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Crime Scene to Court

The Essentials of Forensic Science

Second Edition

Edited by P. C. White



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Edited by

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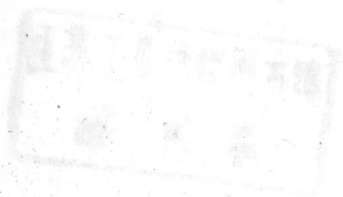
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University of Forensic Science, University of Lincoln

Preface

When the group of forensic scientists had their first meeting with the Royal Society of Chemistry to discuss the proposal for a new forensic science textbook, one of the main points of discussion and concern was whether it would attract a significant market. The decision in the end was to continue and provide a book primarily for supporting the teaching of forensic science degree courses in the UK.

At the time of the first meeting and even when the first edition of *Crime Scene to Court* was published in 1998, there was only a handful of universities offering forensic science courses. However, dramatic changes in universities have since lead to the introduction of many forensic science courses and this book has become one of the recommended textbooks for many of the courses. Hence, when the book was published it could not have been more timely and subsequently has exceeded all our market expectations.

It has also been extremely pleasing to note that the book, as originally intended, has appealed to a much wider readership. *Crime Scene to Court* has been used and referred to by the courts, forensic scientists, police and scene of crime officers and read by lay people who just have a fascination for the subject. Interestingly, although originally intended for the UK the book now sits on many bookshelves throughout the world. This can possibly be attributed to the fact that all the authors are recognised experts in their discipline within the UK forensic science profession, which has an international reputation.

As with any scientific subject technology moves on and hence there was always going to be the inevitable question of a revised edition. Since its publication some forensic practices, both scientific and professional, have changed and when approached all the authors agreed the need for a second edition. Furthermore, the authors were also prepared to give up their valuable time to revise their own chapters, for which I am indebted.

Readers can now benefit from these revisions which provide details of current crime scene and laboratory scientific practices but again the original philosophy of producing a relatively non-technical textbook has been adhered to. As indicated earlier there have also been changes in professional requirements. Maintaining a respected and professional forensic science service is crucial and accreditation of laboratories and individuals, forensic science teaching and quality assurance are all issues which have received considerable attention during the past few years. I am delighted that Brian Caddy, with his extensive professional knowledge and involvement in many of these matters agreed to revise and contribute to Chapter 1 to help address these issues.

This second edition also gave the opportunity to consider if any other forensic disciplines should be included. Computer based crimes in civil and criminal cases have risen dramatically within the past decade and special units have been set up to examine such crimes. Hence a new chapter covering this topic has been introduced. Jonathan Henry provides the reader with the benefit of his considerable experience by introducing how different computer based media store information which, when skillfully restored, can provide evidence for courts.

The other new chapter considered very worthy of inclusion covers the subject of Blood Pattern Analysis. Adrian Emes and Christopher Price, both involved as trainers for the Forensic Science Service in this discipline, explain how information regarding location, sequence of events, disturbance of a scene and even which samples should be considered for DNA analysis can all be gleaned from the careful examination of a blood pattern found at a scene or on an item.

As editor I am grateful for these contributions from the new authors and would like to express my thanks to all authors for their support, valuable time and for providing readers with the benefits of their expertise and experiences. I would also like to record my thanks to the Royal Society of Chemistry for its support and Lorraine Stewart for assistance with the typing.

Peter White

Abbreviations

AA	Atomic absorption spectroscopy
ABO	ABO blood groups
ABPI	Association of the British Pharmaceutical Industry
AFR	Automatic fingerprint recognition
ANFO	Ammonium nitrate/fuel oil
BAC	Blood alcohol concentration
BMA	British Medical Association
BMK	Benzyl methyl ketone
BPA	Blood pattern analysis
BrAC	Breath alcohol concentration
CAP	Common approach path
CE	Capillary electrophoresis
CENTREX	Central Police Training and Development Agency
CJD	Criminal Justice Database
CPS	Crown Prosecution Service
CRFP	Council for Registration of Forensic Practitioners
Δ^8 -THC	Δ^8 -Tetrahydrocannabinol
Δ^9 -THC	Δ^9 -Tetrahydrocannabinol
EDX	Energy dispersive X-ray analysis
EMIT	Enzyme multiplied immunoassay technique
ESDA	Electrostatic deposition analysis
ESLA	Electrostatic lifting apparatus
FAAS	Flameless atomic absorption spectroscopy
FEL	Forensic Explosives Laboratory
FLP	Fragment length polymorphism
FOA	First Officer Attending
FSS	Forensic Science Service
FTIR	Fourier transform infrared spectroscopy
GC	Gas chromatography
GC-MS	Gas chromatography-mass spectrometry
HLA	Human lymphocyte antigenicity
HMX	Cyclotetramethylene tetranitramine

HOLMES	Home Office Large Major Enquiry System
HPLC	High-performance liquid chromatography
IAFS	International Association of Forensic Scientists
IC	Ion chromatography
ICP	Inductively coupled plasma spectroscopy
IEF	Isoelectric focusing
ILAC	International Laboratory Accreditation Cooperation
IR	Infrared analysis
LC-MS	Liquid chromatography-mass spectrometry
LGC	Laboratory of the Government Chemist
LMG	Leucomalachite green
LSD	Lysergic acid diethylamide
MDA	Methylenedioxyamphetamine
MDMA	Methylenedioxymethylamphetamine
MSP	Microspectrophotometry
NAA	Neutron activation analysis
NAFIS	National Automated Fingerprint Identification Scheme
NTCSCI	National Training Centre for Scientific Support to Crime and Investigation
PCR	Polymerase chain reaction
PETN	Pentaerythritol tetranitrate
PF	Procurator Fiscal
PGC	Pyrolysis gas chromatography
PGM	Phosphoglucomutase polymorphism
POLSA	Police Search Advisor
PSDB	Police Scientific Development Branch
RDX	Cyclotrimethylene trinitramine
RFLP	Restriction fragment length polymorphism
RIA	Radioimmunoassay
SEM	Scanning electron microscope
SERRS	Surface enhanced resonance Raman scattering spectroscopy
SGM	Second generation matrix
SIT	Spontaneous ignition temperature
SLP	Single locus probe
SOCO	Scene of Crime Officer
SOP	Standard operating procedure
SSM	Scientific Support Manager
STR	Short tandem repeats
TIAFT	The International Association of Forensic Toxicologists
TLC	Thin-layer chromatography
TNT	2,4,6-trinitrotoluene
VNTR	Variable number tandem repeats

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