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Q. Can you calculate age from teeth?

A. Unfortunately - that was the subject of my Masters thesis.

THE PRESIDENT: Q. What was your conclusion?

A. You can while they're developing, which means up to about the age of about 16 years; they're terrific for that. Beyond that, once they're fully formed after 16 years of age, 16 to 18, the age estimation from teeth is very difficult, to the point where, when we give advice on this, we would normally just say "adult", and that would be the broad range. The teeth have finished developing. They are now an adult. That's about all we can use them for.

CMDR RUSH: Q. And these teeth fitted that description?

A. Yes, they did.

CMDR RUSH: They are the matters, sir.

THE PRESIDENT: Thank you very much, CMDR Blenkin.

**<THE WITNESS WITHDREW**

CMDR RUSH: Sir, if I can call Mr George Bailey.

**<GEORGE THOMAS BAILEY, sworn: [10.53am]**

**<EXAMINATION BY CMDR RUSH:**

CMDR RUSH: Q. Mr Bailey, could you state your full name and address to the Commissioner, please?

A. George Thomas Bailey. My address is [REDACTED]

Q. And your occupation?

A. I'm the Senior Objects Conservator at the Australian War Memorial.

Q. What does that role at the War Memorial involve?

A. Principally, my role at the War Memorial involves caring for objects and their collection, preparing them for display and things of that nature.

Q. Do you have qualifications in relation to that role?

A. I have a Bachelor of Applied Science in Conservation of Cultural Materials, and I specialised in objects and

1 metals.

2

3 Q. From time to time, Mr Bailey, are the staff at the  
4 War Memorial called upon to report on various artefacts and  
5 items that are received by them and to engage in discussion  
6 concerning them?

7 A. Yes.

8

9 Q. In that context, was the War Memorial approached in  
10 relation to preparing a report concerning artefacts that  
11 were recovered with the body from Christmas Island?

12 A. Yes.

13

14 Q. Was the report, in essence, split up into three  
15 sections?

16 A. I believe so, yes.

17

18 Q. Do you have the report with you?

19 A. I have parts of it, yes.

20

21 CMDR RUSH: Sir, if I could ask that NHQ.001.0023 be  
22 brought up on the screens.

23

24 Q. What we have there, Mr Bailey, is the header page of  
25 the "Report on the Analysis of Objects Recovered from  
26 a Grave on Christmas Island in 2006", and it notes  
27 yourself, George Bailey, and then two other authors -  
28 Catherine Challenor and Jane Peek. Did each of you prepare  
29 a section of the report in relation to the various  
30 artefacts that you were requested to examine and report on?

31 A. That's correct.

32

33 CMDR RUSH: I tender that report, sir.

34

35 **EXHIBIT #214 "REPORT ON THE ANALYSIS OF OBJECTS RECOVERED**  
36 **FROM A GRAVE ON CHRISTMAS ISLAND IN 2006"**

37

38 CMDR RUSH: Q. In particular, Mr Bailey, did you prepare  
39 an analysis of the fragment of metal that was removed from  
40 the skull of the body?

41 A. I did.

42

43 Q. If we can turn to that analysis, which is at  
44 NHQ.001.0027. In the introduction, you indicate that it  
45 was received in the Objects Conservation Laboratory on  
46 13 November 2006. Just below is a photograph of the piece  
47 of metal located in the skull. You give a description

1 of it in general terms, saying that it is spherical in  
2 shape and approximately 15mm in diameter and it weighed  
3 4.19 grams upon receipt?

4 A. That's correct.

5

6 Q. Upon receipt, did you form any general conclusions as  
7 to what you were looking at?

8 A. My initial reaction was that it was probably ferrous  
9 based, judging by the colour of the corrosion surrounding  
10 it.

11

12 Q. By "ferrous based", what do you mean?

13 A. Steel or iron based.

14

15 Q. After making that initial observation, what was done  
16 in relation to testing?

17 A. I looked at it under a microscope just generally.  
18 I checked to see if it responded to magnets, which is  
19 a strong indication of iron or nickel. So those were my  
20 first initial tests, yes.

21

22 Q. Was it responsive to those tests in relation to iron  
23 and nickel?

24 A. Yes. Yes, it attracted the magnet quite strongly.

25

26 Q. What does that mean in relation to the sort of  
27 analysis that you were undertaking - that it's ferrous  
28 based and had the initial hallmarks of iron and nickel?

29 A. It gives me an indication of what it's probably made  
30 of. Iron would probably be the principal constituent of  
31 what it was originally made of. It would rule out things  
32 like copper, lead and things like that, which do not  
33 respond to magnets.

34

35 Q. Did you test for lead?

36 A. I did.

37

38 Q. What was the purpose of testing for lead?

39 A. I had read reports in the media that it may have been  
40 a bullet, and I was asked to check if it was a bullet. To  
41 me, bullets usually contain lead, so I checked for lead.

42

43 Q. If we can go over the page, under the heading  
44 "Analyses. Test for Lead", you referred to a Merckoquant  
45 Lead Test kit, in the second line, to detect lead. Who  
46 undertook that test?

