

**COOBER PEDY**

**DUGOUTS**





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### HISTORY OF DUGOUT LIVING

In the past ages, man has often taken shelter in caves. Today people refer to them as Cavemen. This name is mis-leading in that they are not a race of men that lived entirely in caves. During the Ice Age, they like other animals, found refuge in these humble abodes.

The cave dwellers mainly inhabited the other parts of the caves, due to lack of light in the inner parts. One race of cave dwellers lived well in the back of the cave and were noted for their artistic talent.



Very few people live in caves today. This style of ancient living is very well adapted in Coober Pedy. These cave dwellings are quite popular and are called Dugouts. It is said dugout living began in Coober Pedy when soldiers returned from the trenches of France in 1918 and dug underground to escape the heat.

The initial dugouts were made by using a pick and shovel. Once a site has been decided upon, work commenced by digging into the side of a hill. From a small entrance into the hill, a larger cavity which could be enlarged for various rooms, was carved out.

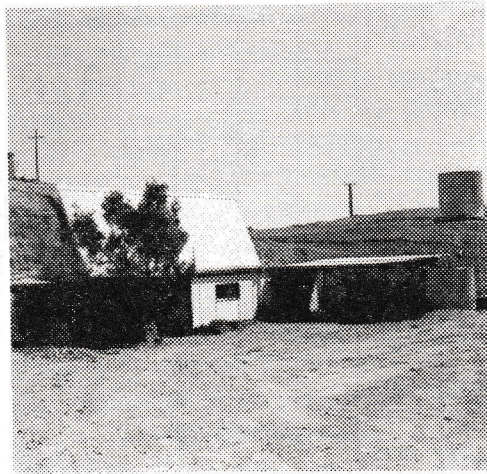
Today many dugout homes are unique places of comfort and beauty. The temperature in most dugouts only varies about 5°C [41°F] all year round with temperatures inside a dugout being from about 21°C [70°F] to 26°C [78°F] while outside can be 45°C [112°F] in summer and as cool as 4°C [38°F] in Coober Pedy's desert winter. Dugouts provide good cooling and heating and also luxury living at low cost.

LUXURY LIVING IN A SUNKEN LOUNGE.



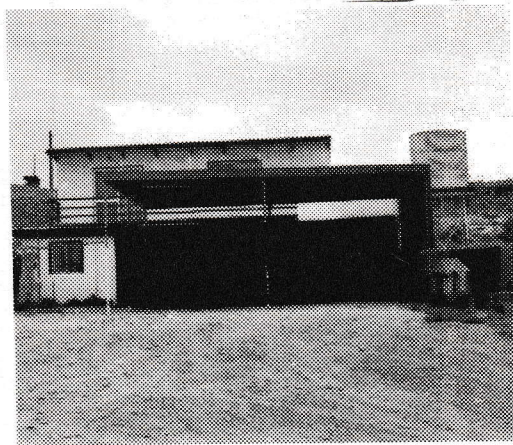
WHY DO PEOPLE LIVE IN DUGOUTS  
AND WHAT ARE THE ADVANTAGES?

In Coober Pedy the most obvious answer to this question is the climate. With the high temperature during the summer months a dugout maintains a constant temperature level. Due also to the lack of vegetation holding the soil down, duststorms are frequent and dugouts seem to be the most dust proof living residence of all.

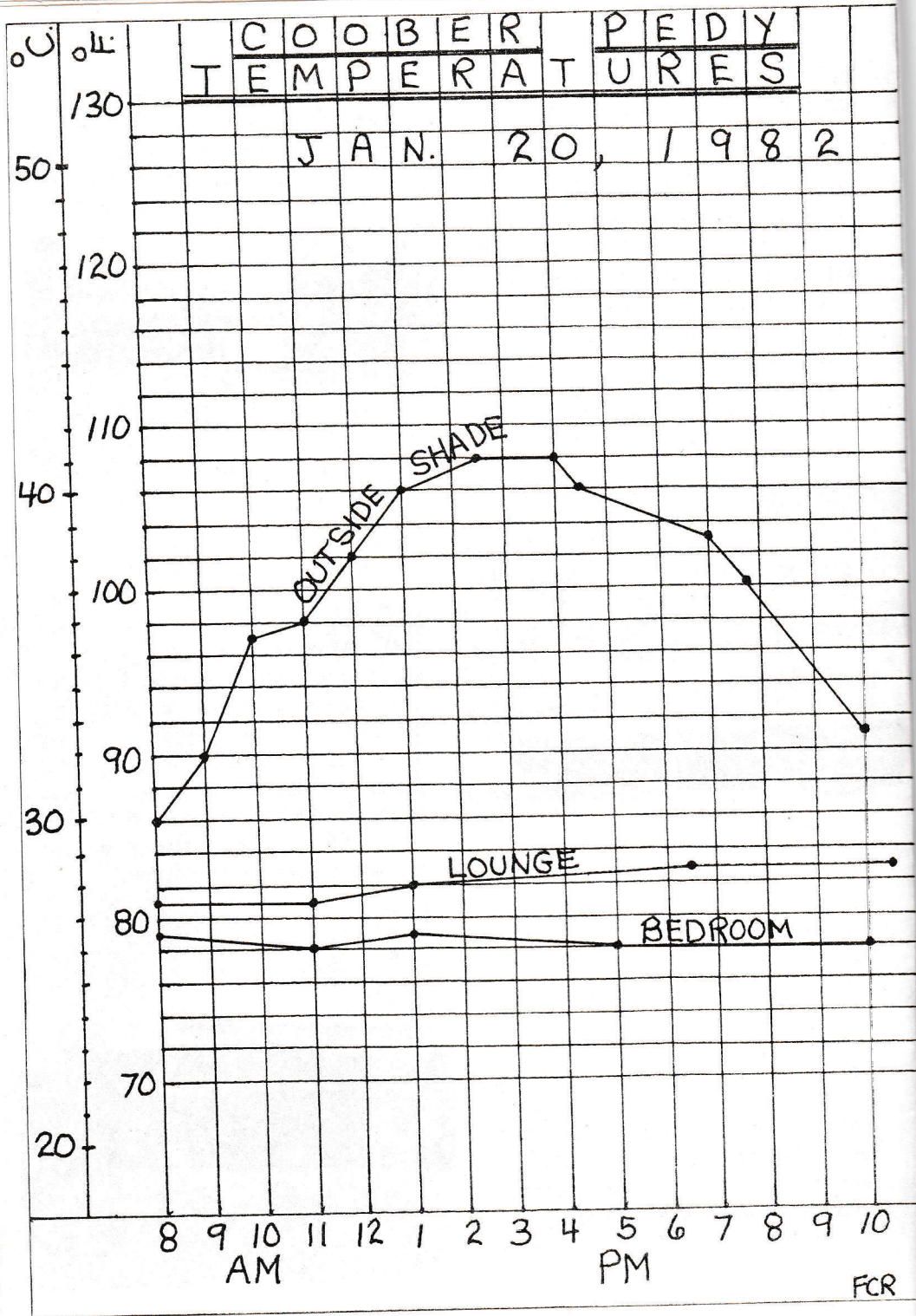


Living in a dugout in itself is an advantage. Due to Coober Pedy's hot summers, dugouts do not need air conditioners. In the heaviest rains they are dry underfoot and watertight overhead. Once the dugout has been made to the desired size and shape one may add fireplaces, build in cupboards, rooms, shelves, or the like. If one wants to make a shelf for more books, it can simply be dug out where ever it is needed.

The walls can be spray painted in a colour to suit its surroundings or in a clear gloss that not only protects the wall by sealing it, but forms natural patterns which are pleasing to the eye.









WHERE ARE DUGOUTS LOCATED AND HOW  
ARE THEY BUILT?

Dugouts are usually built in the side of hills, or located in old bulldozer cuts. There are several conditions which make for suitable dugout ground. Firstly the ground must be firm, e.g. containing no faults or slips which could create a weakness with a possible cave in, and the dugout must be dug deep enough to provide a strong ceiling.

Dugouts are built in several different ways. They can be built as semi-dugouts or full underground dugouts. They can be built with different types of tools, machinery and materials.

The machinery used for building a dugout are a pick, shovel, tunnelling machine and blower. A tunnelling machine is a hydraulic operated machine which digs into the ground. The "clawed" dirt is sucked back behind the machine through a series of pipes by the blower which is a machine akin to a large scale vacuum cleaner. Pick and shovel are used to straighten the ceiling, walls or floors after tunnelling has been completed.

