
Chamberlain Innocence Committee

New Forensic Evidence

In Support of

**An Inquiry Into the Convictions of
M. and L. Chamberlain**

[the so-called "blue book", as it's cover was blue in colour]

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Notes for those not familiar with Australian terms:

'Torana' - a model of car manufactured by General Motors' Holden division in Australia. Also, GMH = General Motors Holden

'napkin' or 'nappy' - diaper in North America

coin shown in photos for size relation is Australian 5-cent piece, similar in size to US 10-cent piece (dime)

A SYNOPSIS OF
THE IDENTITY OF THE SPRAY
MATERIAL ON THE DASH
SUPPORT BRACKET IN THE CAR
OF
MR & MS M L CHAMBERLAIN

L N Smith

1 ABSTRACT

At the trial of Mr and Mrs Chamberlain, scientists who appeared for the Crown told the court that material in the spray pattern on a bracket removed from under the dash of the Chamberlains' family car was blood. Further, tests conducted by Mrs J Kuhl on material from the spray pattern showed that it had come from a baby under 6 months of age. Dr A Jones told the court that the appearance of the pattern was consistent with arterial bleeding. Mr Barker QC, for the Crown, told the jury that this spray pattern "came from the child when she was killed."

Clear evidence has been presented to the Attorney General for the NT Government which demonstrates that material in the spray pattern - alleged to be blood by the Crown - is in fact a sand and bituminous compound sprayed underneath the car by GMH to deaden road noise.

2 BACKGROUND

During the trial, defence counsel showed the court a second spray pattern on a bracket which had been removed from another Holden Torana of the same model as the Chamberlains' car. Dr Jones examined the spray on this bracket and noted that it was "a fine spray of similar character" to the one found in the Chamberlains' car.

Before the trial, counsel for the Chamberlains had approached GMH for help in identifying the spray material on the second bracket. GMH provided a list of possible spray materials, but were unable to identify either the material or its source. After an unsuccessful appeal to the Federal Court of Appeal in 1983, Mr S Tipple, the Chamberlains' solicitor, requested the author to examine the spray patterns on the two brackets. The commission was to find an explanation for the similarity of the two patterns, since one of them was supposed to be an arterial spray of blood.

An examination of about 40 Holden Toranas showed that about ten percent of this model car had a spray pattern on the bracket corresponding to the one in the Chamberlain car.

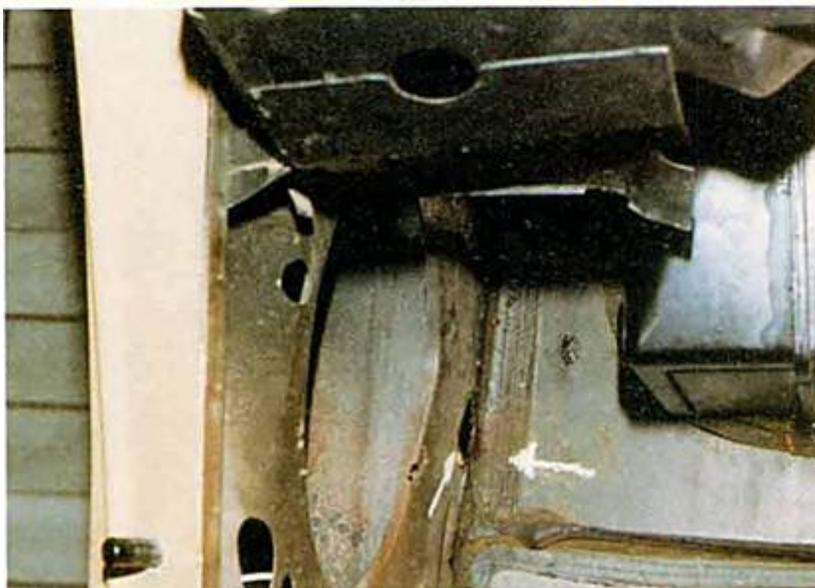
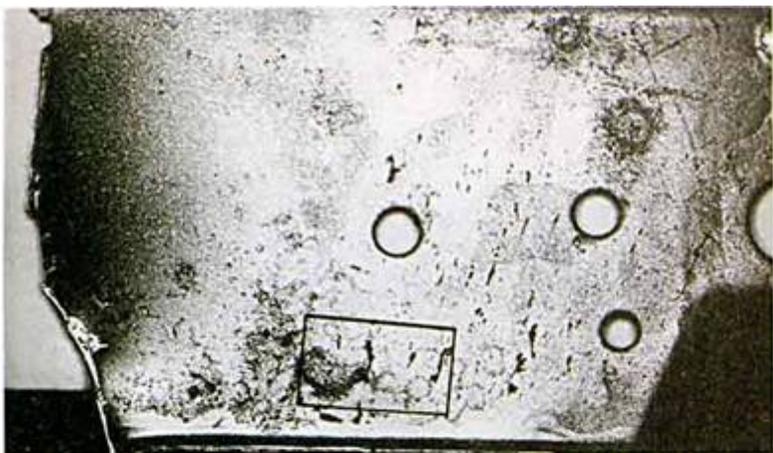
3 IDENTIFYING THE SOURCE OF THE SPRAY

The distribution of the spray material on all of these brackets suggested a common spray source for the material on each of these brackets. A photograph of the spray on the Chamberlain bracket was used to determine whether this spray also shared the same common source as the others. This was done by extending the line of individual spray marks back toward their origin.

Photograph 1. (top) The bracket removed from the Chamberlains' car. The so called blood-spray is the dark pattern on the lower right hand part of the bracket. The area within the box is enlarged in Photograph 7.

Photograph 2. (centre) Another bracket removed from a Holden Torana with a spray pattern similar to that seen on the Chamberlain bracket. Note the apparent source of this spray pattern and its location on the bracket. Compare this with the spray pattern on the Chamberlain bracket shown in Photograph 1, above.

Photograph 3. (bottom) The position of the dash support bracket in the car. This view is taken from the passenger's seat looking toward the firewall. The passenger's door pillar can be seen on the left. The plenum drain hole.



In common with all the other brackets these marks appeared to converge at a point about 200mm in front of the bracket. Calculations based on the geometry of the bracket and the position of the spray showed that the spray always hit the bracket at an angle of about twenty-two degrees. The basis of these calculations are shown in Figure 1 below.

