrain. The enthusiastic caver should not be daunted by the difficulties, for the rewards are more than proportional.

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RESUME. ZUSAMMENFASSUNG. RIASSUNTO.

1) Etat de la Societe - page 4:

Le president de la Societe Speleologique de l'Univ. de Sydney fait un resume de l'histoire et de la nature actuelle de sa societe. En tant que societe universitaire, S.U.S.S., se compose de jaines gens diplomes ou non, et d'autres membres s'interressant a la speleologie mais a cause de son jeune age, n'a pas encore atteint, comme elle se le propose, l'ampleur d'un groupe scientifique solide.

Zustand des Verbandes - Seite 4:

Der Prasident der S.U.S.S. fasst die Geschichte seines Verbandes bis auf die Gegenwart zusammen. S.U.S.S. ist ein Universitatsverband und seine Mitglieder sind daher Studenten und auch andere die an der Universitat Sydney arbeiten oder dort Studenten waren. Der Verband ist aber noch zu jung um eine starke wissenschaftliche Gruppe zu haben; ein solche Gruppe ist aber ein Ziel fur die Zukunft.

Statuto della Societa - page 4.

Il Presidente della S.U.S.S. riassume la storia e l'atuale situazione della sua societa. Essendo uno societa universitaria, l'S.U.S.S. e composta di graduati, studenti e altri membri interessati; purtroppo e una societa ancora troppo giovane per avere quel forte gruppo scientifico cui occorrerebbe.

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2) Resume des travaux a Jenolan - page 6.

On y resume les activities et explorations de la societe au centre principale de Jenolan durant 1956.

Zusammenfassung der Arbeit in Jenolan - Seite 6.

Jenolan Caves ist ein besonders wichtiges Hohlenforschungszentrum, und die Arbeiten des S.U.S.S. dort wahrend 1956 sind hier zusammengefasst.

Riassunto del Lavoro a Jenolan - page 6.

Sono riassunto le attivita e le esplorazioni della Societa nell'anno 1956 al centro principale delle grotte di Jenolan.

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3) Le possibilities de la Speleologie en Australie du Sud - page 8.

Les speleologistes de l'Aust. du Sud distinguent les principales regions calcaires de cet etat et indiquent la correlation qui existe entre le type et l'age des calcaires et les caracteristiques des differentes cavernes.

Gelegenheiten fur Hohlenforschung in Sud-Australien - Seite 8.

Spelaologen aus Sud-Australien beschreiben hier die wichtigsten Kalksteingebiete in ihrem Staat, und sie geben den Zusammenhang zwischen der Art und dem Alter des Kalksteines und den Besonderheiten verschiedener Hohlen.

Potenziale delle Cave nel South Australia - page 8.

Gli Speleologi del South Australia hanno scoperto le principali regioni calcaree di quello Stato ed hanno stabilito la specie e l'eta' delle roccie calcaree e le caratteristiche delle varie grotte.

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4) Fossiles dans les cavernes d'Aust.du Sud - page 11.

Les recherches paleontologiques effectuees dans les cavernes d'Aust.du Sud ont permis de mettre a jour plusieurs restants Pleistocenes d'animaux de race de nos jours eteinte. On n'y a trouve aucunes preuves d'occupation humaine.

Funde in Sud-Australischen Hohlen - Seite 11.

Palaontologische Untersuchungen in Sud-Australischen Hohlen haben zur Entdeckung von pleistozanen Tieren gefuhrt die heute ausgestorben sind, jedoch sind keine Zeichen menschlicher Bewohnung gefunden worden.

Resti Fossili nelle Grotte del South Australia - page 11.

Richerche paleontologiche sono state condotte nelle grotte del South Aust. , con il risultato della scoperta di un certo numero di resti di animali dell'era Pleistocene (era glaciale), ora scomparsi. Nessuna tràccia di vita umana fu trovata nelle grotte.

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5) La Riviere de McKeown et la Riviere Souterraine a Jenolan - p.13.

Il y a, a Jenolan, un courrant, souterrain pendant 3 km, qui suit le contour general d'une vallee a la surface. Il est alimente par une voie ou davantage et si les eaux de pluie sont excessives, le courrant superficial coule egalement. La rapport entre les rivieres de la surface et du sous-sol est a l'etude.

McKeown's Creek und der untergrund Fluss in Jenolan - Seite 13.

Ein Fluss in Jenolan fliesst untergrund fur ungefahr drei Km. Der Fluss folgt einem Tal an der Oberflache und wird von einem oder mehreren Kanalen gespeist. Bei hohem Niederschlag fullt sich auch ein Flussbett an der Oberflache. Der Zusammenhang zwischen den Flussen an der Oberflache und Untergrund wird studiert.

Il Torrente di McKeown e il Fiume Sotterraneoddi di Jenolan- p.13.