To seal ceilings and walls plaster and boncrete is are used. In some dugouts that are not very firm, P.V.A. is watered down and then sprayed onto the walls. When this dries the walls are harder and stronger.

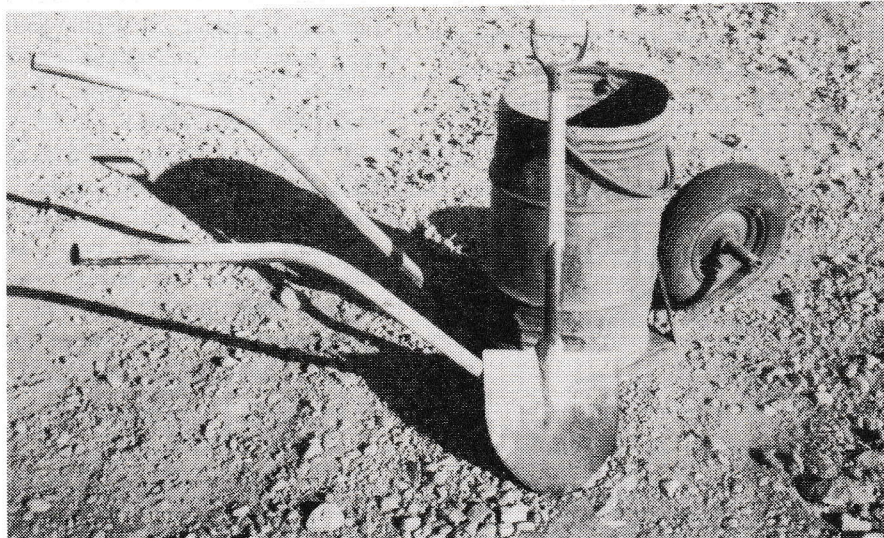
A BLOWER USED TO SHIFT THE ROCK  
AND DIRT FROM FROM THE DUGOUT.





Most of the dugouts between 1945 and 1973 were built by hand, using a compressor, air drill, jack pick and explosives. Dugouts after 1973 were built by using tunnelling machines. Many existing dugouts were extended and improved by tunnelling machines.

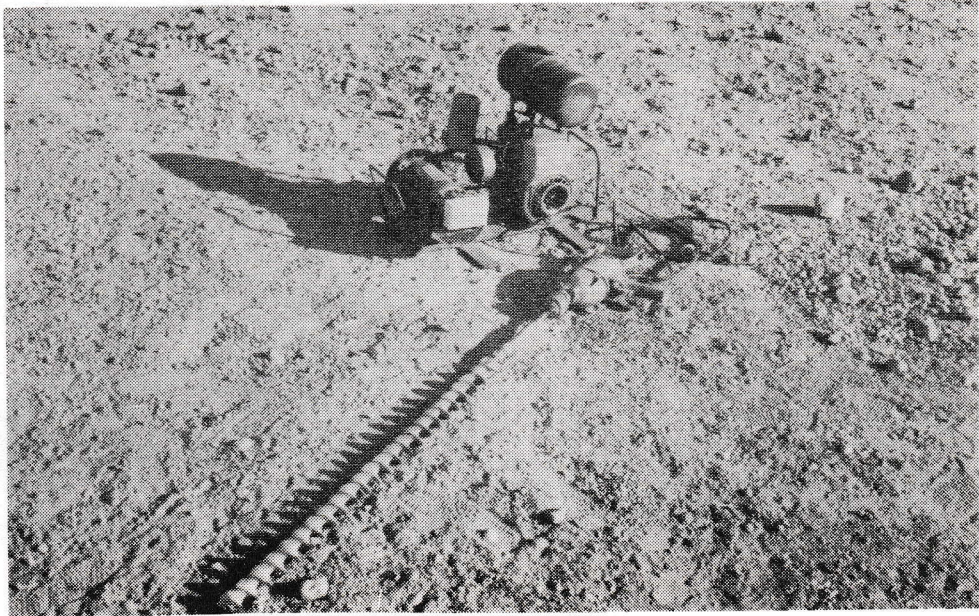
THIS EQUIPMENT IS USED FOR HAND MINING. THE SHOVEL, DRUM AND BARROW ARE USED TO SHIFT DIRT.



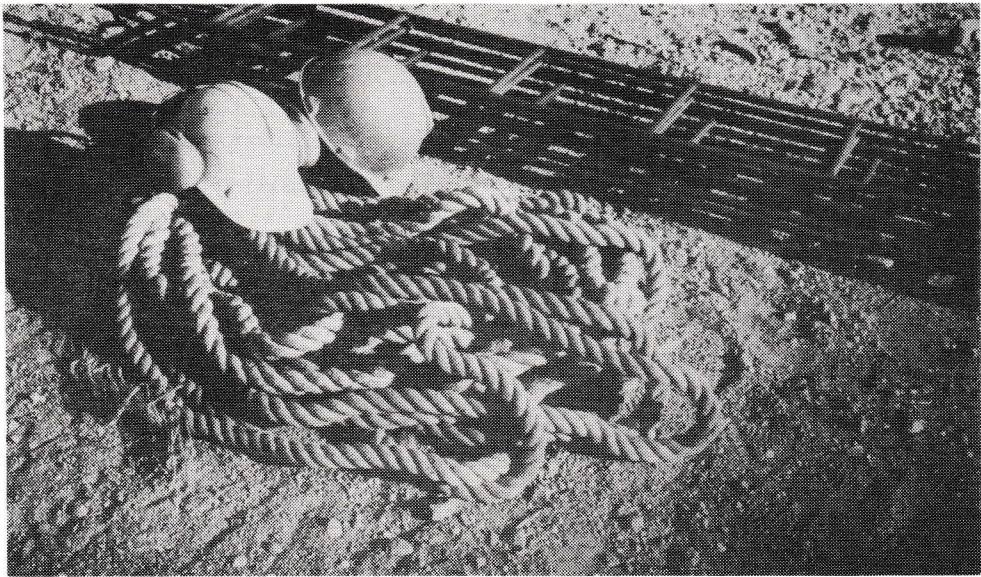
STICKS OF GELIG-NITE, DETONATORS, FUSE AND CUTTING PLIERS USED TO BLAST THE ROCK IN DUGOUT CONSTRUCTION.



A GENERATOR SUPPLIES ELECTRICITY FOR THE NITRO DRILL, WHICH IS USED TO DRILL HOLES FOR THE EXPLOSIVES.



EQUIPMENT USED FOR SHAFT WORK. THE ROPE IS USED FOR SAFETY IN THE SHAFT.

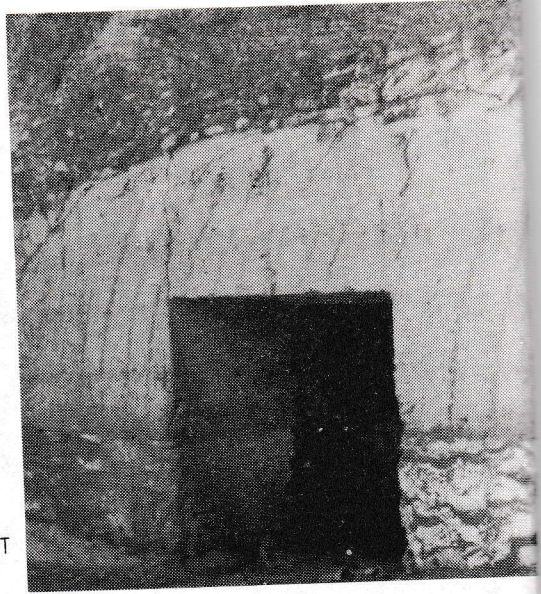




## DUGOUT CONSTRUCTION

When considering constructing a dugout one must locate a suitable site which could be in the side of a hill or a bulldozer cut. If a hill site is chosen it must be cleared so that a face front is visible.

This may not need to be done if the site is to be in a bulldozer cut. Once the site is prepared and the dugout design planned, then construction can begin.



