Scientific Report

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Abstract. In this scientific inform we carry out different experiments in order to give solution to a crime. The victim of the crime is Anne Burth. She is Gordon ward's wife. She is believed to have died in an armed robbery. After having received the case we had to carry out several experiments so as we could in the end find out who the murderer was. We had to do seven different experiment. From each experiment we obtained one conclusion. Taking all the conclusions into consideration we were able to come up with a viable solution

1.INTRODUCTION

Forensic science is thought to be extinct as mentioned in"Observations of modern day forensic science has prompted asking the question of whether this field is in danger of extinction. Although there have undoubtedly been meaningful advancements in analytical capabilities, we have overlooked several unintended practical and philosophical consequences" **[1]**. Because is ts a method that usually has a high rate of error in the experiments as shown in:"Forensic science techniques are often used in criminal trials to infer the identity of the perpetrator of crime and jurors often find this evidence very persuasive" **[2]**. But in 5 years time it will develop enormously because the technology will help lowering the error rates. In every murder the murderer leaves some evidences it is impossible to commit the perfect murder as mentioned in this article:" The perfect murder is a recurring theme in many works of art, high and popular. Scientific inquiry has generally overlooked the issue, though a considerable body of cross-disciplinary evidence documents wide variation in the handling of homicide in human societies"**[3].**

Anne Burth was a young Scottish aristocrat married to Gordon Ward. She inherited the money from her uncle Alfred when he died so she was also in good financial situation.
Alexandra Burth , Anne's sister, who had always been jealous of her older sister Alexandra lived with Anne and Gordon and knew that her sister would never consent to her marrying with a Ross Priory's waiter. If Anne died she would inherit uncle Alfred's money.
James Andrews, Alexandra's boyfriend and Ross Priory's waiter, knew that if Anne died he would have no problem marrying Alexandra.
Bill Thompson is an ex-inmate who after leaving prison took the name of Alan Dougan. The only person who knows his secret is Anne who was threatened by him.
Debbie Anderson was Gordon's secretary, she was in love with him. John Branks suggested the idea that if Anne died Gordon would marry her.
Stephen Blue was a very hard-working young man who was Anne's age. When he was little Alfred gave him a scholarship in Oxford. After leaving, he got into politics and reached the House of Commons in the English Parliament. Anne was the only one who knew his humble roots as it was Anne who gave Stephen the scholarship in a solidarity meeting between poor families that Alfred and Anne attended.

Anne's husband, Gordon Ward proposed divorce to Anne, but she refused.
The incident occurred at the cross road between Ross Loan and the Ross Priory access road, a restaurant near Glasgow. They encountered a man with his face covered with a mask, who pointed a gun at them. He demanded money, jewellery and other belongings. After refusing, the attacker opened the copilot's door and tried to snatch Mrs. Ward's diamond necklace, grabbed his gun and shot Mr. Ward in the left arm. Then he shot Ms. Ward in the right side of the head .

2.TESTING PROCEDURES

2.1 FIRST EXPERIMENT

CARTRIDGE ANALYSIS

First we found a cartridge, in order to obtain a fingerprint from it, we made a solution consisting of acetic acid (CH_3COOH), hydrogen peroxide(H_2O_2) and water(H_2O). We introduced the cartridge in the solution and left it reposing for 48 hours.

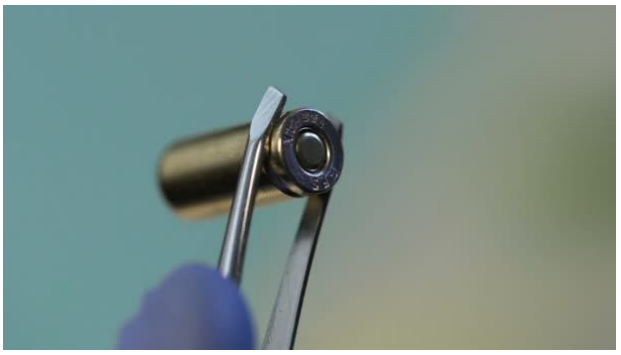

Figure 1. *Cartridge*

2.2 SECOND EXPERIMENT

FINGERPRINT ANALYSIS

We compared the fingerprint obtained from the crime scene with the fingerprints of the husband.We analysed with the microscope and a magnifying glass the bifurcations and curves of the fingertips

Figure 2. *Fingerprint*

2.3 THIRD EXPERIMENT

SOIL ANALYSIS

With precision weights and immersing in water the land to calculate the density by comparing volumes. Visually, the evidence and the soil 1 looked very similar. After that we calculated the density and compared them.