A Jenolan un torrente sotterraneo scorre per due miglia nella forma di una valle alla superficie. Il torrente sotterraneo viene alimentato da una o piu sorgenti, ma da acqua corrente; il torrente alla superficie scorre pure. Le relazione tra i dua torrenti, quello alla superficie ed il sotterraneo, viene studiatta.

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6) Cavernes de Timor - page 15.

Une societe speleologique de province a fournit un rapport tres complet sur un ensemble de cavernes peu connues de leur region.

Timor Caves - Seite 15.

Dies ist ein Bericht uber eine Gruppe von Hohlen die sehr wenig bekannt ist.

Grotte Timor - page 15.

Una societa speleologica della campagna ha dato un'ottima relazione circa un poco conosciuto gruppo di grotte nella sue vicinanze

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7) Riviere Wheeney et Stalactites d'Hematite - page 23.

On a trouve des versluissants dans des cavernes contenant egalement d'importantes formations riches en hematite (oxide de fer). On en donne une explication.

Wheeney Creek und die Hamatit Stalaktiten - Seite 23

Gluhwurmchen sind in Hohlen gefunden worden die auch sehr reich in Hamatit sind. Eine Erklahrung dieser Erscheinung wird gegeben.

Il Torrente Wheeney e Stalattiti Ematiti - page 23.

Vermi luminosi vennero trovati in grotte, le quali contengono pure estese fomazionidi Stalattiti molto ricche di Ematite (osside di ferro). Viene data una spiegazione.

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8) Radios portatives dans les Cavernes - page 28.

Un autre rapport sur l'utilisation d'emetteurs et recepteurs de radio de 144 megacycles dans les cavernes. On demontie que la radio peut etre utilisee pour les arpentages de direction et comme moyen de communication dans les cavernes.

Drahtlose Verbindungen in Hohlen - Seite 28.

Ein weitere Bericht uber den Gebrauch eines tragbahren 144 MHz Senders und Empfangers in Hohlen. Radio kann fur Verbindungen und auch fur Peilungen gebraucht werden.

Communicazioni nell'Esplorazione delle Grotte - page 28.

Un'ampia spiegazione e' data circa l'use dell'apparecchi radio mobile, 144 Megacycles, transmittente e ricevente nelle grotte. Viene provato che la radio puo' essere usata come guida orientatrice nelle grotte, come pure mezzo di communicazione.

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9) Regions de Cavernes dans l'Ouest des Etats-Unis - page 30.

Un speleo- Americain donne un resume des possibilites de prospection dans l'ouest des Etats-Unis et une carte de la region. On y trouve les traits d'ensemble des regions calcaires et les caracteristiques extraordinaires des cavernes principales.

Hohlengebiete der westlichen Vereinigten Staaten - Seite 30.

Eine kurze Beschreibung von Hohlen in den westlichen V.S. wird hier von einem Amerikanischen Hohlenforscher anhand einer Karte gegeben. Die allgemeinen Zuge der Kalksteingebiete, und die Besonderheiten und Merkmale dieser bemerkenswerten Hohlen werden beschrieben.

Zone di Grotte Calcaree nel West Stati Uniti - page 30

Un sommario delle sue esperienze nello studie delle grotte nel West Stati Uniti e' presentato da uno Speleologo Americano con una carta geografica-geologica. Sono incluse le linee generali delle zone calcaree e le migliori caratteristiche delle grotte piu' conosciute.

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ODE to a Helictite.

Hail ! silly twisted helictite,
You crazy mixed up stalactite !
Do you curve and curl and coil
Because of eucalyptus oil?
Is your secret only osmosis,
Or is it simply mass hypnosis?
If you don't stop this senseless game,
You're sure to send us all insane.

Richard Bradshaw.

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The PHOTOGRAPH shows the "Golden Staircase" formation in Croesus Cave, Tasmania. The "Staircase" is a series of crystal terraces, the whole crystal surface being a beautiful golden colour.

Croesus Cave is about one mile long, and of predominantly horizontal development, with an underground stream running throughout. It is particularly rich in large, impressive and beautiful formations such as the one shown.

Photograph by: H.Fairlie-Cuninghame.

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La PHOTOGRAPHIE represente l' "Escalier Dore" formation de la caverne de Cresus, en Tasmanie. L'escalier consiste en une serie de terrasses de cristal dont la surface totale est une belle couleur doree.

La caverne de Cresus mesure environ 1.6 Km. de long, avec un developpement horizontale predominant. Elle est traversee par un courrant souterrain et abonde en formations impressionantes par leur taille et leur beaute telle celle de la photo.

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Die ABBILDUNG zeigt die "Goldene Treppe" in der Croesus Cave in Tasmanien. Die "Treppe" ist eine Reihe von Terrassen die aus Kristallen einer wunderschonen goldenen Farbe bestehen.