ENTRANCE TO DUGOUT ALONG FACE FRONT

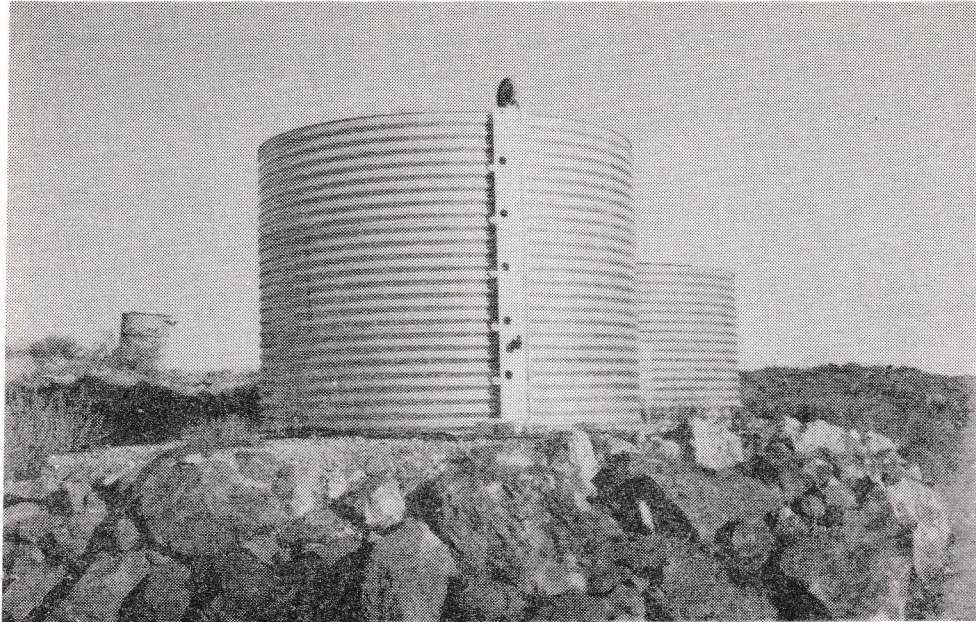


The modern method of dugout construction is with a tunnelling machine. It is set up in front of the face of either the hill site or dozer cut in preparation to begin digging. As the cutters on the machine turn, it "chews" its way into the sandstone. As it enters the face, the operator works to the dugout plan creating rooms, passageways, pillars or windows.

When the ceiling height has been determined, a hand pick is used to ensure the ceiling and walls are straight and all loose stones are picked down.

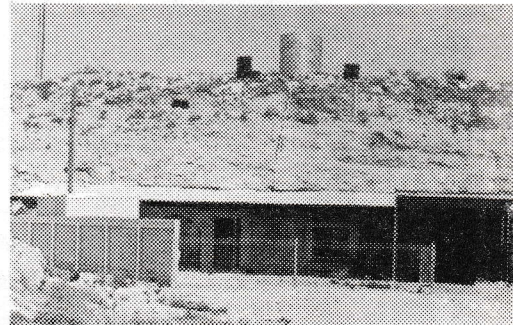
The floor is then levelled and plumbing installed ready for cementing. Wiring is also put in place, e.g. along walls, ceiling and across floors. The dugout is left to dry out several weeks before putting on the sealer.





RAIN WATER TANK ABOVE DUGOUT.

A rainwater tank is placed above the dugout to supply water which is gravity fed into the bathroom and kitchen. With the tank being above the dugout, it is safe and also the accessibility for the water carrier is more convenient.



#### WHAT ARE THE TYPES OF DUGOUTS?

##### Semi-dugouts

Semi-dugouts are the dugouts which have part of the "house" underground and the rest conventional construction in view e.g. a dugout may have several rooms dug into a hill and a sunroom in front of the hill.

##### Full dugouts

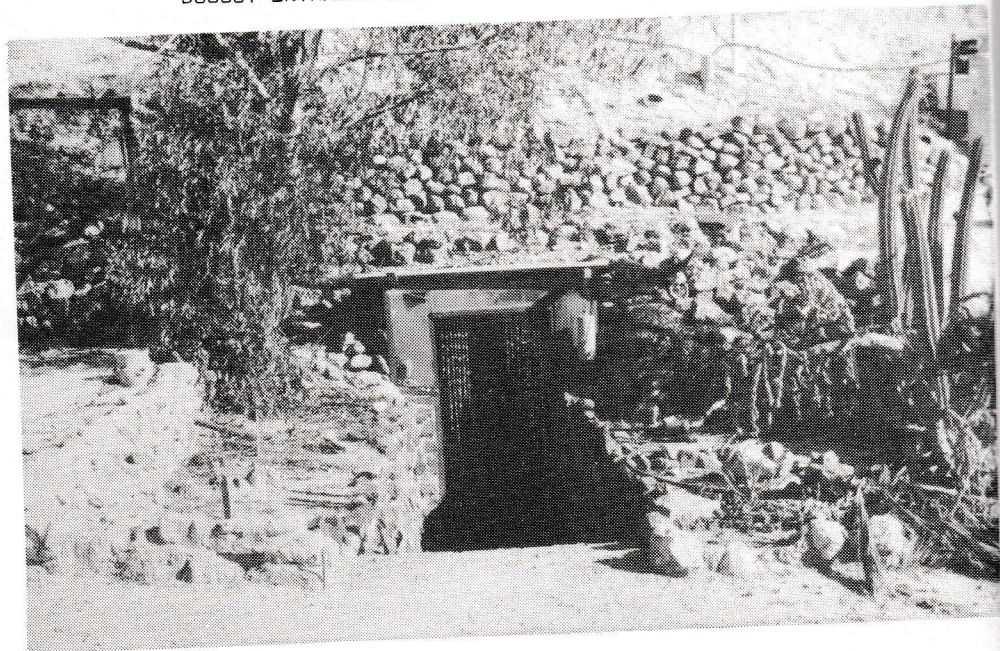
Full dugouts are those which are situated fully underground. Indication of these may be a door in a hill or a rainwater tank.



ARCHED SUNROOM WINDOWS IN SEMI-DUGOUT



DUGOUT ENTRANCE WITH STONE BUILT UP ON FACE FRONT





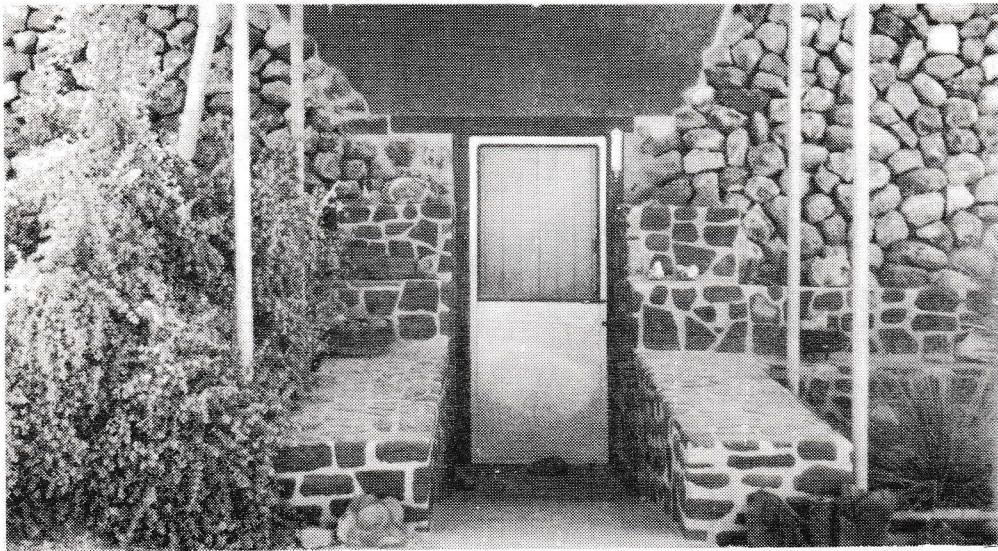


WHAT DO DUGOUTS COST?

