RETURN TO AN ADDRESS OF THE HONOURABLE THE HOUSE OF COMMONS DATED 12 JULY 1990 FOR THE INQUIRY INTO THE CIRCUMSTANCES SURROUNDING THE CONVICTIONS ARISING OUT OF THE BOMB ATTACKS IN GUILDFORD AND WOOLWICH IN 1974

BY
THE RT HON SIR JOHN MAY

INTERIM REPORT ON THE MAGUIRE CASE

Ordered by the House of Commons
to be printed 12th July 1990

LONDON HMSO

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The Right Honourable David Waddington QC MP
Secretary of State for the Home Department

The Right Honourable Sir Patrick Mayhew QC MP
Her Majesty's Attorney-General

Gentlemen,

On 26th October 1989 you appointed me by warrant to inquire into the circumstances leading to and deriving from the trial of Patrick Armstrong, Gerard Conlon, Paul Hill and Carole Richardson on charges arising out of the explosions in public houses in Guildford on 5th October 1974; of Patrick Armstrong and Paul Hill in relation to charges arising out of an explosion in a public house in Woolwich on 7th November 1974; and of Anne and Patrick Maguire, their sons, Vincent and Patrick Maguire, and Patrick Conlon, Patrick O'Neill and Shaun Smyth on charges of possessing explosives and to report.

The convictions of Patrick Armstrong, Gerard Conlon, Paul Hill and Carole Richardson were quashed by the Court of Appeal on 19th October 1989. Those of the four members of the Maguire family, Patrick Conlon (who died in 1980), Patrick O'Neill and Shaun Smyth still subsist.

I now have pleasure in submitting an interim report on the convictions on 4th March 1976 of the Maguire family and others for the possession of nitroglycerine.

As you will see from the report I believe that these convictions can be said to be unsound for a number of reasons. Accordingly I recommend that they should be referred to the Court of Appeal under section 17 of the Criminal Appeal Act 1968. One of those convicted has since died and in his case it may not be possible for a reference to be made. If this is so, then I recommend that immediate consideration be given to finding another way of dealing with this.

The Right Hon Sir John May

INTERIM REPORT ON THE CONVICTIONS ON 4TH MARCH 1976 OF THE MAGUIRE FAMILY AND OTHERS FOR OFFENCES UNDER SECTION 4 OF THE EXPLOSIVE SUBSTANCES ACT 1883

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INTERIM REPORT ON THE CONVICTIONS ON 4TH MARCH 1976 OF THE MAGUIRE FAMILY AND OTHERS FOR OFFENCES UNDER SECTION 4 OF THE EXPLOSIVE SUBSTANCES ACT 1883

1. Introduction

1.1 On 19th October 1989 the Home Secretary announced in the House of Commons that he and the Attorney General were appointing me to hold a Judicial Inquiry with the following terms of reference:–

> "to inquire into the circumstances leading to and deriving from the trial of Patrick Armstrong, Gerard Conlon, Paul Hill and Carole Richardson on charges arising out of the explosions in public houses in Guildford on 5th October 1974; of Patrick Armstrong and Paul Hill in relation to charges arising out of an explosion in a public house in Woolwich on 7th November 1974; and of Anne and Patrick Maguire, their sons, Vincent and Patrick Maguire, and Patrick Conlon, Patrick O'Neill and Shaun Smyth on charges of possessing explosives and to report."

The formal warrant was dated 26th October 1989. At my request Sir Richard Barratt CBE QPM, Professor John Smith QC and Mr Alistair Graham were subsequently appointed as assessors to help me in my work. They have been of the greatest assistance and I am most grateful for their wise counsel and expertise in their respective fields.

1.2 For the reasons set out below, this Interim Report is confined to a consideration of the scientific evidence upon which the convictions of the Maguire family and their friends (to whom I shall refer for convenience and with no disrespect as "the Maguire Seven") were based, and of matters related to that evidence.

1.3 Unfortunately it was not possible for me to embark immediately upon an inquiry into the Guildford and Woolwich public house bombing cases because of police investigations, which are still continuing, into the circumstances in which the alleged confessions by the defendants in those cases were originally obtained. Owing to the close connections between the issues raised in the Maguire and Guildford cases I did not think it appropriate to embark upon a wide-ranging investigation of the trial and convictions of the Maguire Seven

save in the one area to which I have referred. This was an area which I could consider without being inhibited by the continuing police investigations. The Crown case against the Maguire Seven rested almost entirely upon scientific evidence to the effect that when arrested each of the male defendants was shown to have fingers and hands contaminated with traces of nitroglycerine (to which I shall refer as NG) and that Mrs Maguire's gloves were similarly so contaminated. Although no bulk of NG was ever found, it was the Crown's case at their trial that the only inference to be drawn from the scientific evidence was that each of the defendants had been knowingly handling NG. It therefore seemed to me that as a first phase of my Inquiry I could embark upon a consideration of the scientific evidence as constituting a separate area, distinct from the other aspects of the Maguire trial and convictions which were connected with those of the Guildford Four. It will be necessary for me to inquire into those other aspects, including any allegations of deliberate contamination, at a later stage.

1.4 I caused notice to be given of my intention to proceed in this way to all those whom my Secretariat, Counsel advising me and I thought might be concerned. Some of those to whom notice was given sought leave to be legally represented at any public hearings which I might hold and this I granted. A list of those who were so represented and by whom is contained in Appendix A to this Report.