Croesus Cave ist ungefahr 1600 m lang, uberwiegend horizontal und ein kleiner untergrund Strom fliesst durch sie. Sie ist besonders reich an grossen, eindrucksvollen und schonen Formationen.

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L'ILLUSTRAZIONE presenta il gruppo calcaree, chiamato la "La Scala D'Oro" nella grotta di Creso in Tasmania. La "Scala" e una serie di piani cristallini, la cui superficie riflette un magnifico color oro.

La grotta di Creso e' lunga circa un miglia e si allarga in forma decisamente orizzontale, con un torrente sotterraneo che la percorre tutta. Contiene numerose formazioni calcaree, bellissime e impressionanti come l'illustrazione dimostra.

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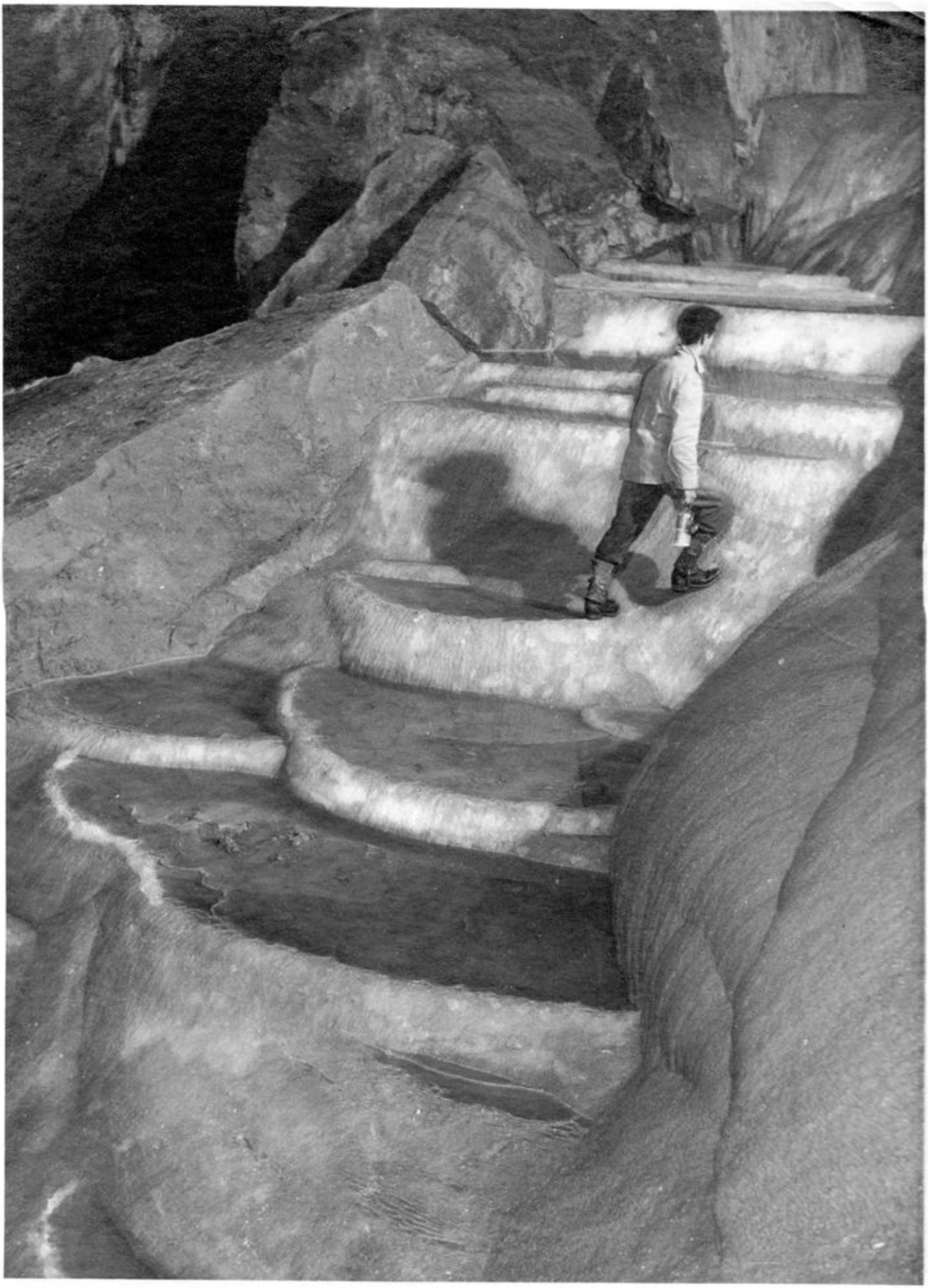

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