NOTICE OF ORDINARY MEETING

The next meeting will be held in the Museum Education Building, North Terrace, Adelaide
at
8.00 p.m. on MONDAY, 25 SEPTEMBER, 1972

AGENDA

1. Apologies
3. Appointment - Council Member.
4. Tabling of Papers and Journals
4. Dr. C.O. Fuller, Principal Medical Officer (Environmental Health), Department of Public Health, will give an illustrated address entitled:-

"HEALTH SERVICES OFFERED TO S.A. ABORIGINES AS OPPOSED TO HEALTH NEEDS DEFINED BY RESEARCHERS"

5. Date of next meeting: MONDAY, 23 OCTOBER, 1972.

R.D.J. Weathersbee,
Honorary Secretary,
C/- South Australian Museum,
North Terrace,
ADELAIDE. S.A. 5000.
Mr. Kevin Sherlock, one of our members currently living in Darwin, translated the following extract from the book, "Die Eingeborenen de Kolonie Sudaustralien" (Aborigines of the Colony of South Australia), written by Dr. Erhard Eymann and published by Dietrich Reimer, Berlin in 1908:

**Chapter XVI.**

**ADHESIVES AND CEMENTS**

As adhesives and cements the Aborigines use organic matter such as human blood, wax, resin and gum.

In the northern half of the Colony blood is used as an adhesive for decorating their bodies and implements with bird-down and woolly plant-substances for secret ceremonies. One also finds in the north that red pigments are sometimes used as an adhesive cement.

Usually they procure the blood by venesection from the median or other superficial arm vein. Sometimes they procure it by puncturing the cavernosum urethrae. To this end they open the artificial slit in the hind-side of the penis and push a sharp fire-hardened stick repeatedly about 4 cm. deep into the lining of the urethra. They catch the blood in a spade-shaped woomera, a piece of bark, or in the hollowed-out hand-grip of a shield made from bean-tree timber.

Wax is in widespread use as a cement only between the north coast and the 16th degree of latitude. The Aborigines of that region call it in their pidgin English "sugar-bag" and distinguish a "hard" and a "soft" type.

---

1. In place of human blood the pupils of Hermannsburg Mission Station use the blood of slaughtered animals for their ordinary corroborees.

2. According to Brough Smith, The Aborigines of Victoria, Vol. I, p.206, part of the account of Messrs. Jardine of their trek from Rockhampton to Cape York comments on "native bees" thus: "It deposits its honey in trees and logs, without any regular comb, as in the case of the former. These deposits are familiarly known in the colony as 'sugar-bags' (sugar-bag meaning aborigine, anything sweet)..." According to this, the word sugar-bag is applied in Queensland not only to the wax but more especially to the honey.
ADHESIVES AND CEMENTS (Cont'd.)

Both are dark-brown and have a strong aroma when heated. In
the air the wax bubbles as it burns with bright, sooty flames,
and pure alcohol dissolves it almost completely. If water is
added to this solution a strong milky cloudiness results.
The "hard" wax is brittle and has a hardness of 1.5. Its
alcoholic solution is reddish-brown and reddens blue litmus
paper. A missionary at the Jesuit Mission Station at Daily
River maintained to me that it was a compound of "soft" wax
and the resin of the root of an ironwood tree. The gentleman
appears though to have been wrong because I was told by the
Aborigines that it comes from the "ends" of bees nests and is
used entirely unadulterated. The "soft" wax can be kneaded
at normal temperature. Its alcoholic solution is brownish
and reddens blue litmus paper little or not at all.

The inhabitants of the northern coastal regions possess a
stronger and harder cement than wax in the resin of the
aforementioned ironwood trees. It encrusts the larger roots
with a several-millimetres-thick layer and has a yellowish
or brownish colouring. They produce it in the following
manner: a finger-thick piece of root is heated in a fire and
then the crust scraped off. The substance obtained is kneaded
under repeated heating on a piece of bark into one mass, at
the same time being repeatedly moistened with fatty sweat
wiped from the brow by finger. In the process the resin
becomes nearly black as a result of charcoal and bark frag-
ments. It has a hardness of approximately 2.5: with it one
can scratch a silver coin and lightly burnish a copper one. It
bubbles as it burns in the air with bright sooty flames. When
heated it spreads aromatic fumes. Apparently it dissolves
only slightly in heated pure alcohol. Its solution is
brownish and reddens blue litmus paper. It is naturally
very easy to confuse the resin with the "hard" wax. If in
doubt we need only heat a little of the substance: if it is
wax it takes on a glossy, greasy appearance, if on the other
hand it is resin it remains matt.