1.5 There were preliminary hearings on 4th December 1989 and 13th March 1990 and I held public hearings at which evidence was called and cross-examined between the 21st May and 18th June 1990. A list of witnesses who gave evidence is contained in Appendix B to this Report. I am satisfied that with the one exception to whom I will refer, I heard from all the witnesses who could give any material evidence upon the issues involved and I am grateful that so many were prepared to give me their assistance. In this phase of the Inquiry I found myself in no way disadvantaged by the lack of any coercive power to enforce the attendance of witnesses. Further, although I had no power to and did not take any of the evidence given to me on oath, I do not think that this has prevented me from reaching a satisfactory conclusion on the various questions which I have had to decide.

1.6 Since the trial of the Maguire Seven in 1976 there has been a substantial amount of criticism of the scientific evidence relied upon by the Crown. There was material available to me which suggested that in the 14 years or thereabouts since the convictions scientific knowledge and experience in the relevant fields had developed substantially. I accordingly thought it right to have appointed to advise the Inquiry an independent expert analytical chemist. The Inquiry was fortunate to obtain the services of Professor Duncan Thorburn Burns Ph.D., D.Sc., F.I.C.I., C.Chem., F.R.S.C., F.R.S. Ed., M.R.I.A. of Queen's University Belfast, who, having considered all the material papers, arranged for a substantial number of experiments and tests to

be carried out at the Home Office Forensic Science Laboratory in Birmingham and thereafter produced an independent report and gave evidence to the Inquiry on his findings and the issues involved in the case. The Professor demonstrated a scientific and intellectual enjoyment of the various questions involved and gave me the benefit of his very substantial experience in this particular field. I am extremely grateful for all the work that he did. Without it, I could not properly or fully have completed this part of the Inquiry. Both Professor Thorburn Burns and I were also very grateful for the help received from the Home Office Forensic Science Service. Save in immaterial respects the evidence which Professor Thorburn Burns gave was accepted on all sides.

1.7 I shall relate the relevant facts in more detail hereafter, but for the present I merely record that the Maguire Seven were arrested and taken into custody in the evening of 3rd December 1974. All their hands and fingernails were swabbed and scraped that same night as the first step in the scientific investigation which ultimately led to their convictions. They were arraigned at the Central Criminal Court before Mr Justice Donaldson (as he then was) and a jury on 14th January 1976 on an indictment charging each with an offence contrary to section 4 of the Explosive Substances Act 1883 in the following terms:–

> "between the 1st and 4th days of December 1974 knowingly had in his possession or under his control an explosive substance, namely nitroglycerine, under such circumstances as to give rise to a reasonable suspicion that he did not have it in his possession or under his control for a lawful object."

Their trial took some 7 weeks and they were all convicted on 4th March 1976. Each applied for leave to appeal against both conviction and sentence and their applications, which were effectively considered by the Court of Appeal as if they had been actual appeals, came before that Court between the 20th and 30th July 1977. Each of the applications was dismissed, save that in O'Neill's case his original sentence of 12 years was reduced to one of 8 years.

1.8 After the dismissal of the applications in July 1977 a number of determined attempts were made to persuade the Home Secretary initially to consider compassionate release for Guiseppe Conlon (who died in prison in January 1980) and subsequently to refer the whole case to the Court of Appeal. Lord Fitt initiated a debate in the House of Lords in May 1985 shortly after the release of the last defendant, Annie Maguire. There were several television documentaries and two books. Cardinal Hume wrote to the Home Secretary in March 1988 pointing to connections between the cases of the Guildford Four and the Maguires. In January 1989 when the case of the Guildford Four was referred to the Court of Appeal, no action was taken in respect of the Maguire convictions because the Home Secretary said that he could find no grounds for doing so. It was only the quashing by the Court of Appeal of the convictions of the Guildford Four for the Guildford and

Woolwich public house bombings on 19th October 1989 that led to the establishment of this Inquiry. The Maguire convictions were then included in my terms of reference.

1.9 I write this report against the backcloth of a continuing terrorist campaign in the United Kingdom and Europe by the Provisional IRA. In 1990 that campaign has already claimed 32 lives. In 1974, when the Guildford Four and the Maguires were arrested, 45 people were killed in Great Britain alone as a result of similar terrorism.

1.10 Before turning to a consideration of my terms of reference I should like to pay tribute to the assistance that I have received from Felicity Clarkson and all the members of my secretariat. The former has been unstinting in her efforts to ensure that I, my assessors and Counsel to the Inquiry have had all the papers and help that we have required. Mrs Clarkson has been ably supported by Richard Mason and the other members of our team and I am extremely grateful for the continuous uncomplaining and skilled work which all have put in to smooth my path. Mrs Tompsett has coped imperturbably with the organisation and production of a mass of correspondence and other documents which the Secretariat, Counsel and I have given her. The accuracy and speed of her typing have been invaluable. It is also right that I should say that I could not have wished for a better team from the Bar to advise me in my work than David Clarke QC and his two juniors, Timothy King and Ian Burnett. Their learning has been equalled by their industry; they have continually pointed me in the right direction in my investigations; they have sorted and collated the number of documents which it has been necessary to consider on various aspects of this Inquiry; they have identified with great skill the issues which my investigations have shown that it is necessary for me to determine.

2. Consideration of terms of reference

2.1 I first consider what I have been asked to do by my appointment and my terms of reference. In relation to this I also consider what I can and should properly do from the constitutional point of view.

2.2 In my opinion my terms of reference ask me to consider, investigate and comment on all the circumstances which led to the trials and convictions of the Maguire Seven and of those to whom I shall similarly refer as the Guildford Four. Subject to what I say hereafter I shall also consider and comment on those trials and convictions, and upon the appeals from the convictions by members of both groups. I shall also in a later stage of the Inquiry consider how the cases have been dealt with by, in particular, the Home Office in the years since 1976 in the light of the various comments, criticisms and representations that have been made.

2.3 My position is and has been a difficult one because I am not a Court of Law and have none of its powers. Yet in many respects I am required by my remit to carry out functions which in other circumstances might be carried out by a Court, indeed the scope of that remit seems to me to be wider than that of the normal investigation by way of a trial before a Court.