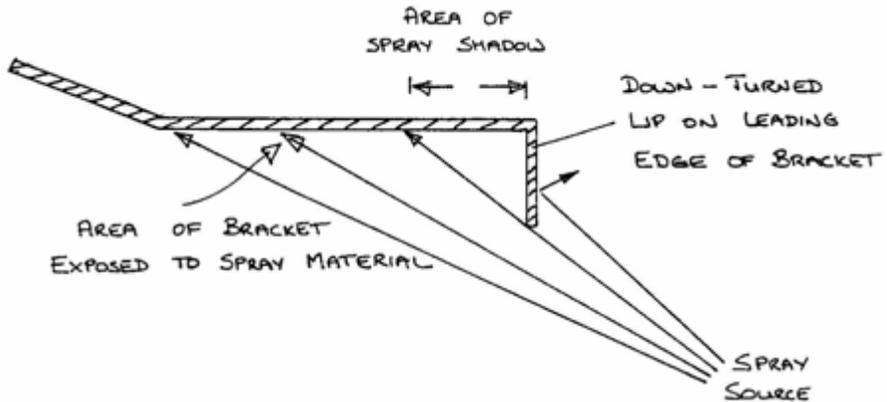


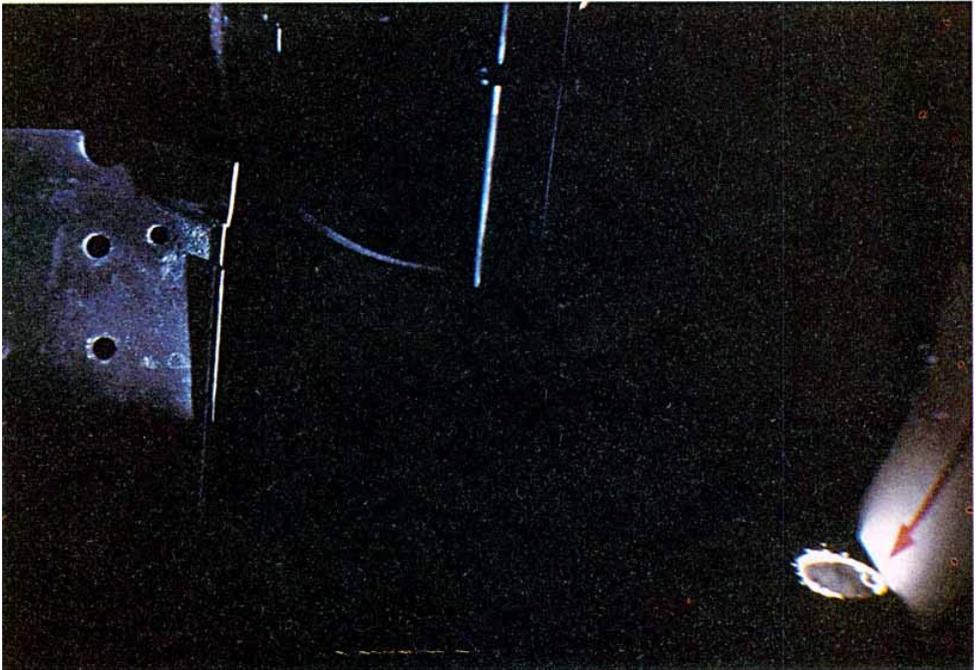
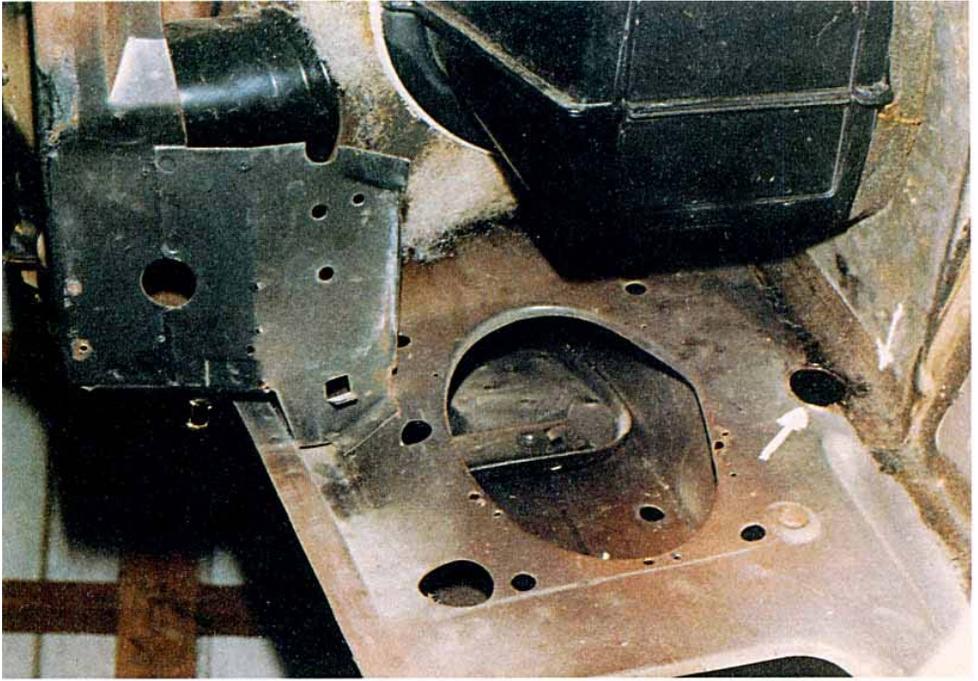
Figure 1. A side view of the dash support bracket, showing how the down-turned lip on the leading edge of the bracket protected the area close behind it from spray material. This protected area is referred to as a "spray shadow". The angle at which the spray hit the bracket can be calculated using trigonometry, given the height of the lip and the width of the "shadow".

By relating these measurements to the bodywork of a Holden Torana, the source of the spray was pin-pointed as a drain hole used to prevent water accumulating in the car's ventilation system. This drain hole, the plenum drain hole, opens into the wheel well of the car, and is arrowed in Photograph 3.

To test the theory that the spray material passed through the plenum drain hole's light beam was shone through this hole onto the dash support bracket. The idea behind this test was simple. Both light and sprayed material travel in a straight line. Therefore the spray material should only be found on the illuminated part of the bracket. By comparing the position of the spray material on the Chamberlain bracket in Photograph 1 with the illuminated area of the bracket in Photograph 5, it is clear that the material on the Chamberlain bracket passed through the plenum drain hole.

Photograph 4 (top) A worm's eye view of a dash support bracket looking up through the floor of the car. This photograph allows details obscured in the photograph below to be easily seen.

Photograph 5 (bottom) A dash support bracket illuminated through the plenum drain hole. Material sprayed through this hole should be found on the illuminated part of the bracket. Compare the illuminated area on this bracket with the area covered by the spray on the Chamberlain bracket.