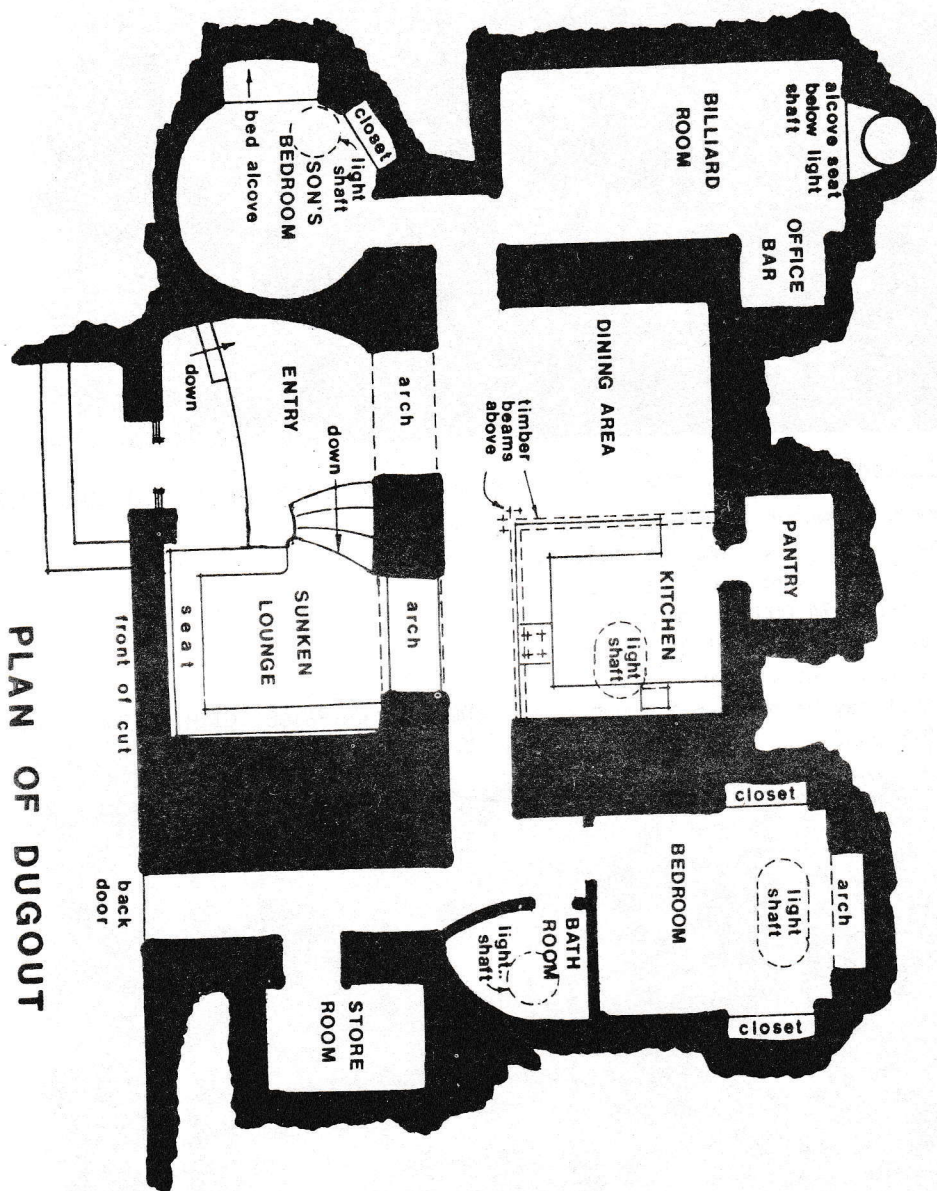
To make a dugout is actually quite cheap. For a basic, no frills, dugout the average cost would be around \$4,000 to \$7,000. If however, one desires tiles, timber, in walls, etc. for decoration the cost may be between \$12,000 and \$15,000.

A DUGOUT BUILT IN AN OLD BULLDOZER CUT.

DUGOUT ENTRANCE WITH STONE BUILT UP ON FACE FRONT.







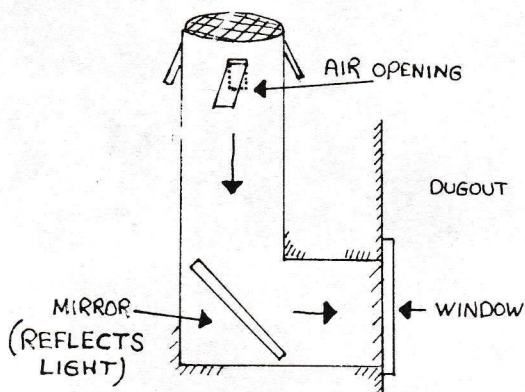
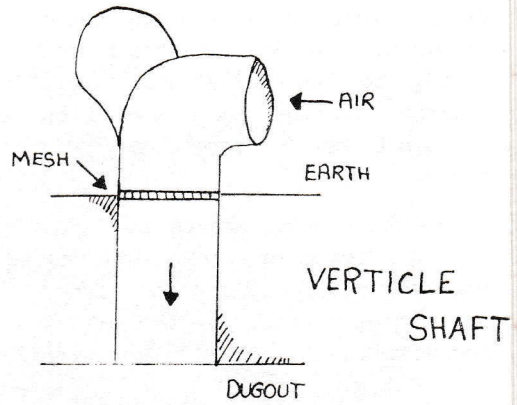
PLAN OF DUGOUT



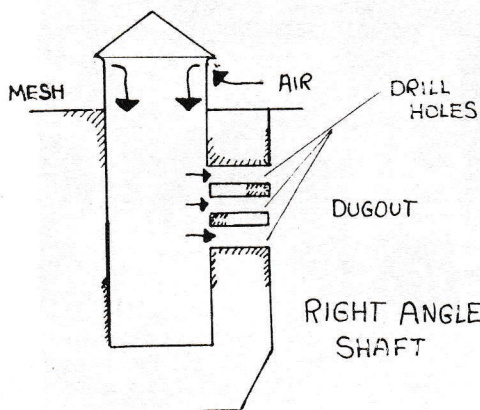
### HOW ARE DUGOUTS VENTILATED?

For ventilation in dugouts, shafts are drilled into the ceiling supply-ing fresh air. They are different sizes, ranging from between .3 metres to .6 metres across. The ventilation shafts are protected by either wire mesh or cloth.

This also prevents stones from falling down the shaft. The shafts are usually placed in the corner of each room (one in each). Some are drilled vertically and others horizontally from the main vent.



RIGHT ANGLE  
SHAFT



RIGHT ANGLE  
SHAFT

Ventilation shafts are not always suitably placed and may cause the air in dugouts to become stuffy. In some dugouts ventilation is aided when the interior walls separating each room do not reach the ceiling. Thus the air is free to circulate within the dugout.

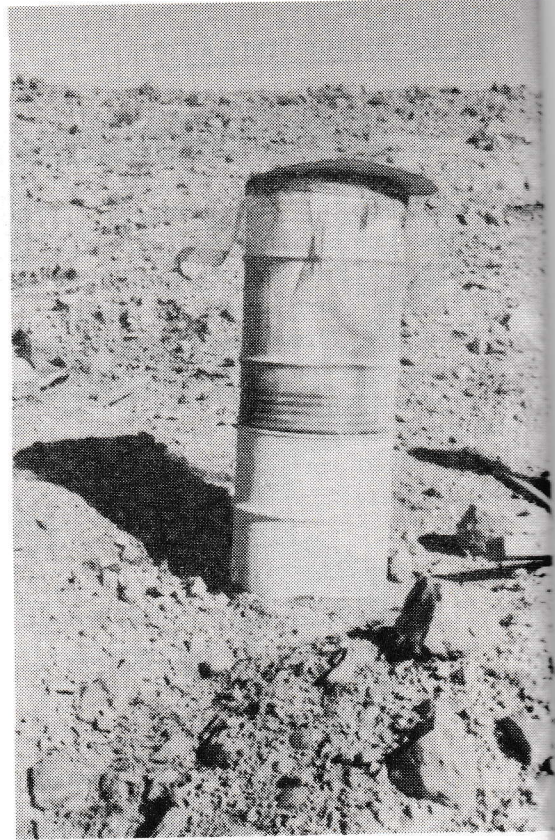


Hooking up the electricity wires is a tedious task and may cause problems. The wiring is restricted mainly to the walls and floor.

Wiring on the floor should be in place before cementing takes place.

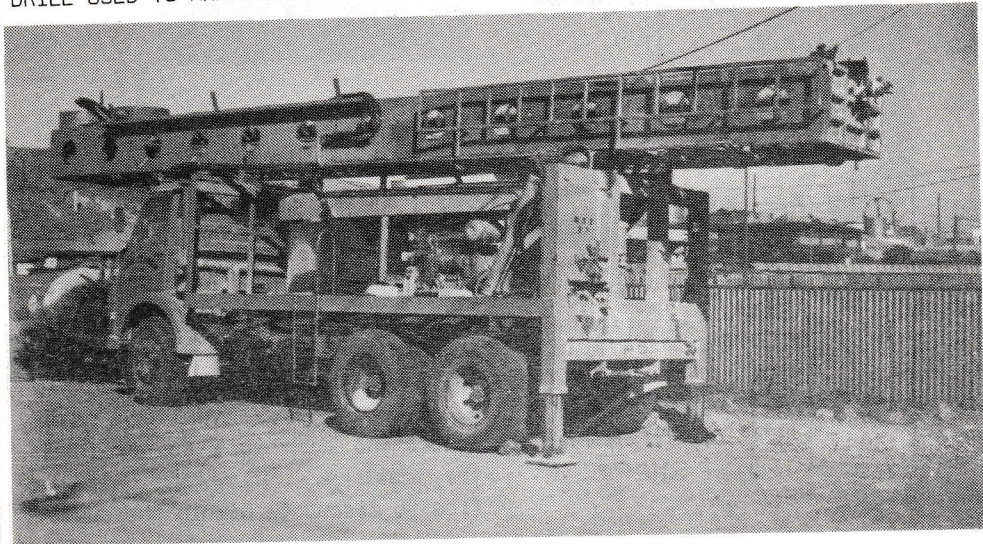
Some people make shafts as large as small rooms to catch rainwater, however, corrugated iron tanks are mainly used. Plumbing is connected to bring in fresh water to the dugout.