2.4 Constitutionally there is a fundamental difference in my position vis-a-vis the Guildford Four on the one hand and the Maguire Seven on the other. I have said on each occasion that this Inquiry has sat in public that I am not concerned to determine the issue of the respective guilt or innocence of the eleven persons concerned. In so far as the Guildford Four are concerned, their convictions were set aside by the Court of Appeal on 19th October 1989. Therefore no constitutional inhibitions will in due time prevent me from investigating and commenting freely upon all the circumstances of their case.

2.5 The position of the Maguire Seven, however, is very different. Although they have served their sentences, their convictions remain extant and can only be set aside by the Criminal Division of the Court of Appeal in accordance with the law. I myself have no power to uphold or set aside the convictions. The only procedure by which these convictions can be now brought before the Court of Appeal is by a reference under section 17 of the Criminal Appeal Act 1968. Subsection (1) of section 17 provides that:

> "Where a person has been convicted on indictment, or been tried on indictment and found not guilty by reason of insanity, or been found by a jury to be under disability, the Secretary of State may, if he thinks fit, at any time . . .
>
> (a) "refer the whole case to the Court of Appeal and the

case shall then be treated for all purposes as an appeal to the Court by that person."

2.6 The grounds upon which the Court of Appeal can act in allowing an appeal and setting aside a conviction are set out in section 2 of the 1968 Act, of which the relevant parts are as follows:

"(1) Except as provided by this Act, the Court of Appeal shall allow an appeal against conviction if they think –

(a) that the conviction should be set aside on the ground that under all the circumstances of the case it is unsafe or unsatisfactory;

(b) that the judgment of the court of trial should be set aside on the ground of a wrong decision of any question of law; or

(c) that there was a material irregularity in the course of the trial, and

in any other case shall dismiss the appeal:

Provided that the Court may, notwithstanding that they are of opinion that the point raised in the appeal might be decided in favour of the appellant, dismiss the appeal if they consider that no miscarriage of justice has actually occurred.

(2) In the case of an appeal against conviction the Court shall, if they allow the appeal, quash the conviction."

2.7 In considering these matters the Court of Appeal has certain powers to admit and take account of fresh evidence, that is to say evidence that was not before the jury at the original trial. These are contained in section 23 of the 1968 Act and for convenience can be quoted here:

"(1) For purposes of this Part of this Act the Court of Appeal may, if they think it necessary or expedient in the interests of justice –

(a) order the production of any document, exhibit or other thing connected with the proceedings, the production of which appears to them necessary for the determination of the case;

(b) order any witness who would have been a compellable witness in the proceedings from which the appeal lies to attend for examination and be examined before the Court,

whether or not he was called in those proceedings; and

(c) . . . receive the evidence, if tendered, of any witness.

(2) Without prejudice to subsection (1) above, where evidence is tendered to the Court of Appeal thereunder the Court shall, unless they are satisfied that the evidence, if received, would not afford any ground for allowing the appeal, exercise their power of receiving it if –

(a) it appears to them that the evidence is likely to be credible and would have been admissible in the proceedings from which the appeal lies on an issue which is the subject of the appeal; and

(b) they are satisfied that it was not adduced in those proceedings but there is a reasonable explanation for the failure to adduce it."

2.8 In *Stafford v DPP* [1974] A.C 878 the House of Lords held that in a criminal appeal in which fresh evidence had been admitted it was for the Court of Appeal to decide whether, in the light of the fresh evidence, the verdict of the jury was safe and satisfactory. To consider whether the original jury, or any jury, might in the light of the fresh evidence have acquitted may be a convenient approach in some cases, but at the end of the day the statute provides that the ultimate responsibility for allowing or dismissing the appeal rests with the Court of Appeal and with it alone. This is the present state of the law which the Court of Appeal will apply. Whether any amendment is desirable, for instance to leave fresh evidence to a jury to consider, must be for further debate and a later report.

2.9 In *R v Chard* [1984] 1 A.C 279, the House of Lords held that, subject to appropriate notice under the Criminal Appeal Rules, the convicted person whose case had been referred to the Court of Appeal under section 17 of the 1968 Act, and who had thus become an appellant, was entitled to argue all questions of fact or law that arose in the case, whether they were connected with the reasons for the reference set out in the Secretary of State's letter or not. However, where on such a reference the appellant seeks to argue grounds which are not only unconnected with the reasons in the Secretary of State's letter, but also have been unsuccessfully relied on in a previous appeal or application for leave to appeal, the court that hears the reference will be very slow to differ, unless it is persuaded by some cogent argument that had not been advanced at the previous hearing.

2.10 I do not forget that the convictions of the Maguire Seven have been before the Court of Appeal once already. Subject to what I have just said this

alone, however, is no reason why the convictions should not be reconsidered by the Court of Appeal, even on grounds which were fully argued before them on the last occasion.

2.11 I propose in this Interim Report to recommend to the Secretary of State that he should refer the case of the Maguire Seven to the Court of Appeal and to state the grounds upon which in my view an appeal to that Court should properly be made.