This resin is used in making woomeras.

The ironwood tree (Erythrophleum laboucheri) belongs to the
Caesalpinia genus. Its range of distribution is between
the north coast and the 17th degree of latitude. It reaches
about the size of a pear-tree and has a tall trunk covered
with iron-grey fissured bark. The leaves are pinnate and
resemble remarkably the carob-bean tree (Ceratonia siliqua).
It never appears in large stands.
ADHESIVES AND CEMENTS (Cont'd.)

Not every ironwood tree yields a suitable resin. I once came across an angry Larakia who had wasted much effort in striving, by alternately heating and kneading, to form the scaped-off substance into a ball. When I asked him why he was annoyed he said in broken English: "No good that one, that one man, all the same as you and me. Lubra much better." Then he fetched another root and in the course of four hours concluded the task to his satisfaction.

It is not clear to me what the Aborigine implied by his statement. Certainly it cannot be common knowledge that the resin of only the female tree is useful; for, on the one hand, as far as we know the Aborigines have no knowledge of the sexual life of plants, and, on the other hand, the Erythrophleum genus does belong to the leguminosae family.

The inland tribes use as cement a black resinous substance which looks very similar to that just discussed, but which is derived from grass. The white settlers call this grass, as they do the other South Australian species of the same family, simply porcupine grass.

In the interior there are three species of porcupine grass, namely Triodia mitchelli, T. pungens and T. irritans; near the north coast I now and then saw a fourth species on high rocky hills. All have long spineshaped leaves and appear to be so resinous that, if lit, they will burn fiercely with smoky flames.

Only Triodia pungens furnishes the Aborigines with cement. This plant grows on rocky hills and is permanent in many widespread areas where other plants only spring up after heavy rainfall. In the first year it grows in clumps of about 30-40cm. in height, looking not unlike a curled-up hedgehog; afterwards the inner old parts die off and it spreads little by little over a larger area, kidney or garland-shaped in appearance. On a rough assessment, its range of distribution extends from the 16th to the 20th degrees of latitude. The above-ground parts are almost completely covered by an amber-coloured resin. Such is the secretion of resin that a fresh green bush, damp with moisture, can easily catch fire.

The extraction of the resin is rather time-consuming and laborious. I give here an entry from my journal of the year 1896, which describes it in detail.
"Camp at a waterhole on the Frew River, 15th September.—
In the morning I went with some Aborigines to a hill
which lies to the south and is completely covered with the
porcupine grass which yields resin. They collected about
8-10 large heads of green and dead tufts of grass and
threshed it for a while with a stick on a smooth rock slab.
Upon finishing this process they painstakingly shook the
coarse pieces of plant and tossed them away. What was
left on the stone slab was composed of chaff-type pounded
leaves and stems, sand, and a resin-powder. The mixture
was placed in a large bowl-shaped piece of gum-tree bark
and they sought by winnowing to further separate the
resin from the other ingredients. By dexterous shaking
of the trough, which was held in the left hand, the chaff-
type matter was first separated and then tossed by jerky
movements of the aforementioned hand on to the ground.
Frequently they picked up a handful and let it fall from a
small height so that the wind blew away the light leaves
and sticks. Eventually everything with the exception of
sandy substances was separated from the resin and removed
from the trough to the ground. Of the remainder, they
sought to separate the thinnest resin granules in the same
way in which they had separated these from the leaf and
stick fragments."

The resultant raw material consisted of yellow resin
particles, from powder to pin-head in size, and a small
amount of the aforementioned substances: sand and crushed
leaves and stems. Out of this the Aborigines made a
cement by heating. They proceeded in the following
manner: the larger granules of powder having been heaped
on a smooth stone, two firesticks were held over it,
rendering the surface of the powder black and viscous.
This emulsion was withdrawn and the process with the
firesticks begun anew. In this way the raw material, by
alternately heating it and withdrawing the melting emulsion,
was little by little converted into a solid bituminous
substance. To produce a cement of as uniform a quality
as possible, the substance was rolled with a heated water-
pebble which was rotated by means of a stick into a pan-
cake shape then formed into a ball until the required
quality was reached. This was repeated frequently to
enable the substance to be clarified of larger pieces of
waste material. Finally the remainder of the raw material
was placed in a bark trough and treated with a burning
piece of wood until it began to melt enough to be rolled
out and kneaded."
Using the process just described, 8-10 tufts of grass would yield a lump of resin of approximately the size of a domestic fowl's egg.