Other shafts are dug deep for toilets. The slang term for this type of toilet is called a "long drop", "dunny" or "thunder box".

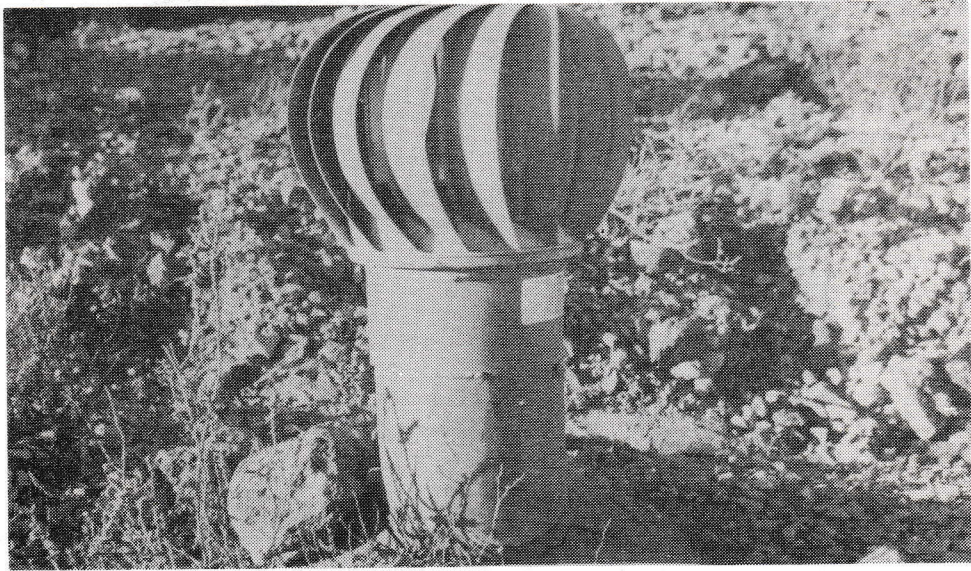


DRILL USED TO MAKE VENTILATION SHAFTS.

VENT PIPES MADE FROM 44 GALLON DRUMS.

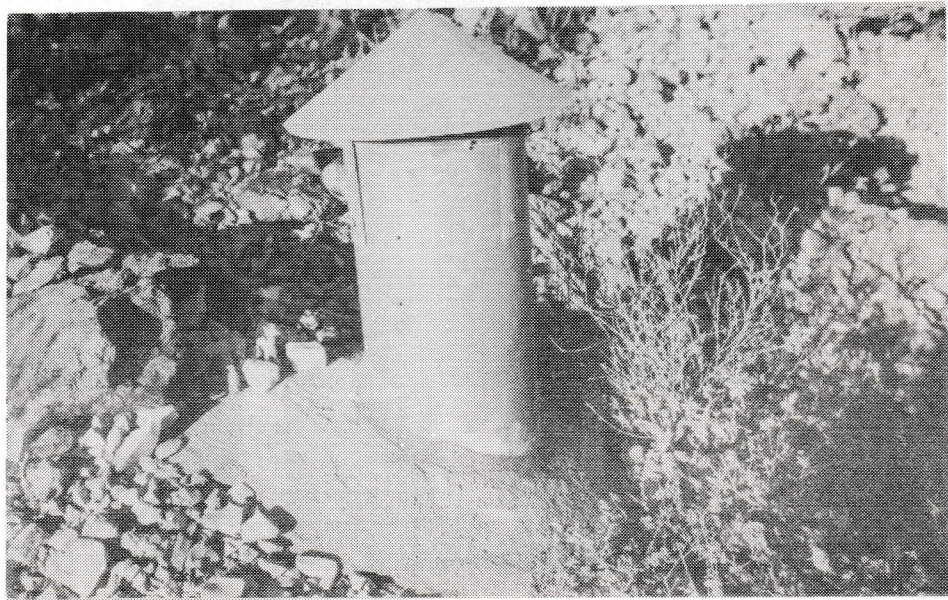






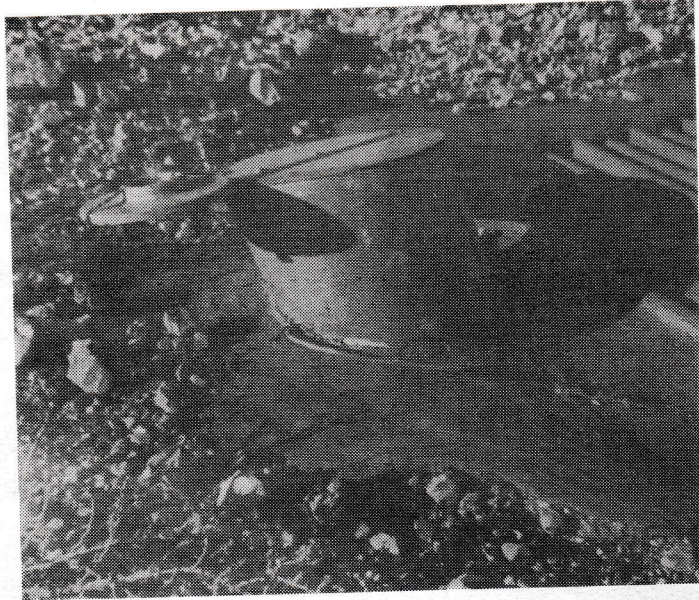
ROTATING VENT PIPE.

WITCHES HAT VENT PIPE.



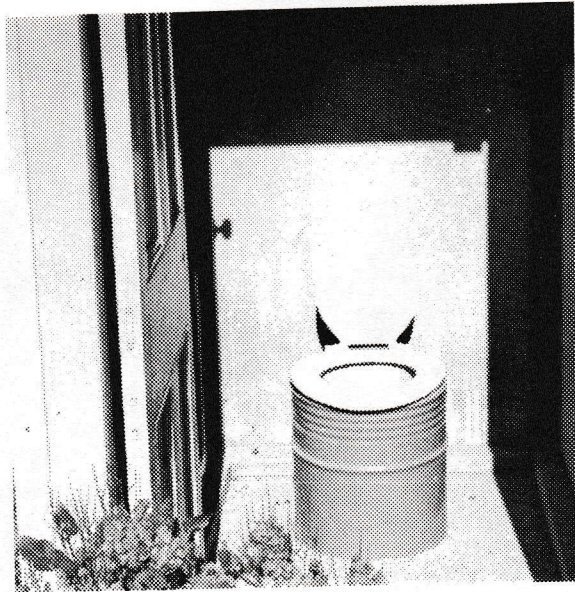


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AIR VENT OPERATED WITHIN THE DUGOUT.

"LONG DROP".