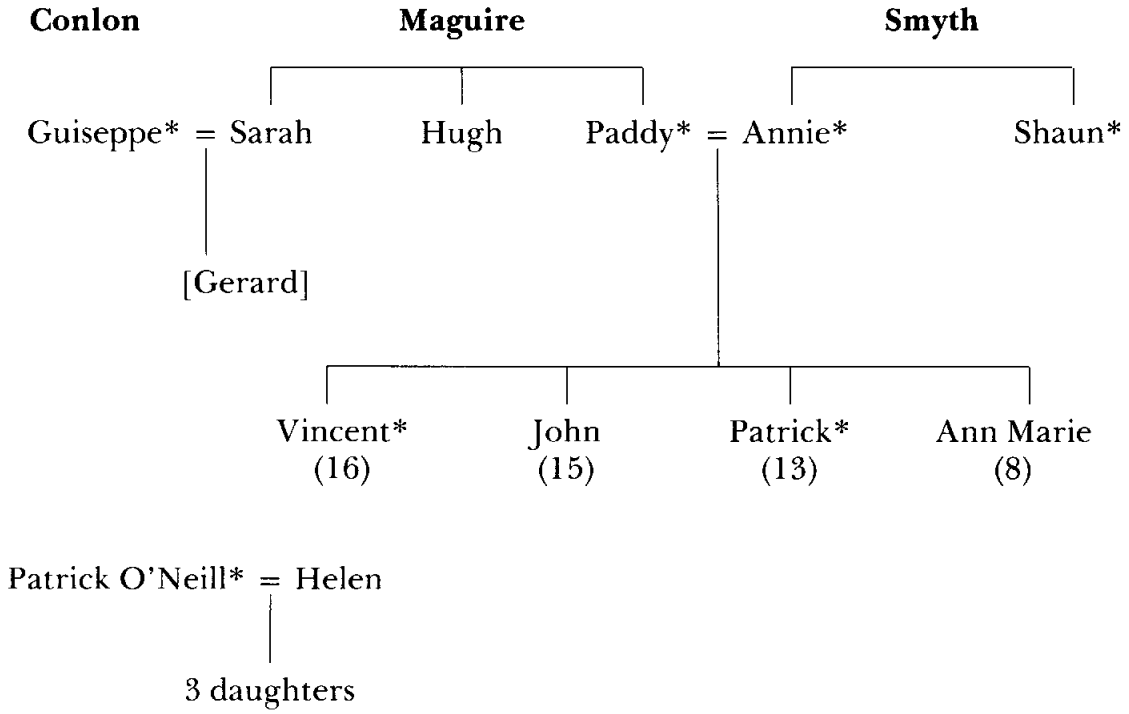
2.12 Against this legal framework, it would clearly be wrong for me in making such a recommendation to seek to usurp the constitutional power and duty of the Court of Appeal to hear and determine for themselves any reference which may ultimately be made of the Maguire case. However, I equally consider that it would be a disservice to all those who have been involved in this phase of my Inquiry and to the thoroughness of the investigations and submissions which have been presented to me on the question of the scientific evidence, if I did not also clearly state the views which I myself have formed as to the soundness of the convictions in the light of those investigations and submissions. Accordingly this I propose to do as part of my functions within my terms of reference, having regard always to the law which I have outlined and the constitutional position of the Court of Appeal of which I am well aware.

2.13 I shall also in this report refer to and comment on various other points which have arisen in the course of this Inquiry and have caused me concern, but which cannot in law or for some other reason support a reference to the Court of Appeal.

3. Background to the convictions

3.1 The Maguires were Patrick (known as Paddy) and Anne Rita Maguire (known as Annie) and their sons, Vincent (at the time of his arrest, 16 years old) and Patrick (then 13). Also convicted were Patrick Joseph Conlon (known as Guiseppe), who was Paddy's brother-in-law, and William John Smyth (known as Shaun), who was Annie's brother. Patrick Joseph O'Neill was a friend of the Maguire family.

3.2 The following diagram depicts the relationships:



Those who were charged and convicted are marked with asterisks. The importance of Guiseppe Conlon's son Gerard, who was one of the four young people convicted in October 1975 of the Guildford pub bombing, will be explained later.

3.3 Guiseppe Conlon lived with his wife Sarah in Belfast. He had been in poor health for a number of years and he died in custody while still serving his sentence on 23 January 1980.

3.4 Paddy and Annie Maguire lived at 43 Third Avenue, Harlesden, North London, with their four children. The eldest, Vincent, had left school and was in work. He attended evening classes at a local college. Paddy and Annie Maguire had come over to London from Belfast on the day on which they were married in September 1957, a few months after Paddy had left the British Army. They had lived together in London for the 17 years since then. Paddy

Maguire's military service had actually begun in the south of Ireland in 1952 when he joined the Irish Army. However, he deserted from it after 18 months and then joined the Royal Inniskilling Fusiliers in the north, serving in both Egypt and Cyprus. In London, after 2 years as a labourer and paint sprayer, he got a job through the British Legion with the North Thames Gas Board. He became a gas fitter and held that job for some 11 years until 1970. In 1969 he began to drink heavily and this seems adversely to have affected both his health and his employment record from then until the date of his arrest. On 3rd December 1974 he had been out of work for over a month, having given up the job which he had held for nearly a year as an assistant caretaker at a college of technology.

3.5 Paddy Maguire's drinking put increasing pressure on his marriage which, on all accounts, had previously been a happy one. He had not told his wife at first when he left his job at the college. When on 28th October 1974 he did tell her, he had already been drinking and a furious row followed. From home he went straight to the local council housing office (which was only about 100 yards from Third Avenue) and, according to the housing officer, demanded to have his name taken off the tenancy which he held jointly with his wife whilst at the same time being allowed to continue living there. Paddy Maguire's account at trial was that what he in fact wanted was a bachelor flat and that he queried whether his chances of being given one would be enhanced if Annie Maguire threw him out. He thought the housing officer was annoyed however and, seeing that he was getting nowhere, angrily left the office with words to the effect that he would not be to blame if he wrecked the house when he got home. The housing officer on the other hand recorded Paddy Maguire as having said that he did not want to be held responsible for the well-being of the premises because "it could be blown up". Although Paddy Maguire had clearly been drinking the housing officer thought it prudent to phone the police, but they took no action. Evidence of this incident was given at trial but the jury were very properly directed that it was only evidence in the case against Paddy Maguire. Furthermore, its alleged significance was strongly challenged by the defence.