This resin cement differs from the previously mentioned one by having a bituminous lustre; though with regard to hardness and strength they appear to be similar. Likewise it burns frothily with a clear, bright smoky flame and spreads considerable heat and a tart aroma. It is dissolved by boiling in pure alcohol. Also the alcoholic drops redden blue litmus paper. Pieces of leaves and twigs are of course everpresent in the mixture; yet they do not impair the strength of it if the amount is small.

Since this cement is tough and not very brittle it is used for diverse purposes. No trouble or privation is too great in its acquisition. So, for example, a "boss" of the West Arunta will journey for some days with only a woman for company nearly 55km. from their horde's camping-place into exceedingly inhospitable regions to procure it.

It appears that in the Tennant's Creek region by way of exception another resin serves as a cement. That is to say, south of this creek I found in an abandoned shelter a hand-sized stone that was covered on its upper smooth surface with a reddish, slightly friable resin, and a trough-shaped piece of bark that had held resin in a molten liquid state.

In the regions of the great depression between the MacDonnell Ranges and the Flinders Range where Triodia pungens does not grow, the Aborigines use as a cement a substance which they produce from the roots of Leschenaultia (Latonia) divaricata in a similar manner to that which the northern tribes use for the resin of the ironwood tree. I was with the Diari during July and August of the year 1900 but I was unable to obtain any of this substance as the plant concerned was dead at this time of the year. According to Maiden1 they do not use a resin, but on the contrary a gummy-natured root extraction. This particular tribe burns L. divaricata lesser and produces the cement kandri from the roots.

I have yet to mention the substances used by the Marrnyngeri as adhesives and cements. I have heard from the old people of

---

ADHESIVES AND CEMENTS (Cont'd.)

this fast-diminishing tribe that these are the resin of the native pines (Frenela robusta and F. Rhomboidea) and the gum of wattles (Acacia sp.). Of the varieties of the last-named species an ample excretion of gum is obtained in particular from Acacia pycnantha. The gum is said to be only a little inferior to gum arabic in quality.

According to reports of different writers on the Aborigines of the south coast, the resin of both grass-trees (Zanthorrhoea quadrangulatis and X. semiplana) is used as cement. So, e.g., says J.D. Woods in his book on the Colony of South Australia: "These grass trees exist in thousands on the sandy flats in the Ninety-Mile Desert, which lies between the Murray River and the Victorian border. The roots of these plants are edible; the gum, when it could be procured, was used by the natives to fix stone points on to the wooden shafts of their spears and to fasten axe heads fashioned of stone to their helves, as other paleolithic savages did in earlier geological epochs." The Narryrneri however, as far as their oldest people can recollect, have never used it in the manufacture of their axes nor of spears armed with stone chips.

Chapter XVII.

PIGMENTS

Peoples who are living in a primitive state take pleasure in decorating their bodies and their possessions with vivid colours. It is noticeable how frequently red is used in this way.

The Australian Aborigines form in this respect no exception. Amongst any dozen of them one would find as a rule one or more who have smeared the face, chest, hair of the head, or even the entire front of the body with paint. Almost all objects which they have made with their hands have a red colouring, and many are decorated as well with striking multicoloured paintings. In the larger camping-places one always finds smooth stones lying which, being covered with freshly mixed paint, leave us in no doubt that painting or staining is a common pursuit of the Aborigines.

In South Australia only red, yellow, white and black pigments are used. The sequence in which I have listed them accords approximately with the frequency of their use. Red is the favourite colour of the Aborigines, since, as with most peoples not on a highly spiritual plane, it brings them greater pleasure than other colours. Red is applied copiously to the most petty objects, being available in superior quality at many places. It is noteworthy that blue and green are not used although copper carbonate is found at many places in the Colony. Perhaps they avoid it because of its great toxicity. Likewise brown proves not to be valued; this is all the more noticeable as earthy light-brown and dark-brown varieties of brown iron-ore are by no means rarely come across.

Red is found in several shades. In most frequent use is a blood-red colour; but more-or-less cinnabar or crimson pigments are also used. Yellow usually has a particularly brownish or reddish tinge.