47 A. I did.

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Q. The results in relation to that test were what?

A. Negative for lead. No trace at all.

Q. What was the purpose of testing for lead in comparison to the preliminary tests that you had done that indicated ferrous - iron and nickel?

A. Some armour-piercing bullets can have a hardened steel outer shell with lead on the inside. That would be one reason.

THE PRESIDENT: Q. The exclusion of lead made it likely that it wasn't a bullet; is that right?

A. That's correct.

CMDR RUSH: Q. There, you refer to a further determination of alloy composition. Was the piece of metal sent for further analysis to try to determine the alloy content?

A. That's correct.

Q. Who was that sent to?

A. It was sent to Dr Ulrike Troitzsch at the Department of Earth and Marine Sciences at the ANU.

Q. She conducted the test that's referred to in that paragraph, noting in the first paragraph, the last two lines:

*The cutting process was very difficult and time consuming because the metal is very hard, much harder than mild steel.*

In relation to a determination as to whether this was a bullet or some other form of munition, was that of any consequence?

A. I believe so, yes. I actually did the cutting of the sample before it went down to Dr Troitzsch. I work with metal quite often. I know how hard mild steel is, and even case-hardened steel. This particular sample was definitely harder than both of those.

Q. What was the significance of that?

A. That led me to think that it was probably from an armour-piercing projectile, something that has a reasonable depth of hardening and is quite well made.

1 Q. Over the page at 0029, the analysis that was  
2 undertaken of the sample is there set out?

3 A. That's right.

4  
5 Q. Was there anything in that analysis that impacted upon  
6 your view that it was hardened steel?

7 A. The manganese and the chromium are typical of hardened  
8 steels. I didn't immediately recognise the silicon as  
9 being a hardening agent, but subsequent research indicated  
10 that it was a possibility.

11  
12 Q. Can you outline to the Commissioner, in very brief  
13 terms, the subsequent research that indicated silicon as  
14 a component of hardened steel?

15 A. Because the percentage of silicon is reasonably high -  
16 usually, in these kinds of alloy, the percentages are quite  
17 small, usually less than a per cent, to my knowledge,  
18 anyway. The fact that the atomic percentage of silicon was  
19 1 per cent is quite a sizeable portion in respect to  
20 alloys, so I then started looking through some of our  
21 metallurgy books at work, reading up on silicon and what  
22 the addition of silicon does to steels. They indicated  
23 that at around 1 per cent they're useful for hardening  
24 purposes.

25  
26 Q. You refer under "discussion" at 0029, in the  
27 second-last paragraph to:

28  
29 *It is also known that, during the Second*  
30 *World War, Germany was using*  
31 *silicon-manganese-chromium steel alloys for*  
32 *armour piercing shells, due to the scarcity*  
33 *of other exotic metals normally used to*  
34 *make high alloy, hardened steels ...*

35  
36 Using that information against the analysis of the metal  
37 sample, did you form any view as to the provenance of the  
38 piece of metal that was being examined?

39 A. In my opinion, and bear in mind that I'm not  
40 a metallurgist, I believe that that's a fairly good  
41 indication that the piece of shrapnel was probably of  
42 armour-piercing German origin.

43  
44 Q. Did you also look at the potential of it being of  
45 Japanese origin?

46 A. No, I didn't. I have received some 1944 intelligence  
47 reports detailing what some Japanese armour-piercing Naval

1 munitions were made of, and none of those bore any  
2 resemblance to this metal.

3

4 Q. In particular, I think you've referred to it at the  
5 bottom of that page and over the page at 0030, the Japanese  
6 armour-piercing projectiles used copper as part of the  
7 alloy?

8 A. That's correct.

9

10 Q. Correct me if I am wrong, but on metallurgical  
11 examination, this particular piece of shrapnel did not  
12 reveal copper?

13 A. That's correct.

14

15 Q. So you set out your conclusions there, Mr Bailey, that  
16 as far as you were concerned, it was definitely not a small  
17 arms projectile, because there was no trace of lead?

18 A. That's right.

19

20 Q. And by "small arms", you mean what?

21 A. By that, I mean rifle calibres and pistol calibres, so  
22 something that a single person would use, as opposed to  
23 20mm cannons and above, which are usually mounted weapons.

24

25 Q. You concluded in the last dot point:

26

27 *. The fragment may be a piece of shrapnel*  
28 *from a German large calibre, armour*  
29 *piercing projectile ...*

30

31 A. Yes.

32

33 THE PRESIDENT: Q. Would you go to that second dot  
34 point. You say:

35

36 *. It is unlikely that the fragment is*  
37 *a piece of German small arms ammunition --*

38

39 that I understand --

40

41 *(20mm, 37mm) because the elemental analyses*  
42 *are substantially different.*

43

44 Is that a view that it did not come from a 20mm mounted  
45 machine gun or a 3.7cm gun?

46 A. That's correct.

47

1 Q. What is the basis for that view?

2 A. I referred to a previous report done at the  
3 War Memorial on the Carley float where they analysed  
4 examples of those munitions, so I used that initial  
5 analysis to compare with what I had done.