3.6 For her part Annie Maguire seems to have been a hardworking and devoted housewife and mother who, at the end of 1974, had a number of part-time cleaning jobs to help with the family finances.

3.7 Shaun Smyth lived at 43 Third Avenue as the Maguires' lodger. He had done so since July 1974 when he came to England from Belfast in order to find work. At the end of 1974 he was working on a building site sending money weekly to his wife and four children in Belfast.

3.8 Patrick O'Neill had been a friend of the Maguires for many years and at one time had lodged with them. By early December 1974 he was the father of

three young girls.

3.9 At 8.50 pm on Saturday 5th October 1974 a bomb exploded in the Horse and Groom public house, Guildford. Five people were killed, over 50 were injured. At about 9.35 pm a second bomb exploded in the nearby Seven Stars public house. Largely due to the presence of mind of the publican, who had evacuated the pub when he heard the earlier explosion, there were no fatalities, though 11 people were injured. Both pubs were widely known to be popular with servicemen and women.

3.10 At about 10 pm on 7th November 1974 a bomb was thrown through the window of the King's Arms public house in Woolwich. Like the two Guildford pubs, the King's Arms was frequented by soldiers who were based locally. Two people died as a result of the blast and 27 were injured.

3.11 In the course of the Surrey and Metropolitan Police investigations into these atrocities a considerable number of people came to be arrested. Of these only four – the "Guildford Four": Paul Hill, Gerard Conlon, Patrick Armstrong and Carole Richardson – were tried and convicted. Paul Hill was arrested in Southampton on 28th November and taken to Guildford Police Station. Gerard Conlon was arrested at his home in Belfast two days later and on 1st December was taken to Godalming, Surrey. On 3rd December Carole Richardson and Patrick Armstrong were arrested in Kilburn, North London. All were eventually held at Guildford.

3.12 On 1st December, the day after the arrest of Gerard, his father Guiseppe Conlon was contacted by Nurse & Jones, solicitors of Belfast, and told that his son had been arrested in connection with the Guildford bombings. He found out later in the day that Gerard had already been taken to England. On Monday 2nd December Guiseppe was told that Mr Jones would go to England that night. Asked whether he had any relatives there who could introduce the solicitor to Gerard Conlon he gave the names and addresses of his wife's brothers, Paddy and Hugh Maguire. A telegram was duly sent to Paddy Maguire which he received at around 6 pm. It read:

> "Re your nephew Gerard Conlon arrested and held in Guildford London. Father has instructed as solicitors Nurse and Jones 7 Lower North Street Belfast. Please telephone 45471 or 2 or after 6 phone 652565 or 23175. Bernard Simon Solicitor 40 Bedford Street London telephone 018367023 will be in contact tonight or tomorrow. Please reply. Nurse and Jones."

3.13 However, after talking things over with his wife Guiseppe Conlon decided to go to England himself. He told Mr Jones, who gave him the

telephone number of a solicitor in London. Mr Conlon travelled on the overnight ferry and arrived at Heysham, Lancashire, at about 6 am on 3rd December. He then boarded a train for London.

3.14 At their trial the Crown's case against the Guildford Four rested solely on confessions which they allegedly made whilst in the custody of the Surrey police. The four have always disputed the content of these confessions and denied that they were freely given. When the Court of Appeal quashed their convictions last October, it did so because inquiries by Avon and Somerset police had demonstrated that Surrey police officers had seriously misled the court when they gave evidence in respect of the confessions.

3.15 The police interest in the Maguire family arose as a result of statements made by two of the four, Gerard Conlon and Paul Hill, on 2nd and 3rd December. As I have already explained, the circumstances leading to the convictions of the Guildford Four, together with certain aspects of the Maguire case, are matters for a later stage of this Inquiry. For the purposes of this report the statements implicating the Maguires may reasonably be seen in the context of the confessions as a whole – that is, against the background of the Court of Appeal's decision – which I outlined in the previous paragraph, though with the rider that it would obviously be premature to attempt to draw conclusions from or about their precise contents.

3.16 In a statement made at Godalming on 2nd December, Gerard Conlon is recorded as having mentioned Annie and Paddy Maguire in relation to his search for accommodation when he came to London that August. The following day Paul Hill made a statement in which, among other things, he referred to a hitherto unnamed woman who he had said in some of his earlier statements had accompanied him and others on the Guildford bombing. He now identified that woman as Annie Maguire. Later that day Gerard Conlon made a further statement in which he allegedly named Annie Maguire as the person who had shown him how to make bombs.

3.17 As a result of what Hill and Conlon had said – whatever exactly it was – Metropolitan Police officers were deployed that evening to watch the Maguires' house. The chronology which follows is an attempt to reconcile conflicting accounts of the day contained in the proofs of evidence, statements, and evidence given at trial, of and by those involved. I have avoided discussing in any detail the merits of different versions of events or timings since in the present circumstances it is patently unnecessary to do so. What is required, for the moment at least, is an outline in the context of which the scientific story can be understood.

4. 3rd December 1974

4.1 In the Maguire household Tuesday 3rd December began as a normal working day. Shaun Smyth left for work at about 6.45 am; Annie Maguire left for her cleaning job at a firm of accountants about half an hour later. At about 8 am Paddy Maguire, having tried without success to contact his brother Hugh to discuss the telegram, rang the number of Hugh's close friend Sean Tully and spoke to Mrs Tully about Hugh's whereabouts. At around 8.45 am Annie Maguire returned home. By this time two of her three sons, John and Patrick had gone to school; Vincent, her eldest son, had gone to work. Around 9 am Annie Maguire took her daughter Ann Marie to school, getting home again about a quarter of an hour later, when she made some tea for her husband. After about 9.40 am she left the house again for two more cleaning jobs, the first at a betting shop, the second, having stopped off at a bakers on the way, at a greengrocers. Afterwards she went to a jumble sale, did some more shopping and eventually returned to 43 Third Avenue at between 1.30 and 2 pm.