They extract the pigments, with one exception, from the mineral world. They are as follows: red ironstone, brown iron-ore, limestone, gypsum, china-clay, manganese dioxide and charcoal.

The locales of good pigments become highly prized; upon their discovery people come from great distances.
Customarily they use only the ochrish varieties of red ironstone, the red iron-ochre often being considerably tainted by clay, etc., sometimes though they use also oolitic ironstone, iron-cream and so on for the preparation of red paint. Moreover they are in the habit of transforming brown iron-ochre by heating with red iron-ochre. This process bestows a beautiful red upon discoloured red iron minerals.

At some places in the Colony the Aborigines procure red ironstone of excellent quality. From the Mission Station at Daly River, I visited the locality near Mount Tolmer which is far-famed amongst the tribes of the north. It belongs to the Awarai and is close to an abandoned tin mine on the summit of a small hill. The friar who escorted me called it Corrorai Mine. In the language of the Awarai it is called jallejalle. The Aborigines have developed a mine-pit of irregular shape. The size of the pit is about 10 cubic metres. The wall consists of a sandy ferric-oxide mineral which stains the finger a blueish-red. It is overall smooth and bears no marks of blows, the Aborigines apparently supplying their own requirements for pigments by scraping with a stone-chip or something similar. The entrance, which descends almost vertically and is roofed over by a deep-red natural rock arch, is so narrow that an adult person can only squeeze through with some effort. A similar red ironstone mine, called by the Awarai tjatjerring, is situated near the 46-Mile Station. A larger red ironstone site of the northern tribes is found near the Roper River. From a Tjauen I obtained a fist-sized lump of oolitic iron-ore that came from there and was said to be for the preparation of pigment. The Waramunga produce a large part of their pigments in the rocky hilly terrain to the south of Renner Springs Station. Provided the information given to me by a bushman is correct, the Arunta are also in possession of a large ironstone mine. The manager of Owen's Springs cattle station, which is situated at the 24th degree of latitude on the Hugh River, told me that on the station property he once came by chance upon an approximately 12 feet deep hole in red ironstone, the walls of which bore ample evidence of having been worked with crude implements.

Of the types of brown iron-ore to be found, as far as I know, only the yellow-brown iron ochre is used. It is to be found in abundance almost everywhere so its production provides no difficulty.
PIGMENTS (Cont'd.)

Of the three minerals used in the production of white paint, limestone and gypsum can be produced without much effort at a great many places. They use either, but, if I am not mistaken, burn them before use. China-clay is especially valued because it is found in only a few regions. An important site of this is not far from the jalle-jalle mine already mentioned and another to the south of Renner Springs Station.

I wish to emphasize that the number of minerals from which the Aborigines procure a white paint is in all probability much higher than three, there being, besides the china-clay, yet another white clayey weathering and disintegrating products to be found in the Colony.

I must mention, for completeness of account, that I now and then saw how Kaititje, Arunta and related tribes whitened their head-strings by using pulverized gum-tree bark (E. rostrata).

Manganese dioxide (pyrolusite), perhaps because of its scarcity, is highly prized. A deposit of this ore is located in the neighbourhood of Renner Springs Station, there, where red ironstone and china-clay are also obtained.

Charcoal is seldom used by the Aborigines because its lack of adhesion does not furnish them with a very durable dye.

Most tribes keep the pigments in the form in which they obtained them, viz., as powder or irregular lumps. Among the Waramunga, on the other hand, it is the custom to give red ironstone a definite shape by mixing it into a dough with water and making spindle-shaped forms which harden in the sun and possess approximately the hardness of unbaked brick. A lump of pigment of this description which I obtained at Tennant's Creek has a length of 29cm. and a circumference of 24cm. in the middle. This is by no means though the largest that they make. The tribe mentioned treats manganese dioxide in the same way. Moreover, I observed similar lumps of pigment of a smaller size now and then among the Arunta, Da Diari and other inland tribes.

They prepare fluid paint by grinding the required pigment upon a moistened flat stone and obtaining paste at will by diluting with water. To apply the paint they use the index finger or a brush made from a part of a plant.

The hair of the head, pubic aprons, bands, strings and also other objects are first greased and then rubbed with the powdered pigment. For cosmetic purposes they often omit the greasing of the skin, since this is always covered with grease.