Table 1. Soil analysis

	evidence	1	2	3	4	5
colour	light	light	dark	very dark	medium	medium
density (g/l)	2,018g/l	2,02g/l	2,279g/l	3,2g/l	3,1g/l	2,2g/l

2.4 FOURTH EXPERIMENT

HAIR AND FIBER

With the microscope we analysed the hairs and fibers and we found out that there were 2 types of hair and some fibers:
Golden hairs: black walls ⅖ with / golden band ⅗ width.
Dark hairs: completely black.

Figure 3. *Dark hair*

Figure 4. *Golden hair*

2.5 FIFTH EXPERIMENT

First we weighed the mass of the plastics. Then we calculated the density of the samples. At last we saw the buoyancy of the evidences.

Table 2. Plastics

	Vinyl polychloride	**Polystyrene**	**Polyethylene**	**Polypropylene**	**Sample pattern**
Mass(g)	0,56g	0,43g	0,38g	0,40g	0,44g
Density(g/l)	1,400g/l	1,075g/l	0,950g/l	1g/l	1,100g/l
Buoyancy	NO	NO	Yes	Yes	NO

2.6 SIXTH EXPERIMENT

DRUGS

We divided the 5 drugs in 3 containers in order to make them react with Marquis´s reactive, Mandelin`s reactive and Scott`s reactive.
The drug in the containers should take the same or similar color to the one of the evidence, (pink, dark red and bottle-green)

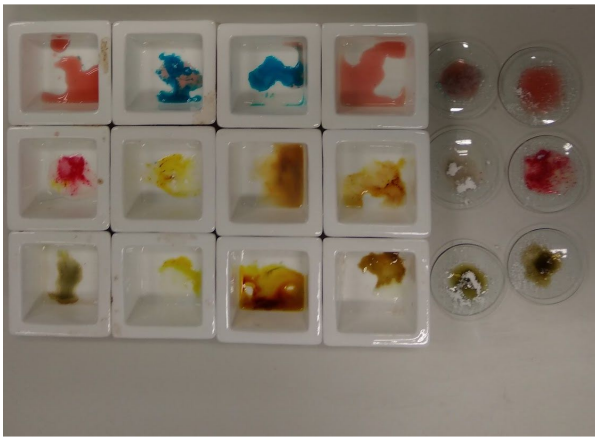

Figure 5. *Drugs experiment*

2.7 SEVENTH EXPERIMENT

BLOOD

Combining 2g of potassium hydroxide (KOH), 35ml of water, 0.3g of luminol and 35ml of hydrogen peroxide (H2O2) at 3%, we obtain a solution that mixed with the supposed drop of blood would illuminate.

This experiment was carried out without light.

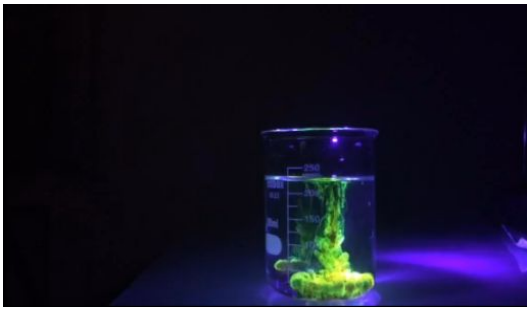

Figure 6. *Blood experiment*

3.CONCLUSIONS

After having carried out the different experiments we found out the following conclusions:

- After having left the bullet reposing for 48 hours a fingerprint was shown, nevertheless, we could not relate it with our data.
- Comparing the curves and bifurcations of the fingertip we came to the conclusion that it was Gordon Ward's right index.
- We concluded that the evidence was the number 1, found in Loch Lomond, a natural reservoir.
- After carrying out an analysis on the hairs we concluded that they were related to Anne and Gordon.
- The sample pattern corresponded to Polystyrene.
- The powder found on the crime scene was a licit drug called aspirin.
- The luminiscence shown during the experiment was an indicator of the presence of blood.

References

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