4 THE IDENTITY OF THE SPRAY MATERIAL

Spray material removed from one of the sample brackets was compared with material removed from the wheel well of the same car using infra-red spectroscopy. This technique, which is somewhat akin to chemical fingerprinting, showed that the two materials were the same,

During the infra-red analysis, sand particles were extracted both from the material in the spray on the bracket and under the wheel well of the car. GMH have advised that a sand filled sound deadening compound is sprayed into the wheel well of the car during the assembly of the car. This compound is known as Dufix and is supplied by Dulux Paints.

Mrs J Kuhl, the forensic biologist who tested a spray particle removed from the Chamberlain bracket told the court that she had discovered that it was human blood containing haemoglobin F. She also noted sediment in the test tube used to dissolve the spray spot. This sediment, probably sand, supports the idea that she was testing Dufix, although she was unaware of this at the time.

The preceding evidence clearly establishes that the spray material on the bracket removed from the Chamberlains' car is Dufix. In confirmation of this, the spray deposits on the Chamberlain bracket look like Dufix, not blood. (See Photographs 6 and 7).

A completely independent observation establishes when the spray material was put on the bracket. In Photograph 8, yellow flecks of paint overspray can be seen uniformly distributed on the bracket itself and also on the Dufix spray material. This paint overspray, which is found on all brackets, was deposited during the assembly process at GMH. Thus the spray pattern must have been deposited on the bracket prior to the painting of the car at the time of its manufacture.

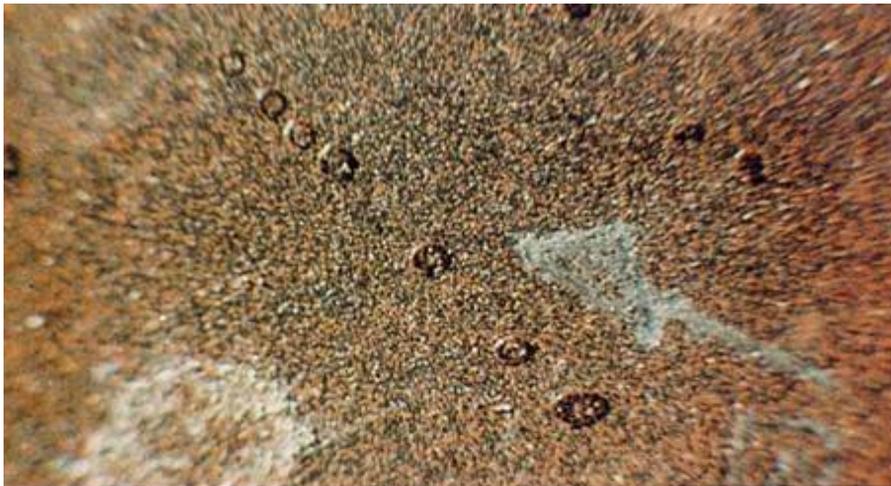
5 CONCLUSION

The evidence outlined in this report shows that the material on the dash support bracket - claimed by the Crown to be human blood containing heemoglobin F - is not blood of any type whatsoever. It is Dufix. Sufficient material to test this claim still remains on the Chamberlain bracket. It is hoped that this report will provide the impetus to have these tests done.

Photograph 6. (top) The appearance of blood which has been sprayed onto a dash support bracket. Note the low profile and raised rim of each of these blood-spots. Compare the appearance of these stains with the material on the Chamberlain bracket, shown below.

Photograph 7. (centre) The appearance of spray material on the Chamberlain dash support bracket. The rugged profile of this spray material is typical of the appearance of Dufix seen on other dash support brackets.

Photograph 8. (bottom) Two spray marks from the Chamberlain bracket, seen at the left in Photograph 7, have been enlarged here to show yellow flecks of paint overspray both on the surface of the bracket and also on the spray material itself. This dates the deposition of the spray prior to the time when the car was painted during assembly by GMH.



A SYNOPSIS OF
THE CAUSE OF DAMAGE
TO
A. CHAMBERLAIN'S JUMPSUIT

R D Bennett

K J Chapman

L N Smith



1 INTRODUCTION

When A Chamberlain vanished from the family tent at Ayers Rock in August 1980 her parents claimed that she had been taken by a dingo. One week later her damaged clothing was recovered and submitted for scientific examination. The damage was mainly confined to the sleeve and collar of the jumpsuit. Photographs 1 to 4 show this damage.

As a result of this forensic examination, the Crown concluded that a dingo did not cause the damage to the jumpsuit. Further, the Crown postulated that the Chamberlains themselves had interfered with the jumpsuit to simulate dingo damage. Mr Barker gave the Crown's view of the significance of the damage.

"Now a great deal in this case turns upon the condition of the clothes. At this stage I simply say none of the damage was consistent with having been caused by a dingo and in fact the damage to the jumpsuit was caused by human hands. It will be proved that the garments - the garment - had been cut with a pair of scissors in a manner the Crown says, calculated to simulate damage inflicted by a dingo." (Trial Transcript, p 69-70)

Mr Barker also asserted that dingoes can only damage cloth by tearing it and are not able to cut it.

"Nothing in the dentition of the dingo is capable of making a mark which can be possibly confused with the mark made by a pair of steel scissors" (Trial Transcript, p 3089).

In a submission made to the NT Attorney General, clear evidence has been provided which shows that the damage seen in A Chamberlain's jumpsuit was not fabricated by a human with scissors, but is consistent with canine damage.

The ability to distinguish between canine and scissor damage has remained a central issue in the Chamberlain case.

Photograph 1. (top) A partial view of the damaged left sleeve in A Chamberlain's jumpsuit. At the top, centre left and centre right, note the arcs of damage which are comparable in size and shape to the canine central incisor damage shown in Photograph 13.

Photograph 2. A partial view of the damaged sleeve of A Chamberlain's jumpsuit. The circumference of the damage seen here is about 100mm. It is formed from about 10 small cuts joined end to end. These small cuts range in length from about 8mm up to 15mm. Compare the size and appearance of these cuts with known canine cuts, shown in Photograph 12.



In his judgement for the Federal Court of Appeal, Jenkinson J (p 66) noted:

"But in my Opinion the whole of the evidence was such as to require consideration of the hypothesis... that it was the appellants or one of them who had interfered with the garments in order to conceal the murder of the child."

Referring to the same matter in the High Court, Gibbs C J and Mason J (p 29) noted:

'In our opinion it was clearly open to the jury to prefer the evidence of the Crown witnesses.'

2 THE EXPERIMENTAL BASE FOR THE CROWN CASE

The crown experts found no information in the literature which would enable them to deduce the cause of damage to A Chamberlain's jumpsuit, and so set out to obtain the necessary knowledge by experimental investigation. They investigated damage caused by canines, scissors and other means to Bonds terry towelling from which A Chamberlain's Gro-wear jumpsuit was made. All references to fabric in this report are to this cloth.