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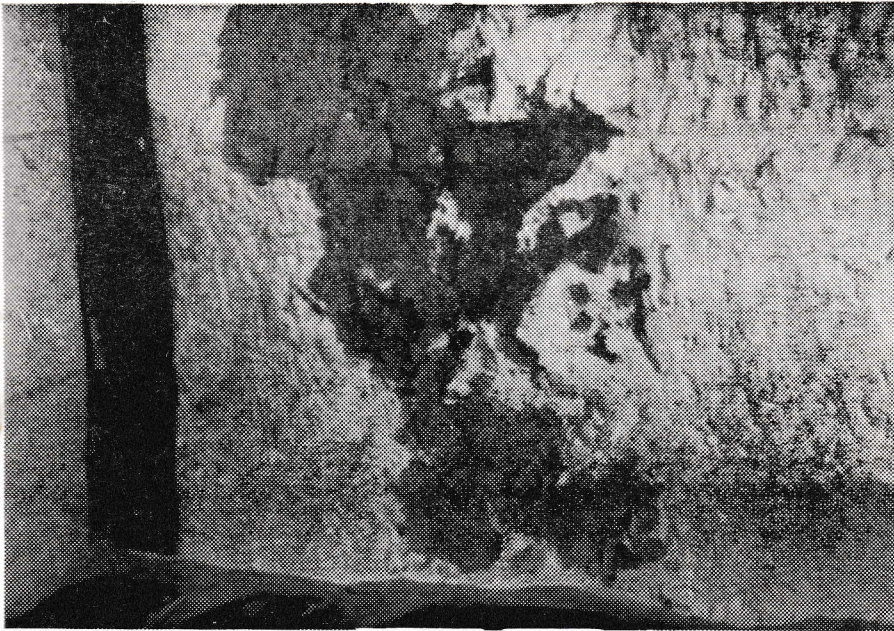
#### WHAT ARE DUGOUT PROBLEMS?

It cannot be denied that to live in a dugout in Coober Pedy is more favourable than to live in a house. But even a dugout has its limitations. One problem that this town's people have to put up with is dust. It is true, houses above ground have a greater problem with dust, but dugouts receive their fair share.

Although there is not much dust in a dugout, it does come in through the entrance and it does have a habit of finding its way into any crack or corner.

Because dugouts are built underground there is always the problem of insufficient light. This often is overcome by having shafts drilled in different areas of the dugout which act as a type of skylight. The use of mirrors to direct light into darkened areas has also been tried.

#### FLAKING WALLS



Humid air can enter between tiny cracks of earth in the dugout, and when the moisture in the air dries, the outermost layer becomes flakey causing more dust.



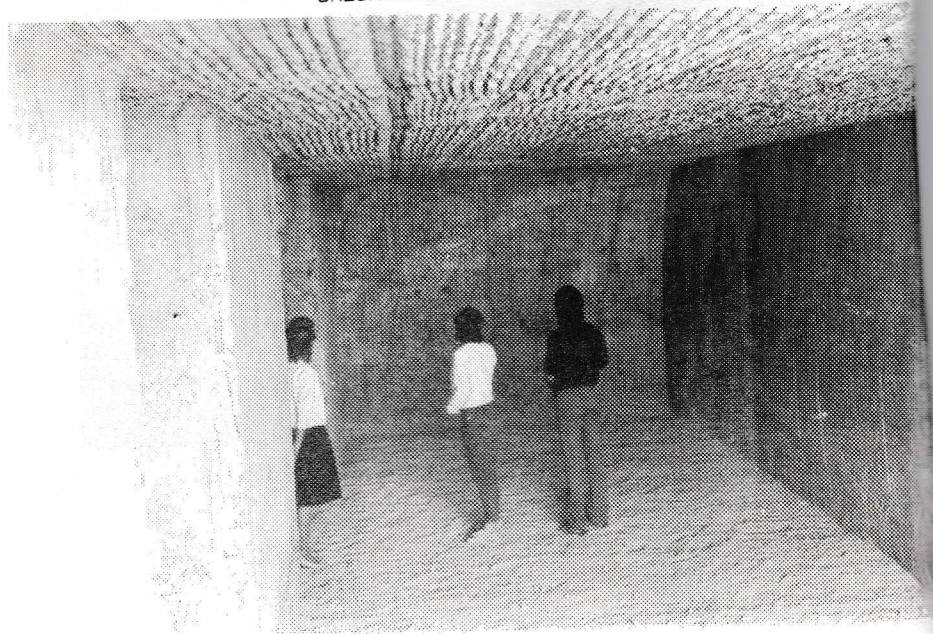
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Rodents and insects at times can be a nuisance to a dugout owner. Mice often enter dugouts after prolonged rain or long periods of high temperatures to seek the dry, protective environment of a dugout. Insects find their way into dugouts either by falling down shafts or crawling under or through cracks around doors and windows. One very common intruder is the dugout beetle. They do little harm other than crawl up walls or burrow into them knocking down pieces of dirt onto the floor.



DUGOUT BEETLE LARVAE

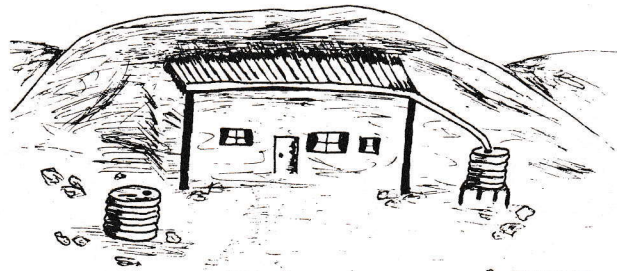
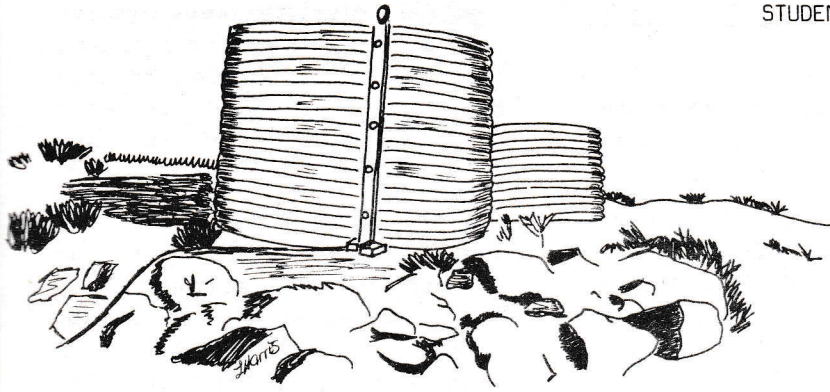
CHECKING FOR BEETLE LARVAE



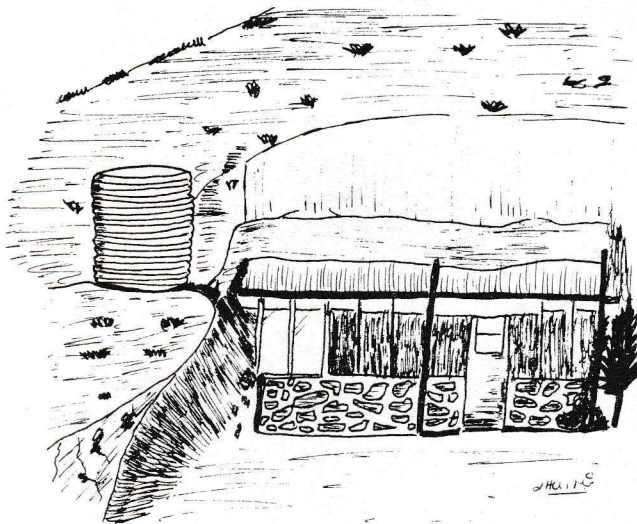
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STUDENT SKETCHES.



A DUGOUT





WHAT REACTION DO PEOPLE LIVING  
IN DUGOUTS HAVE?

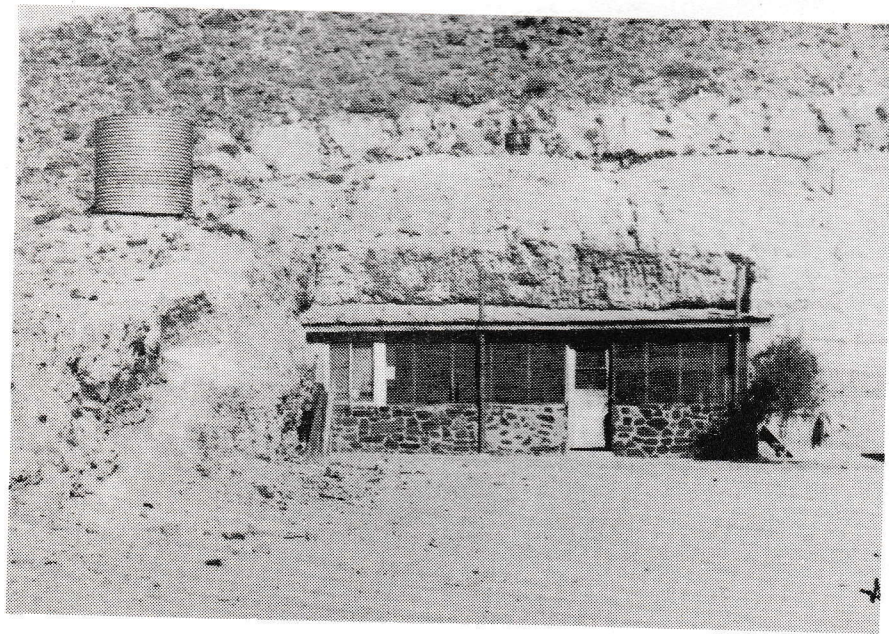
Most people in Coober Pedy prefer living in dugouts for several reasons, some of which are:

1. Dugouts maintain a constant temperature of around 26°C, this temperature being stable is extremely suitable for Coober Pedy's varied climate.
2. Comfortable dugouts can be made to suit each persons individual tastes.
3. Flexible in their design, this means that every dugout has the owners special touch and things can be easily added.
4. Dugouts tend to insulate noise easier than houses.