6

7 THE PRESIDENT: Is that right, CMDR Rush? I don't recall  
8 a specific War Memorial report addressing either 20mm or  
9 37mm ammunition.

10

11 CMDR RUSH: Sir, in exhibit 208, COI.002.0016, at  
12 page 0045, under sample 7, there is reference to three  
13 examples of contemporary German munition of 20mm and 3.7cm  
14 also being submitted for analysis.

15

16 THE PRESIDENT: Yes. Thank you.

17

18 CMDR RUSH: Q. I take it, Mr Bailey, that it was against  
19 that analysis that you were looking at the specific  
20 analysis of the fragment that was found in the skull?

21

A. Yes.

22

23 Q. Mr Bailey, have you also more recently been involved  
24 in the X-raying of press studs that were located in the  
25 grave of the Christmas Island body?

26

A. I have.

27

28 Q. Have you facilitated X-raying of those press studs by  
29 the Australian Federal Police?

30

A. Yes.

31

32 Q. That has been a process that has been ongoing and, as  
33 I understand it, is still continuing?

34

A. It is still continuing, yes.

35

36 Q. However, there are some results, are there not, that  
37 give us an indication in relation to some letters on the  
38 inside of the press studs?

39

A. That's correct. I think we can say beyond reasonable  
40 doubt that the press stud that I looked at was made by Carr  
41 Australia.

42

43 Q. What letters have been identified on the press stud?

44

A. "CA" of "Carr" and "AU" of "Australia", and their  
45 positions in relation to each other match other examples  
46 that we have.

47

1 Q. So the X-ray report is still to come. You're speaking  
2 before the formal report, but you say "CA" and "AU" have  
3 been identified as letters on the press stud?

4 A. Yes.

5

6 Q. And the War Memorial holds examples that are not  
7 affected by corrosion, by which you're able to compare the  
8 writing on the press stud under examination from the grave  
9 against one that is in good condition?

10 A. That's correct.

11

12 THE PRESIDENT: Q. And it is known that a company,  
13 Carr Australia, manufactured press studs during the 1930s  
14 and 1940s?

15 A. They did, and they still do it today.

16

17 CMDR RUSH: Q. By those comparisons, you reached that  
18 conclusion?

19 A. That's correct.

20

21 THE PRESIDENT: That is of considerable importance,  
22 because it establishes beyond doubt from the location where  
23 the press studs were found in the grave site, as shown in  
24 the previous reports, that the person was wearing  
25 a boilersuit with four sets of press studs from waist to  
26 neck, and that the press studs were of Australian  
27 manufacture.

28

29 CMDR RUSH: Correct, sir, together with some other  
30 identification in relation to the Carley float and other  
31 matters, yes, sir.

32

33 THE PRESIDENT: Yes, and we have in addition the Carley  
34 float in which the body was found, which has markings as  
35 described by two different people on 23 and 25 February  
36 1942. Whilst their recollections were different, they both  
37 identified it as having markings coming from either Lysaght  
38 or "Made in Australia". So there can't be any doubt that  
39 the body which was recovered from Christmas Island and  
40 recently reinterred was in fact the body of a sailor who  
41 came from *HMAS Sydney*.

42

43 CMDR RUSH: Yes, sir. I think they are the matters that  
44 I needed to ask of Mr Bailey.

45

46 THE PRESIDENT: Q. When will we expect to get the formal  
47 report in relation to the Federal Police X-raying and

1 photographing of these press studs, Mr Bailey, do you know?  
2 A. I'm not sure when the final report will be ready, but  
3 I know that they're working hard at it, so reasonably soon,  
4 I would expect.

5  
6 THE PRESIDENT: Thank you.

7  
8 CMDR RUSH: Might Mr Bailey be excused?

9  
10 THE PRESIDENT: Yes.

11  
12 <THE WITNESS WITHDREW

13  
14 CMDR RUSH: Sir, I call Ms Challenor.

15  
16 <CATHERINE MARY CHALLENGOR, sworn: [11.13am]

17  
18 <EXAMINATION BY CMDR RUSH:

19  
20 CMDR RUSH: Q. Ms Challenor, could you state your full  
21 name to the Commissioner, please?

22 A. Catherine Mary Challenor.

23  
24 Q. And your address?

25 A. [REDACTED]

26  
27 Q. And your occupation?

28 A. I'm currently Conservation Manager of paper, textiles,  
29 photographs and art collections at the War Memorial.

30  
31 Q. How long have you worked in that field at the  
32 Australian War Memorial?

33 A. As manager in conservation, just for the past  
34 18 months. Previously, as a textile conservator at the  
35 War Memorial, since 1985.

36  
37 Q. And your qualifications?

38 A. I have a Bachelor of Applied Science in Conservation  
39 of Cultural Materials, specialising in textiles.

40  
41 Q. Ms Challenor, was it in your role then as the senior  
42 textile coordinator that you prepared a report in relation  
43 to the textile components of the artefacts that were  
44 located in the grave at Christmas Island?

45 A. I was senior textile conservator rather than  
46 coordinator, and, yes, that was my role.

47