2.1 Dr Brown's Control Experiment

The Crown carried out only one experiment to obtain canine damaged jumpsuit fabric. In this experiment at the Adelaide Zoo, a kid goat carcass was fitted with a jumpsuit, singlet and napkin. A dingo removed the carcass from the clothing and in the process undid 2 press studs.

Photograph 3. (top) The V cut in the collar of the Chamberlain jumpsuit. The length and appearance of these cuts led the Crown to argue that this damage could only have been caused by scissors. However further evidence now shows that such damage is entirely consistent with canine action. The stretched nylon thread, at the angle of the V is attached on both sides of the cut. This is inconsistent with the action of scissors.

Photograph 4. (centre) The cut in the collar of A Chamberlain's jumpsuit adjacent to the press stud. The semi-detached tufts, stretched nylon threads and appearance of the severed thread ends are all typical of canine action.

Photograph 5. (bottom) An enlarged view of damage from A Chamberlain's jumpsuit, also shown in Photograph 1, lower left. The appearance of this damage, which shows a striking resemblance to known canine damage, should be compared with the canine damage shown in Photograph 15.

A section of the jumpsuit collar 110mm long was missing. The resulting edge showed damage characteristics which Dr K Brown attributed to the carnassial teeth. A tear 31mm long was found on the front left hand side of the jumpsuit. The singlet was heavily bloodstained and a portion of the front and left shoulder was missing. The remaining damaged edge showed characteristics of canine teeth marks. Two small irregular holes 10mm apart were found on the front at the base of the left shoulder strap. A third similarly shaped hole 8mm x 3mm was found 5cm below the other holes.

This experiment produced the only sample of canine damaged jumpsuit fabric used by the Crown experts as a control. Although it exhibited "features attributable to the action of canine carnassial teeth", "the most notable aspect of this jumpsuit was that it was heavily contaminated with dirt ... and this prevented proper visualization and prevented characterisation of the mode of [nylon] fibre fracture." (Report M. Chaikin p 5)

2.2 Sergeant Cocks' Simulation of Damage to A Chamberlain's Jumpsuit Using Scissors

Sgt F B Cocks (of the South Australian Police Technical Services Section) used an intricate series of cuts to simulate the damage to the Chamberlain jumpsuit. The appearance of this damage is shown in Photographs 6, 7 and 8. We use the sample he produced in demonstrating this technique to the court as the control for scissor damage.

3 AN ANALYSIS OF THE CROWN CASE

The Crown's case concerning the damage to the jumpsuit was based on three hypotheses:

3.1 That a canine could not grasp a body without producing damage attributable to the four canine teeth.

This hypothesis was proposed by Dr J Cameron, a Forensic Pathologist and Mr B G Sims, a Forensic Odontologist, both from the London Hospital Medical College. Their hypothesis is invalidated by other Crown evidence.

Photograph 6 (top) and Photograph 7. (centre) Scissor cuts in the arm of a test jumpsuit. These were produced in the courtroom by Sgt Cocks, to demonstrate how the Crown believed the damage in the Chamberlain jumpsuit had been caused.

Photograph 8. (bottom) The cut shown here in the collar of a test jumpsuit, was produced in the courtroom by Sgt Cocks to demonstrate how the Crown believed the collar cut in the Chamberlain jumpsuit had been made.



Chaikin's experiment showed that a canine tooth could penetrate a cloth covered rabbit carcass to the depth set by the gum without permanently deforming the fabric. This experiment supported Orams' position for the defence that canine action could produce isolated small holes.

The other two hypotheses may be considered together. These were:

3.2 That the Chamberlain jumpsuit had been cut.

3.3 That canine teeth cannot cut, and could not have caused the damage to the Chamberlain jumpsuit.

A number of tests were proposed to establish the validity of these hypotheses. These were:

(i) The presence of cotton tufts along the cut line.

(ii) The appearance of cut thread ends where the ends of constituent fibres lie in a plane.

(iii) The absence of distortion of the nylon fabric base near cut edges, but its presence when sufficient stress is applied to the fabric base to cause tearing.

(iv) The presence of cuts longer than the cutting surfaces of canine teeth.

(v) The appearance of symmetry in the damage-pattern.

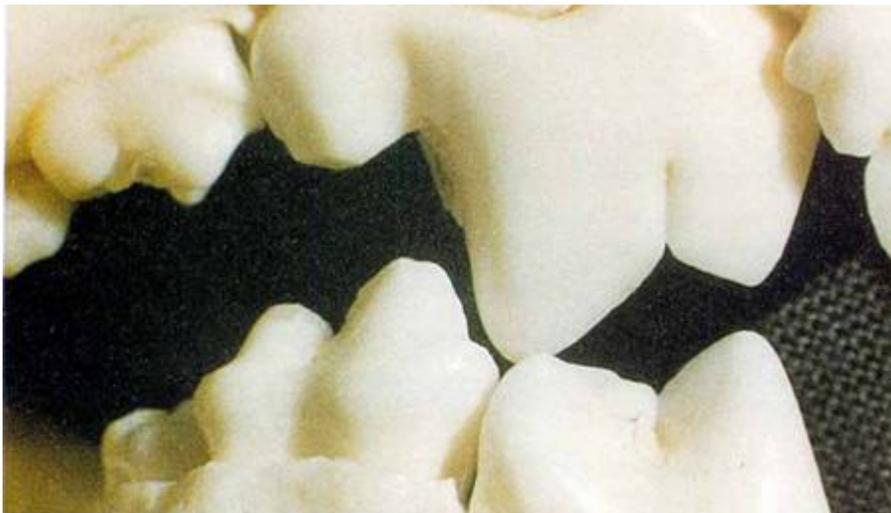
The Crown experts found all these features in the damage in the Chamberlain jumpsuit and so each test was fulfilled in the affirmative.

Photograph 9. Canine carnassial teeth. These teeth are used in the typical gnawing action associated with a dog when it chews a bone. R F Ewer, author of *The Carnivores* describes the action of the carnassial teeth as follows:

'The two constituent cusps [teeth] do not form straight lines but are arranged so that each blade has the shape of a wide open V. This increases efficiency by preventing the meat from slipping out forwards, and makes the action really more comparable with that of pruning shears than of ordinary scissors.'

Photograph 10. A cotton tuft, produced when the pile in Bonds towelling fabric is cut with a sharp instrument. At the trial the court was told that the presence of these tufts constituted the strongest possible evidence that A Chamberlain's jumpsuit had been cut with scissors. It was not possible - the court was told - for dingo teeth to produce tufts such as these. The tufts shown in this photograph were produced by the action of canine teeth.