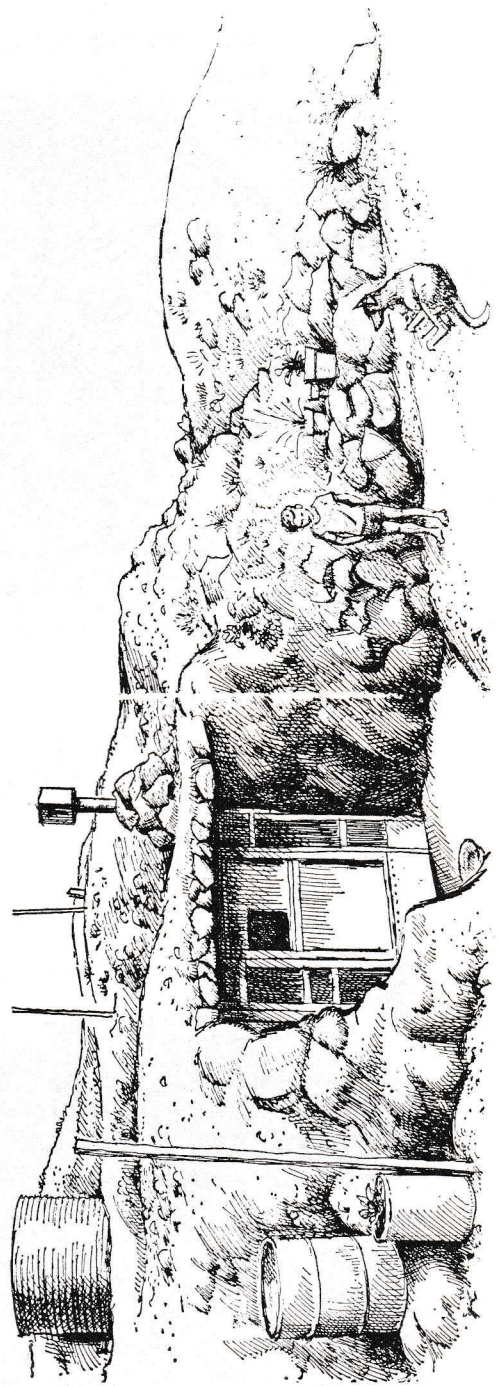
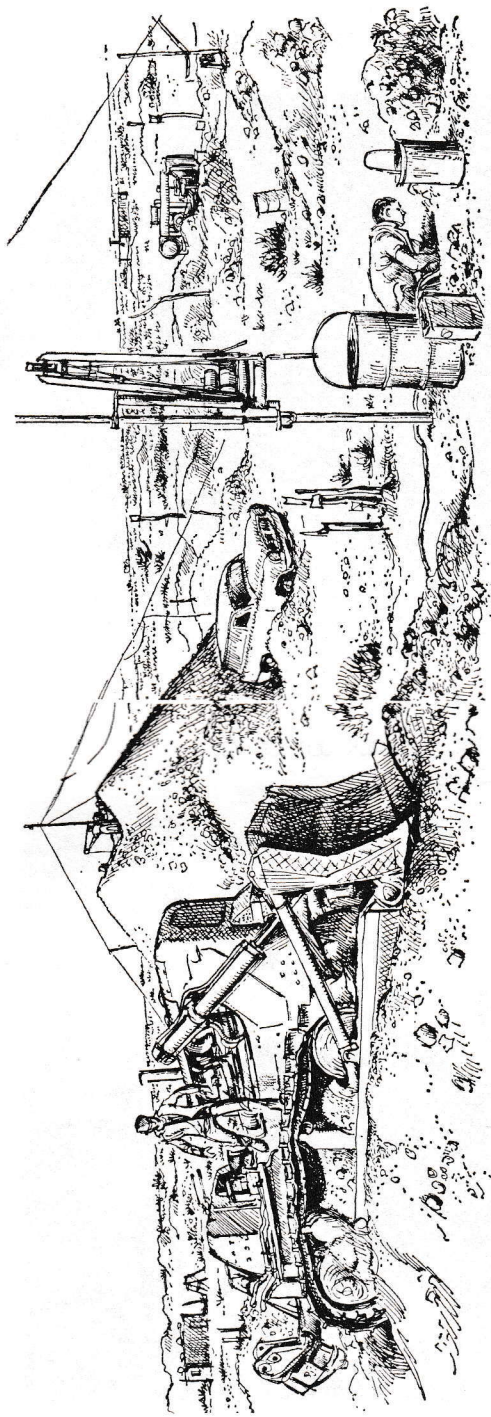
The majority of people that have answered our written questionnaires have all stated they prefer dugouts to houses. Most people have said even if they were away from Coober Pedy they would prefer to live in a dugout!

The people interviewed said that their visitors were amazed by the dugouts, some even overwhelmed. The visitors found it hard to grasp the fact that they were actually underground in some places they seemed to find the whole idea strange.

Some individuals felt claustrophobic due to the lack of natural lights. A disadvantage that one person pointed out was fretting walls (when the walls come away) and having to repair the walls so often.

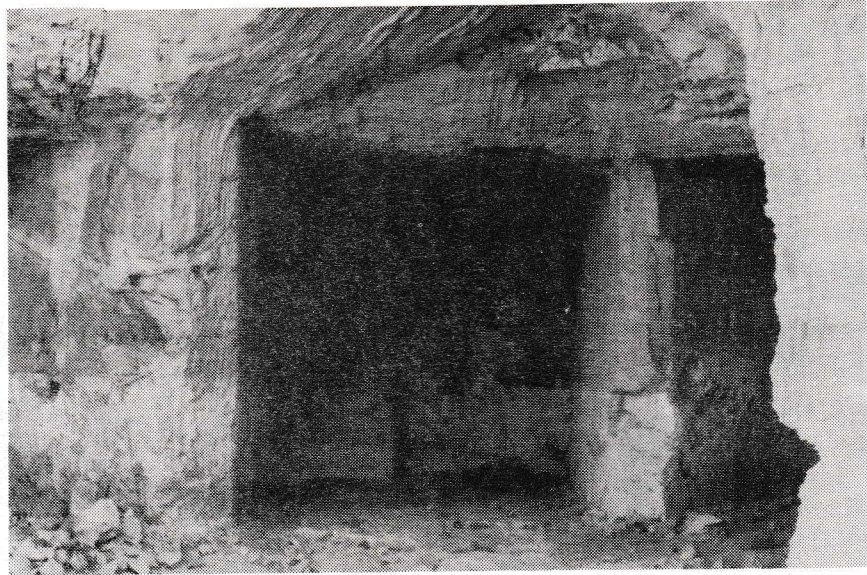




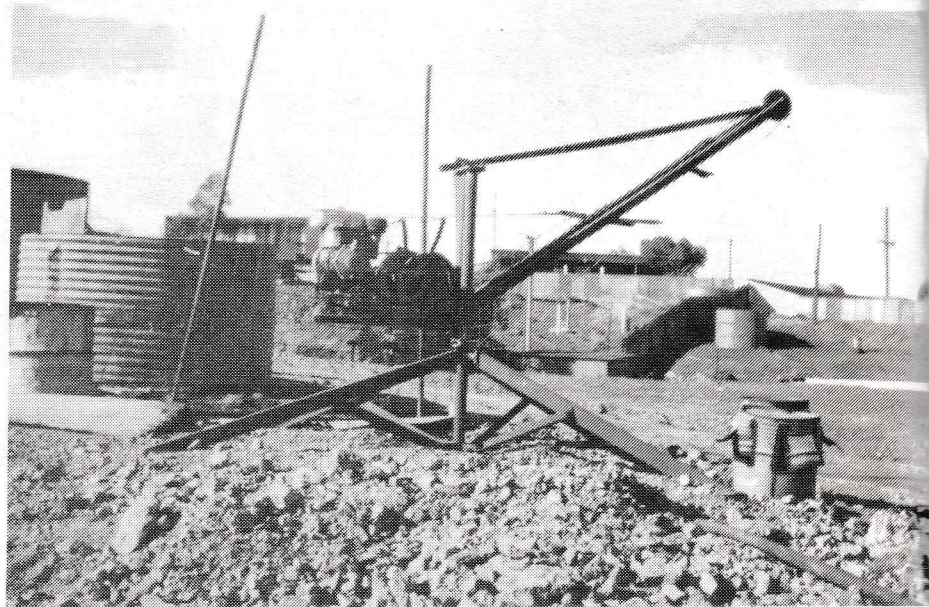




TUNNELLING WORK NEARING COMPLETION ON ENTRANCE TO DUGOUT.