4.2 Meanwhile, much to Paddy Maguire's surprise, Guiseppe Conlon had arrived at the house and, after 20 minutes or so, they went to a public house. This was perhaps getting on for 1.30 pm. Not long after, John Maguire arrived home with his friend Hugh McHugh – "Ginger" – followed by Vincent Maguire who probably had to let them into the house. Both John and Vincent recalled seeing Guiseppe Conlon's suitcase. Vincent, who had gone into Shaun Smyth's bedroom for a pack of cards, found under his uncle's bed what he said at trial was a piece of chalk. The police evidence was that Vincent had described an object "like a candle, about eight inches long and smooth like a sort of wax." At about 2 pm Annie Maguire had lunch with the boys. Between 3 and 3.30 pm Paddy Maguire and Guiseppe Conlon returned from the pub. Paddy Maguire used the bathroom. Annie Maguire was told of her nephew's arrest in connection with the Guildford bombings – her husband had not told her about the telegram – and Hugh Maguire's whereabouts were discussed, Guiseppe having been trying to contact him throughout the previous weekend. At 4 pm John Maguire's girlfriend Maxine Ryan visited the house, staying for about half an hour. Soon after 4 pm Ann Marie came home with a schoolfriend. Between 4.15 and 4.30 pm a neighbour, a Mrs Roach, came to collect a package from Annie Maguire, staying about 5 minutes. At about 4.30 pm John and Ginger left the house.

4.3 In the course of the afternoon a further attempt may have been made to telephone Hugh Maguire. At some point Paddy Maguire and Guiseppe Conlon telephoned the firm of solicitors in London acting for Gerard Conlon. An appointment was made for Guiseppe Conlon to see the solicitor the following morning. When tempers frayed in the course of Guiseppe Conlon and Paddy Maguire's anxious discussions, the former said he would leave 43 Third Avenue and go and stay with Hugh Maguire. He was persuaded to stay, however and later, perhaps between 4.30 and 5.30 pm, phoned his wife in Belfast to put her in the picture. With still no word of or from Hugh Maguire

another call was made to Sean Tully who said that he would go round to Hugh's address after his tea.

4.4 John Maguire returned home between 5.15 and 5.30 pm, Patrick not long after. Soon after this, though probably no later than 5.40 pm, Vincent left for his evening class. His father left soon after to inquire after Hugh at Harrow Road Police Station.

4.5 The family sat down to supper at about 6 pm. Shortly after – though it may have been about the same time the previous evening, or even possibly Tuesday morning – Patrick O'Neill phoned to ask if Annie Maguire could look after his three children as his wife was in hospital with complications in a further pregnancy. She agreed to do so. Patrick left to go to a local youth club and, at or shortly before 6.30 pm, Shaun Smyth came home from work, arriving just before Paddy Maguire's return from the police station. He had a wash and changed out of his work clothes. Annie Maguire told him of Gerard Conlon's arrest. The others had finished their meal by the time Shaun Smyth sat down to his.

4.6 At around 6.40 or 6.45 pm Sean Tully arrived at the house. He may have stayed for somewhere between 5 and 10 minutes. Patrick O'Neill and his three girls may have arrived just before Sean Tully, though their arrival could have been nearer 7 pm. At some time after supper Guiseppe seems to have made another call to the solicitor, who phoned back later.

4.7 Police observation of the house began at around 7 pm. About that time Maxine Ryan called for John. She went on to a local youth club having arranged that John would join her there later – he probably left the house towards 7.20 pm.

4.8 It appears that after 7 pm Sean Tully may have visited the house again, staying for about 10 minutes. The police recorded a man leaving the house at around 7.15 pm. In the course of his visit(s) he told the family that he had learnt that Hugh Maguire had been arrested. Guiseppe Conlon seems to have made a further call to his wife in Belfast to tell her the news. The timing of this call, like that of the evening calls to and from the solicitors, is uncertain. At around 7.45 pm, or possibly nearer 8 pm, Patrick O'Neill received the phone call he had been waiting for from his wife, Helen, in hospital. At some point after the arrival of the O'Neills, Annie Maguire went with two of the girls to buy some chips. One account puts this as late as 7.45 pm but it seems more likely to have been considerably earlier. Similarly, Patrick O'Neill recalled using the lavatory and washing his hands at the house, but again the timing is uncertain. Not long after the phone call from Helen O'Neill her husband, Paddy Maguire, Guiseppe Conlon and Shaun Smyth made their way to the

Royal Lancer public house, but there is a discrepancy between their evidence and that of the police on the timing of their departure.

4.9 John Maguire returned home at around 8.45 pm. Almost immediately afterwards Metropolitan police officers led by Detective Chief Inspector Munday entered the house. Mr Munday told Annie Maguire that they were making inquiries about a bombing and asked where Paddy Maguire was. Annie Maguire explained that he and the others were at the Royal Lancer. She denied any involvement in terrorist activities. At about 9 pm the police drove to the pub, taking John with them so that he could point out his father. Paddy Maguire and his three companions were arrested at the pub and driven away by the police: John was dropped off at 43 Third Avenue. Making his way home from the youth club Patrick had been surprised to be passed by a car carrying both his father and his brother. He and Vincent, returning from college, probably arrived home at about the same time.

4.10 Annie Maguire and her sons were taken into custody. The boys were released in the early hours of the following morning.