Photograph 11. (bottom) The appearance of a group of threads seen in a sample of canine damaged fabric illustrates the cutting ability of canine teeth.



The hypothesis that the Chamberlain jumpsuit is cut is therefore valid.

The single sample of canine damage presented by the Crown gave negative results for all the proposed tests. From this, the Crown concluded that canine teeth do not cut and that therefore the Chamberlain jumpsuit must have been cut by a human, probably using scissors.

If these features are found in known canine damage, then the Crown's hypothesis that canine teeth cannot cut is in error. Given the fact that the Crown's conclusions were based on a single sample of Canine damage, this aspect warranted further investigation.

4 NEW EXPERIMENTS GIVING SAMPLES OF CANINE DAMAGED FABRIC

This report is based on a series of experiments in which canines extracted meat enclosed in either jumpsuit sleeves or bags made from jumpsuit fabric. These samples were presented at the dogs' regular mealtimes, and their actions were observed. When the meat had been removed, the sample was recovered. All samples illustrated here were damaged by a female Kelpie/Border Collie cross.

Photograph 12. (top) The damage seen in this photograph illustrates a number of typical canine damage features found in A Chamberlain's jumpsuit. The zig-zag cut, about 100mm long, is formed from a series of smaller cuts, each about 12mm long, joined end to end. The cut in the sleeve of the Chamberlain jumpsuit (Photograph 2) is likewise formed from a series of 12mm cuts.

Abrupt changes in the direction of cut, such as seen in the zig-zag here are found in canine damage patterns. Compare this with the abrupt change in direction of the V cut in the Chamberlain jumpsuit collar, shown in Photograph 3.

Photograph 13. (centre) The repeated arcs of damage in this fabric sample (lower left) show the damage resulting from the use of a dog's central incisors in an action reminiscent of a dog hunting fleas.

Photograph 14. (bottom left) The tuft shown in this photograph of canine damaged fabric is still attached to the main body of cloth by one or two fibres. Semi-detached tufts such as these are caused by small irregularities in the animal's teeth, but do not usually result from the action of scissors. A comparable tuft in the Chamberlain jumpsuit can be seen in Photograph 4.

Photograph 15. (bottom right) The tails of fabric shown here were created when a dog secured the fabric with a paw, grasped the other end of the cloth between her central incisors and raised her head (cf Photograph 5).



4.1 Evidence that Canine Teeth Do Cut and Do Produce Symmetrical Damage Patterns

These samples of canine damage show that each of the Crown's tests to distinguish canine damage from scissor cuts is invalid.

(i) Cotton tufts are produced along severance line cut by canine teeth (Photograph 10). The component fibres of the tuft end in a plane. [Chaikin did not find tufts in the Crown's single sample which Sgt Cocks had previously vacuumed.]

(ii) Thread ends where all the constituent fibres end in a plane occur in canine damage with a frequency similar to that in the Chamberlain jumpsuit (see Photograph 11).

(iii) The absence of distortion adjacent to the severance lines seen in Photographs 11, 12 and 16 is as obvious as that in the Chamberlain jumpsuit (Photograph 17). This may be compared with the scissor cuts in Photographs 8 and 18.

(iv) Cuts longer than the cutting surfaces of canine teeth are produced when the line of one cut is continued by sequential cutting actions of the canine's carnassial teeth (see Photograph 12).

(v) Symmetrical patterns of damage were found in many canine samples. Holes about 70mm in diameter were often made to gain access to the food. See Photograph 13.

4.2 Differences between Canine and Scissor Damage to Fabric

The samples of canine damaged jumpsuit fabric now available also exhibit a range of damage features not found in scissor cut fabric, but which are found in the damage to the Chamberlain jumpsuit. These features include:

Photograph 16. (top) The appearance of a fabric edge cut by canine teeth.

Photograph 17. (centre) The appearance of the cut fabric edge in A Chamberlain's jumpsuit.

Photograph 18. (bottom) The appearance of a scissor cut edge of fabric.



(i) Single or repeated arcs of damage, attributable to the action of the canine's central incisor teeth are seen in Photograph 13. The arcs measure about 10mm across the cord of arc. It is common to see "tails" of fabric between adjacent crescents. Compare these with arcs of damage in the Chamberlain Jumpsuit (Photograph 1).

No corresponding arcs of damage can be seen in the jumpsuit which was damaged with scissors by Sgt F B Cocks (Photographs 6 - 8).

(ii) Straight cuts accompanied by discontinuities in the damage line every 10 to 20mm suggest the use of the carnassial teeth. These discontinuities are usually either changes in direction of the cut or a small group of threads which are not cleanly cut as seen in Photograph 12. Compare this with Photographs 2, 3, and 4 of the Chamberlain jumpsuit.

Compare the quality of the cut edge from the Chamberlain jumpsuit with the canine cut and scissor cut in Photographs 17, 16 and 18 respectively.

(iii) Discontinuous cuts where two cuts appear in a line with a short section of uncut fabric remaining.

(iv) Irregularities in the severance line such as those shown in Photographs 19 & 20 are characteristic of canine damage. Contrast this with the scissor damage lines in Photograph 21.

(v) Cotton threads extending beyond the severance line by up to several cm are common in canine damaged samples, but are produced with scissors only by deliberate manipulation (compare Photographs 2 and 16).

(vi) Stretched (frizzy) nylon threads along severance lines indicate the cloth has been subjected to significant stretching forces. Compare Photographs 19, 20 and 21. In some examples of canine damage such thread ends join the two sides of a cut. Photograph 3 shows such a thread in the collar of A Chamberlain's jumpsuit.

(vii) Matted and chewed sections of damage where the canine has joined or attempted to join two cut sections by chewing the intervening fabric.

Photograph 19. A common appearance of fabric cut by canine carnassial teeth.

Photograph 20. The appearance of the damage line in the sleeve of the Chamberlain jumpsuit.

Photograph 21. The typical appearance of fabric cut by scissors. This damage seen here is from the jumpsuit cut by Sgt Cocks.

These photographs allow a 3 way comparison to be made between the damage in the Chamberlain jumpsuit and known canine damage. Such a comparison can be used to determine whether a difference exists between known scissor damage and the damage in the Chamberlain jumpsuit.



(viii) Semi-detached tufts attached by a few threads to the fabric. See Photographs 14 & 16 and compare these with Photograph 4 of the Chamberlain jumpsuit.

(ix) Small Holes, 2-5mm across, are found in otherwise undamaged areas of fabric where one or two threads are cut by a canine's tooth. These correspond in appearance to small holes found in the back and label of the Chamberlain jumpsuit (Compare Photographs 25 and 26).