YORKE HOIST USED TO BRING MULLOCK OUT OF MINE.  
POWERED BY A PETROL ENGINE.







UNDERGROUND CATACOMBE CHURCH

SEMI-DUGOUT WITH SUNROOM IN FRONT OF HILL





KEY TO COOBER PEDY MAP

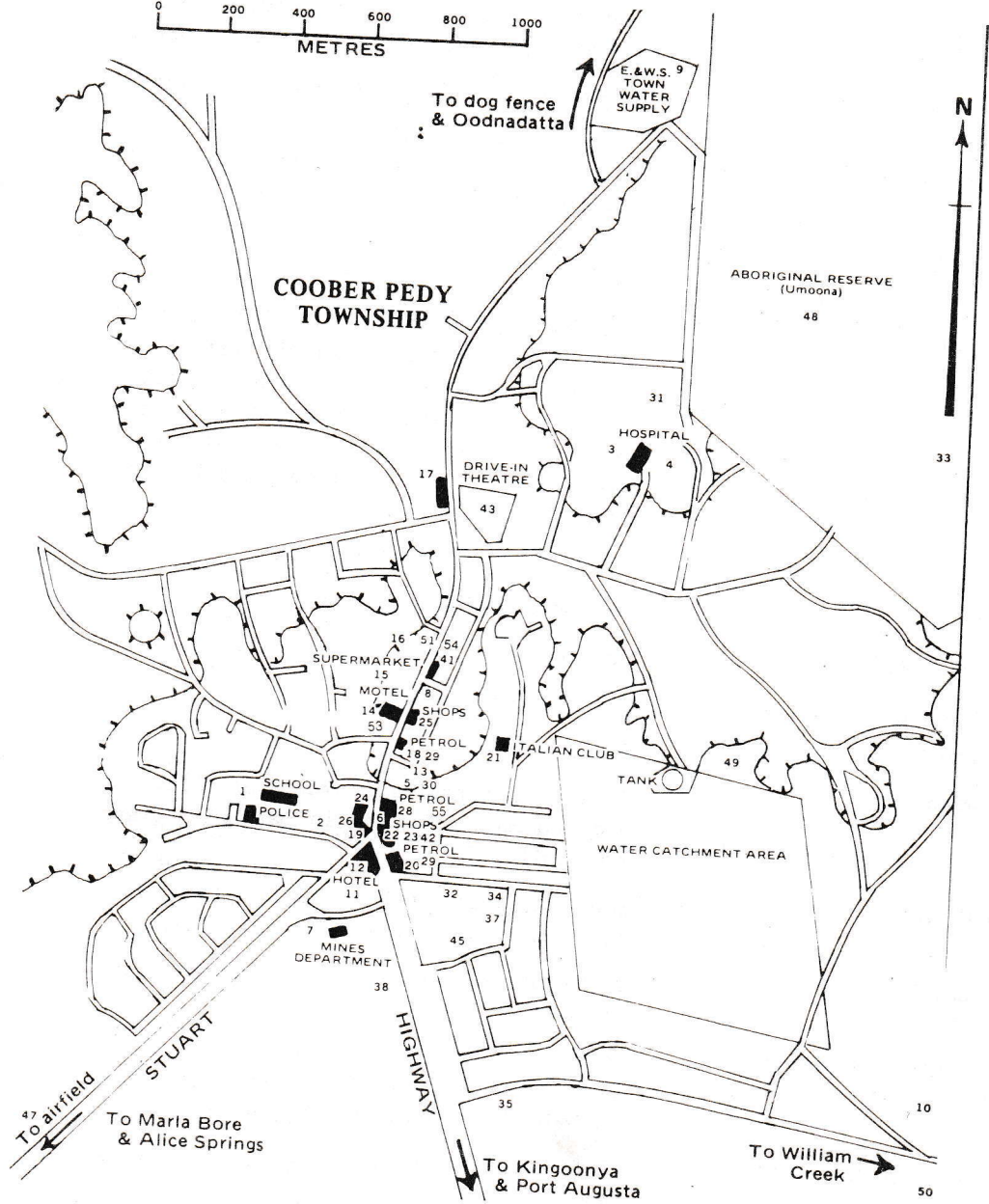
1. POLICE STATION
2. FIRE STATION
3. HOSPITAL
4. AMBULANCE - ST. JOHN
5. MINE RESCUE
6. POST OFFICE & MINERS STORE
7. DEPARTMENT OF MINES
8. DEPARTMENT OF COMMUNITY WELFARE
9. E.& W.S. WATER DESALINATION TREATMENT PLANT.
10. POWER STATION
11. OPAL INN HOTEL - MOTEL
12. THE STABLE INN
13. RADEKA'S UNDERGROUND MOTEL/ YOUTH HOSTEL.
14. THE DESERT CAVE MOTEL
15. UMOONA UNDERGROUND CAMPING MOTEL AND CAMPING.
16. OPAL CAVE
17. BULL'S TRANSPORT- TOURIST PARK
18. MOBIL RESTAURANT
20. GOLDEN FLEECE RESTAURANT
21. ITALO/AUST. MINERS CLUB
22. MARIO'S PIZZA BAR
23. ACROPOLIS RESTAURANT
24. BABANIOTIS CHICKEN AND FISH SHOP
26. WESTPAC BANK
28. OPAL AIR OFFICE
29. STATELINER BUS DEPOT
30. ST. PETER'S, ST. PAUL ROMAN CATHOLIC CHURCH
31. THE CATACOMBE CHURCH
32. GREEK ORTHODOX CHURCH
36. GOLF CLUB
37. BASKET BALL AND TENNIS COURTS
38. SOCCER FIELD
39. HORSE RACING TRACK
40. SMALL BORE RIFLE CLUB
41. MICK LUCAS SUPERMARKET
42. C.P.S. STORE
43. DRIVE-IN THEATRE
45. PROGRESS AND MINERS ASSOCIATION
47. COOBER PEDY AIRPORT
48. UMOONA ABORIGINAL RESERVE
50. COOBER PEDY CEMETARY
51. STAR OPAL
53. DISPLAY DUGOUT
54. CARAVAN PARK (OPAL FACTORY)

D



MAP OF COOBER PEDY.

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33



## GLOSSARY OF TERMS

- BALLROOM - Circular cavern formed when material is removed from underground.
- BLOWER - A machine akin to a large scale vacuum cleaner that sucks in the dirt to the surface.
- BONCRETE - (Lockcrete-silcrete) used to seal walls in a dugout.
- COOBER PEDY - Kupa (whiteman) Piti (whiteman's hole) or burrow.
- DRIVE - Horizontal tunnel branching off from a shaft.
- DUGOUT - A place of residence or accommodation excavated below the ground surface in the kopi. Generally constructed by bulldozing a flat area on the side of a mesa and then excavating a number of rooms into the side of the mesa usually with a tunnelling machine.
- DUMP - Mounds of dirt around a shaft.
- FACE - Working end of a drive.
- FRETTING - Flaking off of dust from dugout walls.
- HEADWALL - Top of tunnel or drive.
- D  
KOPI - Sandstone.
- MESA - A land form having a relatively flat top and bounded wholly or in part with steep rock walls.
- P.V.A. - (Poly-vinyl-acetate) like Aquadhere. Mixed with water to seal dugout walls.
- SLIDE - A major oblique or near vertical joint or fault.
- TUNNELLING MACHINE - Hydraulic operated machine that digs the dirt which is sucked back and deposited behind the machine.
- VENTILATION SHAFT - Shaft drilled into a dugout to provide fresh air.



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Carmelo CRISA

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D

Daniel  
Guz