5. The police investigation

5.1 The police began a search of the house soon after their arrival and dogs trained in the detection of explosives were taken round the house in the evening of 3rd December. In a kitchen drawer containing a variety of household odds and ends the police found 39 lightweight plastic gloves of which 22 appeared to have been used. Detective Chief Inspector Munday gave evidence that Annie Maguire told him at the time that she used them for household jobs because she had a skin complaint. Her evidence at trial was that she wore them in bed at night, and she denied that the Inspector had asked her about them. The drawer containing the gloves was taken from the kitchen and left in the living room overnight.

5.2 On 4th and 5th December the police undertook further examination of the house and many swabs and items of clothing were taken for analysis from a number of locations. On 4th December they came equipped with an explosives vapour detector (a "sniffer"). They checked the drawer containing the gloves with the sniffer, with a negative result.

5.3 The search of the house was extensive and in some rooms was doubtless very thorough, but it would seem to have been incomplete in that there was never any evidence – for example, photographs or a record of swabs taken – that the bathroom was searched. It was treated as common ground in the summing-up that the bathroom was not searched and this was referred to in the Court of Appeal. However, the gist of the evidence given by the police officers who appeared before me was that they presumed that someone would have examined the bathroom – which was located on the ground floor behind the kitchen – and, indeed, Police Constable O'Connor said he believed that he himself had done so. The only record which we have of Police Constable O'Connor's evidence at the trial suggests that he was not specifically questioned about the bathroom. If it be necessary to choose between the two versions, I prefer that given at the trial. In her final submission to me Miss Goddard (counsel for the Metropolitan Police) said that, whatever the state of the evidence, it was most unlikely in the circumstances that the bathroom was not looked at and searched. The reasoning behind this argument – which one might describe as essentially one of common sense – is clear, but the fact remains that whilst there is considerable contemporary evidence of the police activities elsewhere in the house there is none in respect of the bathroom.

5.4 Leaving aside the gloves, which I will consider in due course, the police found nothing of significance at 43 Third Avenue. No bulk of explosives was recovered, neither were any detonators or any other bomb making material found. The swabs taken from the house all proved negative, and the ninety items of clothing gave negative results on a "sniffer" test.

5.5 At Harrow Road Police Station hand swabs were taken from Guiseppe Conlon, Paddy Maguire, Shaun Smyth and Patrick O'Neill by Detective Sergeant Lawrence Vickery. Annie Maguire and her three sons, Vincent, John and Patrick, were swabbed at Paddington Green Police Station by Detective Sergeant Kenneth Day, as he then was. Both officers gave evidence at the trial and to the Inquiry. Both had attended a one day course at the Royal Armament Research and Development Establishment (RARDE) Laboratory in July 1974 on the swab taking procedure.

5.6 The hand test kit, which was contained in a separate cardboard box for each subject, included a set of written instructions. A piece of paper from the hand test kit was placed under the suspect's hands. Each hand was then swabbed, first with a dry swab, then with one soaked in ether, and finally with one soaked in distilled water. The swabs were small pieces of cotton wool held by a pair of tweezers in the officer's gloved hand. The subject's fingernails were then scraped with a fingernail stick, again one for each hand. These scrapings and sticks, and all the swabs, were separately bagged and labelled and returned to the box together with the paper and an unused piece of the cotton-wool which was used as a control.

5.7 Both officers told the Inquiry that it was their practice to read the instructions before swabbing. Mr Day had at the time little previous experience of taking swabs. They were both sure they had washed their hands before commencing the swabbing but Mr Vickery was less sure that he had washed *between* swabbing the different suspects. Mr Day recalled washing hands between suspects and he also recalled that Annie Maguire had such short fingernails that it was virtually impossible to get the stick underneath them.

5.8 The swabs were then sent for scientific analysis to RARDE. The Laboratory Form 1 forwarded with the swabs for Guiseppe Conlon, Patrick O'Neill, Shaun Smyth and Paddy Maguire did not say of what precise offence the men were suspected but entered the circumstances – "Suspects for Guildford and other bombing offences." The equivalent form for Annie Maguire and the three boys recorded under "Offence" – "Murder" and the entry under "Circumstances of Offences" was similar to that for the men. The swabs and sticks were then tested later on 4th December for NG by the technique known as thin layer chromatography (TLC).

5.9 The Royal Armament Research and Development Establishment (RARDE) is part of the Ministry of Defence. Then at Woolwich in South East London, the laboratory carried out forensic work for the Metropolitan Police on suspected explosives. At the time of the Maguire investigations the Forensic Science Section was under severe pressure of work. Its head was Mr Douglas Higgs, Principal Scientific Officer. He had taken over the post from Mr John

Yallop, who was to be the principal witness for the defence. Mr Walter Elliott was the Senior Scientific Officer, Dr Thomas Hayes was a Higher Scientific Officer, Mrs Pamela Brooker was a Scientific Officer and Mr David Wyndham an Assistant Scientific Officer. All five RARDE scientists gave evidence at the trial. Mr Elliott has since died. Mr Higgs, Dr Hayes and Mrs Brooker (now Mrs Kemp) gave evidence to the Inquiry. Mr Higgs is retired, Dr Hayes is no longer working full time at RARDE, and Mrs Kemp is now employed elsewhere. Mr Wyndham, who still works at RARDE, was invited to make a statement to the Inquiry but declined to do so. Dr Frank Carver, then Superintendent of the Home Office Branch of RARDE, also gave evidence to me.