(x) Tissue or meat fragments. During microscopic examination of canine damaged samples and the Chamberlain jumpsuit, fragments of material such as those seen in Photographs 27 and 28 were noted. In the canine damaged samples the material is meat fragments.

The features of damage to the Chamberlain jumpsuit are indistinguishable from known canine damage. Many of these features are not found in scissor damage contrived to simulate the damage in the Chamberlain jumpsuit.

5 CONCERNING THE POSSIBILITY OF FRAUD

It is inconceivable that without detailed knowledge of the features of damage caused by canines, such damage could be duplicated by chance. Thus, in the light of what is now known a postulate of fraud would go beyond the Crown's original position. The Crown's postulate was that the Chamberlains produced a random damage pattern with characteristics unlike canine damage. It was not suggested that the Chamberlains knew what canine damage looked like. If the Chamberlains had this knowledge, there would be no purpose in the fraud if they did not use this knowledge in their defence.

Photograph 22. (top) The damage seen here typically occurs when two cuts made in the fabric by a canine have not met and the animal has mauled the intervening fabric. Note the curled edge of the material, and the general matting of the threads where the two cuts come together.

Photograph 23. (centre) The damage shown here is an enlargement of the cloth tail seen in the Chamberlain jumpsuit sleeve, Photograph 1, centre right. The appearance of this damage should be compared with that seen above.

Photograph 24. (bottom) This damage, from the Cocks jumpsuit occurred when two scissor cuts did not meet and the intervening fabric was torn apart. Compare this with the damage seen in both photographs above.

These photographs allow a 3 way comparison to be made between known canine damage, scissor damage and damage in A Chamberlain's jumpsuit. They show that over short distances canine teeth can cut as well as scissors, and that features other than the presence of cuts are necessary to distinguish between scissor and canine damage.



6 CONCLUSION

In considering the range of damage seen in A Chamberlain's jumpsuit, a number of features which were inconsistent with the scissor theory were noted. The hypothesis that the jumpsuit of A Chamberlain was damaged by human agency, with scissors, is highly unlikely, and inadequate to explain the full range of damage observed.

The damage observed in A chamberlain's jumpsuit has been compared with known canine damage. The correspondence between known canine damage and the damage observed in the Chamberlain jumpsuit is clear, thus demonstrating the high probability that a member of the canine family was responsible.

Photograph 25. (top left) A number of small isolated holes were found in the centre back of A Chamberlain's jumpsuit. The court was told that if holes such as the one shown here had been caused by a dog they could not occur in isolation from other holes or damage.

Photograph 26. (top right) One of a number of isolated holes found in canine damaged fabric.

Photograph 27. (bottom right) A meat fragment embedded in the fabric by the animal's teeth.

Photograph 28. (bottom left) Small fragment of material seen in the left arm of the Chamberlain jumpsuit.

These fragments should be compared with meat fragments embedded in the fabric by the animal's teeth in Photograph 27.



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CONFIDENTIAL

MESSRS. BRENNAN, BLAIR AND TIPPLE
SOLICITORS AND ATTORNEYS
2 BAKER STREET
GOSSFORD 2250
NEW SOUTH WALES

18 SEPTEMBER 1984

Dear Sirs,

RE: CHAMBERLAIN

In your letter of 27 August 1984 you have asked me to examine hairs that were removed from clothing and are held in the safe custody of the High Court.

I have examined the hairs on the 17 September 1984. They were permanently mounted on two microscope glass slides labelled DW1 and DW2. Subsequently the hairs could only be examined the way they appeared as a whole mount. The possibility to also cross-section the hairs or to take scale prints of them would have provided useful, confirmative information.

Results:

Slide DW1 contained three guardhairs of dog, one human hair and one unidentified fibre.

Slide DW2 contained three guard hairs of dog and one human hair.

Yours faithfully,



Hans Brunner
SENIOR TECHNICAL OFFICER

Enc. Invoice

BEHRINGWERKE AKTIENGESELLSCHAFT
TELEFON MARBURG (0421) 20 21
FERNSCHREIBER 04 42 320
TELEGRAMME BEHRINGWERKE MARBURGLAHN
POSTSCHECKKONTO FRANKFURT/M. 555 99-602
BANKKONTO COMMERZBANK AG, MARBURG 1
NR. 3910023 (BLZ 533 400 24)

Page 30



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Mr.
Stuart Tipple
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2250

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IHRE ZEICHEN	IHRE NACHRICHT VOM	UNSERE ZEICHEN	DURCHWAHL 39	D-3550 MARBURG 1
		Dr. Bd/Ln.	(06421) 202/4255	21. Juli 1983

Manufacturing of Antiserum against Haemoglobin F/ Batch-No. 2456

Antiserum against human haemoglobin F has been produced by Behringwerke since about 1971. It is produced by injecting a number of rabbits with purified haemoglobin F. The rabbits produce antibodies to haemoglobin F in their bloodstream. After six to eight weeks selected rabbits are killed and their serum is collected and pooled after testing for activity and specificity. To remove unwanted antibodies in the serum if necessary, absorptions are carried out. For instance absorption with haemoglobin A is performed to remove antibodies to the alpha chain, which is common to haemoglobin A and haemoglobin F and also with human plasma. After completing quality control procedures, stabilization and sterilization, the pool of absorbed antiserum is given an identification batch-number, such as 2456.

The antiserum against haemoglobin F is then dispensed into bottles, each containing a 1 ml portion, which are frozen and maintained at a temperature lower than - 20°C. From time-to-time, depending on demand, bottles of antiserum are supplied for use. Bottles of antiserum with the same identification batch-number, contain identical antiserum.

an Mr. Stuart Tipple

Marburg/L., den 21.7.1983 Blatt- 2 -

Our company records evidence that bottles of antiserum against haemoglobin F from batch number 2456 were supplied to the Australian distributor from April 1975 to September 1982.

Antiserum against haemoglobin F is not listed in our commercial catalogue since it is produced as a special laboratory product which does not have defined uses. Therefore, the application and suitability for use of the antiserum is the responsibility of the user. Behringwerke does not guarantee that the anti-haemoglobin F antiserum will react only with haemoglobin F in all test conditions.

Following enquiries received from Professor B. Boettcher a series of tests on antiserum to haemoglobin F was conducted, mainly in the period of March and April, 1983. The repeated results of the tests demonstrate the following conclusions:

Firstly, the antiserum has been adjusted to be specific when reacted against plasma proteins in the agar gel double diffusion (Ouchterlony) technique and immunoelectrophoresis.

Secondly, the antiserum might react with other proteins e.g. with cell proteins that have entered the plasma.

Thirdly, non-specific immune reactions can be observed under certain conditions due to denaturation of haemoglobin A in adult blood or due to alteration of the relative concentrations of antigen and antibody.

