NOTICE OF ORDINARY MEETING

the fourth general meeting of the Society for 1976 will be held in the
Napier 5 Theatre, University of Adelaide, North Terrace, at

8.00 pm Monday 28 June, 1976

This meeting will occur exactly 50 years since the Society was founded on
Monday 28 June, 1926.

AGENDA

1. Apologies.

2. Minutes of meeting held Monday 24 May, 1976 to be confirmed. Copies of
   these minutes are attached.

3. New members.
   The following new members have been elected to the Society.
   Mr. Maurice Stockdale       93 Main Street, Port Augusta
   Mr. Kym Morgan Goodsell    2/4 Torrens Street, Lockleys

4. Papers and Journals.
   Papers and journals from other Societies and organizations will be
   tabled.

5. Films.
   As a part of the Anniversary Weekend Celebrations a series of films will
   be shown.
   Dr. T.D. Campbell       'So they did Eat'
   Qantas
   Ian Dunlop             'The Dreaming'
   Dr. C.P. Mountford     'The Desert People'
   'Walkabout'

6. July meeting.
   The July meeting will be held on Monday 26 July, 1976.

VERN TOLCHER,
Hon. Secretary/Treasurer,
213 Greenhill Road,
EASTWOOD, S.A. 5063
PATINATION AND WEATHERING IN RELATION TO
AUSTRALIAN ARCHAEOLOGY

by

Dr. P.S. Hossfeld,
formerly of the Department of Geology, University of Adelaide

Weathering and Patination.

Alterations of the rocks and rock surfaces with which, or upon which the aboriginal inhabitants had worked, have been studied with a view to determining the ages of the designs marked on the rocks, or of the stone artifacts. In order to use these criteria it is necessary first, to define the terms used and to agree on such definitions, secondly, to determine if possible, the rate at which such alterations are produced, and thirdly, what variants of the environment influence the processes and their products.

Four terms, the first two more frequently, are used commonly in Australia to indicate such alterations. They are: WEATHERING, PATINATION, DESERT VARNISH, DESERT POLISH.

WEATHERING is the geological term for a process which includes the changes that occur in a rock exposed to atmospheric conditions such as changes of temperature, variations of available water in the form of rain or dew and the atmospheric gases and other materials dissolve in the water. Under various conditions changes will take place: in the minerals composing the rock, thus producing new minerals, and by various means causing the rock to crumble, thereby exposing more of the material to the process. The result in general is a gradual change inwards from the surface of the rock either even and gradual where controlled by the porosity of the material, or highly irregular where crevices and fractures exist along whose walls the alterations have taken place.

Whatever the types of materials involved, the effects of weathering and of its products - given the same rock types and conditions - can be recognized by the increasing depths of alteration in situations where the weathering processes have operated for longer periods of time.

A common and well known feature and product of specialized weathering is the off-white or cream-coloured crust developed on flints in many localities in Australia and elsewhere. The South-East of South Australia offers excellent opportunities for a study of this process. In this region flint pebbles, boulders and the artifacts made from them by the aboriginal inhabitants, occur over large areas and in varied environments, and in the case of the pebbles and boulders have been subjected to weathering processes over periods ranging from scores of thousands of years to the present, enabling all stages of the processes to be examined. (Campbell, Cleland and Hossfeld, 1946, pp 474 and 475).

Investigations have been made into the process of flint weathering and
have been ascribed to the partial solution of the silica by predominantly
alkaline solutions.

The use of the term PATINATION has been extended beyond its original mean-
ing. It has been and is being used very loosely by archaeologists for alter-
tations from the surface inwards of rocks, stones and artifacts. It has been
applied more extensively to the flints and the artifacts made from this material
and similar materials, because of the wide application and the interest in the
alteration of the surfaces of flint. This is due notably to the extensive use
of these materials by Primitive Man, and also to the relative ease with which
flints, under suitable environment, can develop alterations from the surface
inwards. No obvious attempts have been made to distinguish patination from
weathering, and apparently authors regarded the two terms as synonymous
(Sollas 1913, Basedow 1914, Howchin 1921, 1934; Campbell and Noone 1943;
Mitchell 1947, and others).

For the purpose of discussion of age, either relative or absolute, of stone
relics of aboriginal occupation, clear definitions of the terms to be used are
necessary and distinctions between them must be well understood. As defined
by the present writer, patina is not weathering, but is an extremely thin sur-
face film or skin, too thin for measurement except by special laboratory tech-
nique.

Except for the rare instances, where the effects of weathering are in their
early stages and noticeable as a thin film only of altered material on the
surface, there is no difficulty in distinguishing patina from weathering.

