

MURDER BY THE LOCH

FORENSIC SCIENCE PROJECT

JAVIER ZABALA
JUAN OLABARRI
ASIER BUJEDO
PABLO ORTIZ
JAIME HORMAECHEA

RELEVANT DATA OF THE CASE

Victim: Mrs. Ward

Crime scene: Surroundings of Ross Priory

Suspects:

- Alexandra Burth
- Alan Dougan (Bill Thomson)
- Stephen Blue
- James Andrews,
- John Branks
- Debbie Anderson



GATHERED AND ANALYSED PROOFS

- Soil analysis
- Fingerprints
- Cartridge shell
- Plastics
- Hairs and fibers
- Blood
- Drugs

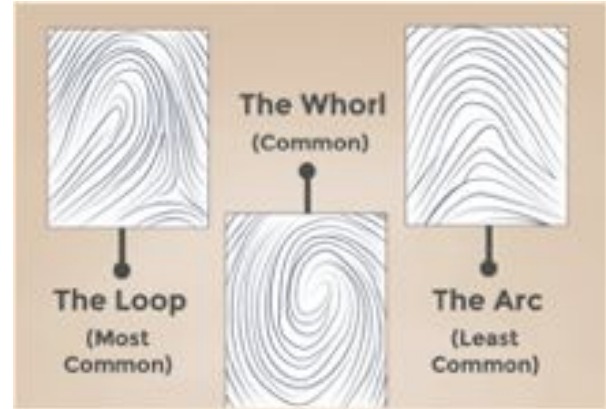
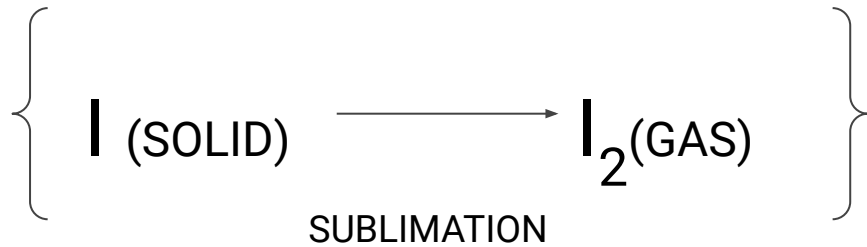


FINGERPRINTS' ANALYSIS

Fingerprints' characteristics:

- Belonging to an individual
- Contrasting different comparison points
- Pellets of iodine (extractor hood)
- Lack of comparison points

(Fingerprint belonging to Mr.Ward)



CARTRIDGE SHELL

Required:

- 30 ml of hydrogen peroxide at 3%
- 21 ml of acetic acid (CH_3COOH)



Brass: alloy of copper and zinc

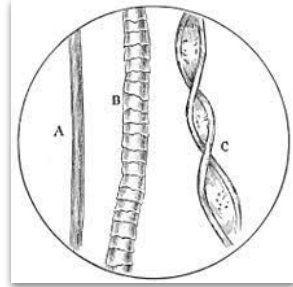
SOIL ANALYSIS

ANALYSED SOILS	ORIGIN	MASS (g)	INCREASE OF VOLUME(ml)	DENSITY (g/ml)	RELATIVE ERROR (%)
Soil from the tyre	Unknown	15,24 g	9 ml	1,69 g/ml	
Soil 1	Jetty of Ross Priory	52,99 g	21,5 ml	2,465 g/ml	5,9%
Soil 2	Claddochside Farm	34,04 g	28,9 ml	1,18 g/ml	3,18%
Soil 3	Lagganbeg Caravan Park	61,64 g	27 ml	2,28 g/ml	4,91%
Soil 4	Portnellan Farm	59,7 g	22,9 ml	2,61 g/ml	4,44%
Soil 5	Loch Lomond National Nature Reserve	59,56 g	22 ml	2,71 g/ml	6,36%

PLASTIC ANALYSIS

PLASTICS ANALYSIS	MASS (g)	INCREASE OF VOLUME (ml)	DENSITY (g/ml)	FLOTABILITY	RELATIVE ERROR (%)
Pattern specimen	0,39g	0,4ml	0,975 g/ml	NO	
Vinyl Polychloride	0,45g	0,4ml	1,125 g/ml	NO	5,39%
Polystyrene	0,44g	0,4ml	1,1 g/ml	NO	2,82%
Polyethylene	0,37g	0,4ml	0,925 g/ml	YES	5,13%
Polypropylene	0,40g	0,4ml	1 g/ml	YES	2,56%

HAIRS AND FIBRES



- Confirmation of the presence of hairs and fibres.
- Comparison by size, colour and opacity.
- Necessary incineration to confirm the previously analyzed proofs:
 - How does the fiber burn, if at all?
 - What odor is emitted by the burning fiber?
 - Does the fiber continue burning when removed from the flame source?
 - What does the residue look like?

BLOOD

The reaction makes excited 3-APA molecules quickly return to their base state, emitting photons that are visible as a characteristic weak blue luminescence

First step:

- 2 g potassium hydroxide KOH
- 35 ml water H₂O

Second step

- 0,3 g Luminol: C₈H₇N₃O (molecular formula)
- 3,5 ml of hydrogen peroxide 3%



DRUGS TEST

-- Mandelin

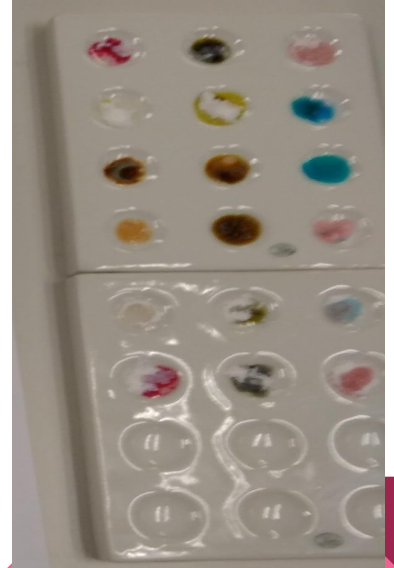
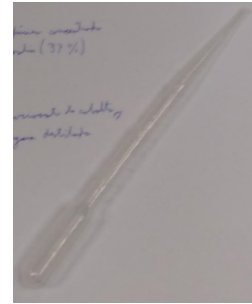
- Weight 0,1g of NH_4VO_3
- Add 10 ml of concentrated sulfuric acid (96-98%)

-- Marquis


- Add 10 ml of concentrated sulfuric acid to
- 0,25 ml of formalin reactive (37%)

-- Scott

- Weight 0,5 g of cobalt thiocyanate (II) and add it to 0,25 ml of distillate water



DISCUSSION

- GORDON'S FINGERPRINTS
 - SOIL FROM CLADDOCHSIDE FARM
 - PLASTIC OF POLYSTYRENE
 - PRESENCE OF BLOOD, HAIRS AND FIBERS
 - DRUG FOUND: ASPIRIN
- 

CONCLUSION

NOT ENOUGH PROOFS TO POINT OUT THE
MURDER

MISTAKES IN THE CHAIN OF CUSTODY



THANK YOU
VERY MUCH
FOR YOUR
ATTENTION