Fourthly, the antiserum against haemoglobin F of Behringwerke, therefore, is not suitable on its own for the identification of foetal/infant blood and adult blood.

an Mr. Stuart Tipple

Marburg/L., den 21.7.1983 Blatt - 3 -

This statement is made by Behringwerke AG by duly authorised officers namely Dr. rer. nat. Klaus Störiko, General Manager for Production of Diagnostics and Dr. rer. nat. Siegfried Baudner, Production Manager and Head of the Plasma Protein Research Laboratory.

BEHRINGWERKE
Aktiengesellschaft


Dr. Störiko


Dr. Baudner



ANALCHEM

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21st January, 1985.

Ref: 27/85

Mr. Stuart Tipple,
Brennan, Blair & Tipple,
Solicitors,
2 Baker St.
GOSFORD. 2250

Dear Mr. Tipple,

Re: Pr. & Mrs. M. L. Chamberlain

I have examined the document dated 24/11/83, which was prepared by Mr. L. N. Smith, 354 Freemans Drive, Cooranbong, N.S.W., and which is titled "On the Identity of the Spray Material found on the Dash Support Bracket in the car of Pr. and Mrs. M. L. Chamberlain". My opinion on the matters described therein is set out below. I have referred to the second document provided viz., "Appellants Submission re Spray of Underdash Area".

The document deals with three aspects of material found on a bracket taken from the Chamberlain's car.

- (1) The spray pattern
- (2) The morphology of material making up the spray
- (3) The chemical identity of the sprayed material.

My qualifications, as a chemist, relate most directly to item (3) - chemical identification. I comment on the other items on their logical merit, as described.

The Spray Pattern

The information provided by Mr. Smith, which describes the presence of a spray pattern in several Torana cars, resembling the pattern found in the Chamberlain's car, suggests to me that a very close scrutiny should be made of the evidence presented in court concerning this matter. It was asserted by the prosecution that the sprayed material was blood.

Morphology of Spray Material

Mr. Smith's report includes close-up photographs of spray material from the Chamberlain's car in the region from which analysis results indicated the presence of blood. Close-up photographs of spray material from two other cars taken in the same region are also included. The physical characteristics of all three are very similar indeed.

The spray material from all three sources comprised rough textured elongated lumps. The original material sprayed must have had a high solids content. Blood does not have a high solids content and could

.../2

not form such lumps.

I am astonished that the prosecution did not examine the spray material using a microscope. It is an essential first step when attempting to identify an unknown material and should be carried out before the material is removed from the original site. Once it has been scraped off into a bottle it may lose its characteristic shape.

The Identity of Sprayed Material on Vehicle KIE 295

Mr. Smith described tests carried out to identify material which made up the spray pattern on Vehicle KIE 295. He extracted the material with toluene and obtained an infrared spectrum of the soluble material. A similar extract of material used as a sound deadening layer gave an identical spectrum. Dried blood would not behave in this way.

An insoluble, granular residue resembling sand was obtained from both samples. Again blood would not leave such a residue.

It would be possible to carry out these and additional tests on samples from the Chamberlain's car to find out whether the material making up the spray pattern was essentially sound deadening material. While such tests would not preclude the presence of blood on the car, they would show whether the pattern was made up of blood or of some other material.

Conclusion.

The information reported by Mr. Smith is technically sound. Whilst I have not physically checked his results, the data presented has been derived by sensible means, the chemical techniques are appropriate and lead to the conclusions drawn.

I am most surprised that physical evidence concerning the spray pattern was not presented at the trial and feel that this was a most serious omission.

Yours sincerely,



D. V. Clark, PhD.FRACI
Managing Director.

December 28, 1984

Stuart G. H. Tipple
Brennan, Blair & Tipple
P.O. Box 1117
Gosford South
DX 7285 Gosford
AUSTRALIA

RE: Chamberlain Case

Dear Mr. Tipple:

I have carefully evaluated the material sent to me October 9, 1984 and September 3, 1982. Specifically, the items examined were as follows:

- (a) Sample 28.01.84
- (b) Sample 21.06.84
- (c) Sample 23.02.84
- (d) Glass vial containing tufts from sample 23.02.84
- (e) Undamaged jumpsuit
- (f) Trial evidence of Sargent Cocks
- (g) Trial evidence of Professor Chaiken
- (h) Report of L. N. Smith
- (i) Photographs of jumpsuit and singlet

Upon reviewing this material carefully, it appears clear to me that cutting is the primary mechanism responsible for damage to the Azaria Chamberlain jumpsuit. The experimental work of Professor Chaiken leaves little doubt of this. In addition, evidence presented by the prosecution demonstrated that this cutting could possibly have been produced with scissors. It is imperative to realize, however, that this activity was merely postulated. That is, evidence was presented to show that it could have occurred but no direct evidence was presented to demonstrate that it did in fact occur. Being able to reproduce a phenomenon with a combination of operations does not indicate in any way that those operations are the same as the activities actually producing the phenomenon. Prosecution testimony, however, claimed otherwise, "...when you find you can achieve a match, then that is the most likely method that was used...the most likely cut, is the one that I demonstrated here in court" (F. B. Cocks, page 901). The fallacy of this conclusion is obvious since one can reproduce any phenomenon many different ways. As a result, I agree that the damage of the Azaria Chamberlain jumpsuit was caused by cutting, but very strongly disagree that the most likely method used to produce the cutting of the jumpsuit has been shown to be the rather complex scissor mechanism proposed by the prosecution.

Great effort was expended in reproducing damage to the Azaria Chamberlain jumpsuit using scissors and a complex combination of

operations was proposed in surprising detail to reproduce the jumpsuit damage. On the other hand, no experiments were performed to investigate cutting damage to the jumpsuit by canines. This is somewhat surprising in light of the fact that canines such as coyotes are known to be capable of cutting in a way that is remarkably similar to cutting with a sharp object such as a knife. For example, discriminating between these two types of cutting is a common forensic problem when assessing damage to animal skin and requires close examination. It is important to note that the possibility of a Dingo cutting the jumpsuit is not excluded by any of the experimental evidence presented by the prosecution since only brief experiments were conducted with Dingos or Dingo teeth and the circumstances of those experiments involved tearing rather than cutting. Those experiments were bound to fail in reproducing the damage of the Azaria Chamberlain jumpsuit since the Chamberlain jumpsuit damage occurred primarily by cutting rather than tearing.