In view of the fact that the weathered zone has been observed to range in
thickness from an initial film or veil to inches and even greater, with all
gradations in between, and in some instances affecting the whole rock mass, it
is obvious that the off-white to cream-coloured alteration zone developed in
exposed flint must be distinguished from patination. If specimens in which the
whole of the rock has not yet been weathered are broken across, a core of dark
and apparently unchanged flint is seen surrounded by a zone of light-coloured
weathered material. A noticeable feature is the approximate reproduction of
the outer surface by the unaltered core of the original shape of the specimen,
whether beach pebble or human artifact.

Sollas in his excellent discussion does not distinguish between weathering
and patination and used them as equivalent terms.

However, he distinguishes an inner and an outer patina. He writes:- "The
white crust is evidently a residual effect of solution but the patina is some-
thing besides. Its outermost part is an extremely thin impervious film or
skin"..."It is to the presence of this skin that the patina owes what little
lustre it possesses..."

In the writer's opinion patination is a process which results in products
different from those of weathering and is, in the great majority of instances,
easily distinguishable. As defined herein, patination of rock and mineral
surfaces is the formation of a thin veil or coating, generally of molecular thickness, produced on the surfaces of unaltered material or on the weathered crust of the rock or minerals. As can be seen in many specimens from the Lower South East region of South Australia, relatively freshly broken flint pebbles exhibit a white weathered crust or zone which may or may not possess a patinated glossy surface ranging in colour from off-white through cream to yellow and orange, and, if weathering has not affected the whole of the interior of the stone, exposes a core of the original dark flint (brown to dark grey to black).

In cases where flaking has occurred at different times the colour of the flaked surface ranges from the original dark grey to black on the newest surface through blue, greyish blue, grey and white on progressively older surfaces, their relative ages determinable by overlapping areas of flake removal.

Such bluish surfaces (blue patinas of Sollas, 1913), can be found also where flakes occur on former native campsites, all of them at least 100 years old. On some sites all flakes have developed this thin film but of varying thicknesses probably depending on the age of manufacture. Such a film is not patination but the initial stage in the weathering process.

Patination of materials other than flint is of importance in other areas. In the drier areas of the interior of South Australia, patination affects, for example, the surfaces of slates, limestones, quartzites and igneous rocks, but although it forms a veil or coating on weathered and unweathered rocks, it is distinct from the weathered crust where such a feature exists.

Variations in the thin veneer have received distinctive names the commonest being known as DESERT POLISH. The glass and lustre of this form of patination are produced by the frictional action of wind-blown sand and dust.

Another coating referred to by previous authors is known as DESERT VARNISH. A good example occurs at Kalleamurra Waterhole on the north bank of Cooper's Creek east of Innamincka, the location of numerous petroglyphs. Both the original cream-coloured semi-quartzite and the designs gouged in its surface are coated with a black material. Its thickness is variable but averages about 1/5 of a millimetre. The coloured component of the coating consists of manganese oxide with strong traces of iron oxide. The thickness and nature of the coating are such that they cannot be referred to as a patina, especially as the surface of the coating exhibits in places the lustre of patination impose on it since the coating was formed.

Like many of the petroglyphs in South Australia the surface features, whether they be patina or desert varnish, have developed again in those places where they were destroyed when the grooves were made.

For archaeological purposes it is important to determine the rates of formation of these surface features and to reach agreement on the definitions and meanings of the terms employed.

This topic has been discussed in more detail in a paper which is awaiting publication.
(Cont'd).

References.


AUSTRALIAN CANOES AND CANOE TREES.

by

Dr. E. Couper Black

The natives living along the coast of Australia had few watercraft and what they had was poor. One can speculate about original inhabitants arriving over dry land, or if they came by sea-going boats, that they had lost the art and desire to build them. The same goes for the Tasmanians whose primitive bark canoes were described by Labillardiere in 1792.

In the main there was no watercraft of any sort from Shark Bay in Western Australia along the south coast to Lakes Entrance in Victoria. From there along the New South Wales coast canoes made of a strip of pliable bark pleated and tied at the ends were used in quiet waters, such as seen by Captain Cook. Going north along the Queensland coast canoes improved, being larger and made of strips of bark sewn together. These extended to the north coast of Arnhem Land. In the Gulf of Carpentaria log rafts were used which continued westwards and down the north-west coast of Western Australia, becoming often single logs to Shark Bay. But for some time before European settlement, and over an unknown period, visiting Malays and Torres Strait Islanders had intro-