The new evidence reported by L. N. Smith in his report dated October 2, 1984 constitutes information that is extremely important and relevant to the Chamberlain case. The evidence presented in this report clearly demonstrates that canines are capable of producing the type of cutting damage seen in the Azaria Chamberlain jumpsuit. It is important to note that all the damage of the Chamberlain jumpsuit can be accounted for in a straightforward manner by the results of this study. Furthermore, the results of this study are consistent with what is known about canine cutting of animal skin. This is in contrast to explanation of the damage using the scissor mechanism proposed during the trial which relies on rather complex contortions of the fabric to reproduce the damage.

In summary, it is clear that the damage of the Azaria Chamberlain jumpsuit was caused primarily by cutting. The actual mechanism responsible for this damage can be explained in a straightforward manner by canine cutting and all of the damage to the jumpsuit can be explained in this manner. In addition, none of the experimental evidence presented by the prosecution during the trial excludes canine cutting (vs tearing) as a mechanism for producing damage to the Azaria Chamberlain jumpsuit. Finally, the damage found in the Chamberlain jumpsuit is consistent with that known to be found in animal skins damaged by canines. Explaining the damage by cutting with scissors, on the other hand, requires a complex set of operations and there is no evidence available to conclude that the scissor mechanism is "the most likely that was used" to produce the damage to the Azaria Chamberlain jumpsuit.

Sincerely,



Randall R. Bresee, Ph.D.
Associate Professor, Textiles
Kansas State University
Manhattan, Kansas 66506

An evaluation of the report, 'The Cause of Damage to A Chamberlain's Jumpsuit' (Bernett, Chapman and Smith), contained in a letter from Dr H J Orams, Reader in Dental Medicine and Surgery in the University of Melbourne, to solicitor S Tipple dated 4 March 1985.

"To me this report demonstrates quite unequivocally the close similarity, almost to the point of being identical, between the damage to the jumpsuit of A chamberlain and that caused in the experimental jumpsuit by a member of the canine species.

The detailed description of the characteristics of canine damage to the experimental jumpsuit and the demonstration of closely similar damage features in the jumpsuit of A chamberlain by comparison photography are most convincing. The arguments against fraud are also strong."

PROFESSIONAL BACKGROUND OF THE AUTHORS

NAME Dr.rer.nat. Siegfried BAUDNER

TITLE Production Manager and Head of Plasma Protein Research Laboratory, Behringwerke.

NAME Roland Desmond BERNETT

EMPLOYMENT Product Development Scientist, Australasian Food Research Laboratories, Cooranbong NSW

QUALIFICATIONS B.Sc., (Hons) University of London, 1972
Ph.D University of Newcastle, 1983

EXPERIENCE 1972 Technical Officer, Taubmans, Sydney
1973-1979 Postgraduate Student
University of Newcastle 1980
Product Development Scientist
Australasian Food Research
Laboratories, Cooranbong NSW

NAME Barry BOETTCHER

EMPLOYMENT Professor and Head of Department of Biological Sciences, University of Newcastle, since 1972.
Acting Dean, and, previously (1979-81) Dean, Faculty of Science, University of Newcastle.

QUALIFICATIONS Bachelor of Science, University of Adelaide - 1962 majoring in Biochemistry and Genetics.

Doctor of Philosophy, University of Adelaide-1966 undertaken within the Department of Genetics.
Thesis title - "The Genetical Control of Blood Group Substances in Body Secretions".

PUBLICATIONS Author of approximately 100 scientific papers in the fields of general genetics, blood group genetics, general immunology and reproductive immunology.

NAME Randall R BRESEE

TITLE Eastern Illinois University, B.S. Chemistry, 1971 Southern Illinois University, M.S. Chemistry, 1974 Florida State University, Ph.D. Clothing and Textiles, 1979

EMPLOYMENT Assistant Professor, Kansas State University, 1978-1982. Associate Professor, Kansas State University, 1982-present.

CURRENT TEACHING Polymer Science, Textile Fibers, Textile Yarns, Textile Finishes, Textile Analysis, and Chemical and Optical Analysis of Textiles. Member of Graduate Faculty.

PROFESSIONAL ORGANIZATIONS American Chemical Society International Association for Identification, Kansas Division Phi Lamda Upsilon, Honorary Chemical Society

RECOGNITION Awarded postdoctoral research fellowship by the National Academy of Sciences for Cotton textile chemistry during 1978-79 (fellowship declined).

REVIEWER National Science Foundation Journal of Forensic Sciences

AUTHOR Author of approximately 15 papers.

NAME Hans BRUNNER

EMPLOYMENT Mr Brunner is presently a Senior Technical Officer for the Department of Conservation, Forest and Land. Mr Brunner developed the technique for identifying mammalian hair which was published in 1974 and is used around the world. In Australia users include the CSIRO, Government agencies and Universities.

PUBLICATIONS He is the co-author, with B Cousan, of the definitive reference work 'The Identification of Mammalian Hair', Inkata Press, Melbourne 1974.

NAME Kenneth John CHAPMAN

QUALIFICATIONS B.Sc. (Hons) London 1970 (Physics and Chemistry) M.Sc. Newcastle 1974 (Chemistry)

EMPLOYMENT Tutor in Chemistry, Avondale College. 1970-1973 Postgraduate Student, Uni. of Newcastle 1974-76 Chief Analyst, Australasian Food Research Laboratories, 1977-1984 Laboratory Supervisor, Avondale College, 1985

NAME Doreen CLARK

QUALIFICATIONS B.Sc. (Hons) University of Sydney 1959
Ph.D., University of New South Wales (1964)
Fellow of the Australian Chemical Institute
Associate of the Australian Institute of Food Science and
Technology.

EMPLOYMENT Since 1969 Dr Clark has been the Managing Director of
Analchem Consultants Pty Ltd, which provides a Chemical
Consulting and Testing Service for industry, government
agencies and the public.

NAME Hector Josiah ORANS

MILITARY
SERVICE Royal Australian Naval Reserve, 1956 to present.
Surgeon Lieutenant (D). Reserve decoration, 1972.

QUALIFICATIONS B.D.Sc University of Melbourne 1946
M.D.Sc " 1954
D.D.Sc " 1970

EMPLOYMENT Senior Lecturer In Dental and Oral Pathology 1965
Reader in Dental Medicine and Surgery 1980

FELLOWSHIP Senior Foreign Fellow, National Institute for Dental
Research, 1972.
Visiting Professor, Department of Dental Biochemistry,
Dental School, University of Southern California, 1972.

PUBLICATIONS Author of approximately 36 scientific, case histories and
abstracts.

NAME Leslie N SMITH

QUALIFICATIONS Dip. App. Science, Avondale College, 1974

EMPLOYMENT Plant Development Division, Sanitarium Health Food Company
Senior Scientist responsible for the design and commission
of process control and automation equipment.

NAME Dr.rer.nat. Klaus STORIKO

TITLE General Manager of Production of Diagnostics, Behringwerke.