5.10 Mr Elliott gave evidence at trial that he analysed the hand samples and the results were recorded by him in his notebooks which have been produced to me. Since the conclusion of the trial and appeal it has been widely stated and believed that the tests on the hand kits were conducted by Mr Wyndham then aged 17 years. Whilst there is no doubt that Mr Wyndham carried out the analysis of plastic gloves removed from the house there was no evidence at trial, nor has any been produced since, to suggest that he tested the hand kits. An examination of his evidence and that of Mr Elliott at trial suggests the contrary and it is significant that Mr Wyndham's notebooks, which I have seen, do not record the relevant hand kits on 4th December 1974 in what was otherwise a busy day. By contrast his notebooks do record his testing of the gloves and swabs taken from the house. Those gloves were further tested by Dr Hayes.

6. Thin layer chromatography

6.1 It is appropriate here to give a brief description of the TLC technique. The first stage is the extraction from the swabs and gloves of whatever suspicious substances might be present. They are washed with a solvent, ether, into a beaker and the solvent is then allowed to evaporate. The residue is then spotted on to a plate to which spots of known explosives, including NG, are also applied. The spots are placed on a line, known as the origin. In 1974 the plates used were prepared, that is to say coated with silica gel, at Woolwich. The plate is then placed in a tank containing a quantity of a liquid which is itself a solvent (though for this part of the test described as an "eluent"), in this case toluene, in order to draw the control spots and the spots of the questioned substance up the plate by capillary action. For sound and consistent results, the atmosphere within the tank should be saturated with the eluent vapour; this prevents evaporation as the eluent front rises, which can distort the results. The eluent front can be seen as it moves and the plate is removed from the tank when the front reaches a particular point. It was the practice at RARDE to have a line marked on the plate known as the strike line 10 centimetres from the origin, and to remove the plate from the tank when the eluent reached that strike line.

6.2 This is a separation process, designed to separate out the components of a questioned sample. Essentially it subjects the control spot of NG, and the spots of the questioned samples, to two competing forces. One is the force of attraction exerted by the mobile phase, which is the eluent rising up the plate by capillary action. The other is the force exerted by the stationary phase, which is the silica gel coated onto the plate through which the eluent rises. Different substances react to these competing forces in different ways, and thus rise up the plate at different rates. The rate at which a substance has risen (after it has been made visible chemically) can be measured. It is expressed not as an absolute measurement but as a proportion of the total distance travelled by the eluent front. This ratio is described as the Rf value.

6.3 Various materials may be used in the process and certain eluents have been found to be more effective than others in TLC identification of particular classes of substances. It was the usual but not invariable practice of RARDE in 1974 to use toluene as the eluent when examining for explosives. It had been found to be effective in producing distinctive Rf values for most explosives. The Rf value will vary from one plate to another through the effects of humidity and temperature. The thickness of the silica gel, or the degree of saturation within the vessel, may also vary. It is therefore necessary to have a control sample of the known substance (in this case NG, and other explosives for which the scientists were searching) on every TLC plate. It was the practice at RARDE to have controls at each side of the plate and the spots of the questioned samples between them.

6.4 When this first stage has been completed, both the control spots and those of the questioned samples will have risen up the plate. But these spots will still be invisible and must be subjected to two chemical processes to make them visible. NG is an organic nitro compound of the nitrate-ester grouping and in order for it to be made visible it is necessary (as stage 2) to treat the plate with sodium hydroxide (caustic soda) to liberate the nitrite ion from the nitrate compound. The plate is then heated for 10 minutes in an oven at 110°C and then (as stage 3) it is treated with what is known as the Griess reagent, which reacts with any nitrite present to form a pink spot. The last two stages of the process are done by spraying from aerosol cans first of sodium hydroxide and then of the Griess reagent. It is during the Griess reagent spraying that the pink spots appear and it is then that the Rf value is assessed. The Rf value of a sample is the proportion of its travel to that of the eluent front. An Rf value of 0.5 would mean it travelled half as far. The Rf value of the NG standard spots in the tests done at RARDE principally varied between 0.5 and 0.65. If the questioned and control samples had the same Rf value a positive result would be recorded.

6.5 Where the questioned sample did not show exactly the same Rf value as the control sample, a positive result would still be recorded by RARDE if the two Rf values differed by only a limited amount. This, sometimes called the limit of tolerance, I shall refer to as the parameter. At the trial Mr Elliott originally said that 0.02 was the safe parameter, but he later said that 0.03 was safe. Dr Hayes said at trial that he

> "would hope that the spot of a sample solution would fall within plus or minus approximately 2 mm of the standard".

6.6 When pressed by Mr Edwards he said he would not like to put a figure on an acceptable range: "It is only gained by experience."

6.7 Dr Hayes was questioned at length at this Inquiry on the subject of parameters. He said:

> "It is a matter of judgement for the case officer as to his interpretation of the results . . . The context of each individual case will be weighed up very carefully, and [the] parameter would be far more rigidly applied in the case of swab kits and hand test kits, than would be the case in examination of swabs from, for example, explosion debris, where again the questions being asked are rather different. Equally, the parameter would be waived to a degree if it had been possible to subsequently confirm the results by, for example, gas chromatography, as was the case in many cases."

6.8 It was accepted at the Inquiry (although not made known until the end of the trial) that a TLC test carried out in toluene does not differentiate between NG and another explosive pentaerythritol tetranitrate (PETN), although it was considered by Mr Elliott that it was possible to distinguish the two by reference to the rate of colour development, namely the rate at which the pink spot develops on the TLC plate. This view was not shared by Mr Higgs, nor Dr Hayes nor by the scientists present at the experiments carried out for this Inquiry. It is clear that unlike the Rf value, the intensity of the colour and the rate of its development are matters of subjective judgement and not measurable or capable of being recorded as figures. Patently, it is a judgement which can only be made (if at all) while the test is being carried out. Having heard all the evidence, I do not think that the rate of colour development was relied on at RARDE to any substantial extent. Further, I am quite satisfied that any attempt to rely upon it would be in large measure impracticable and in any event wholly unreliable. I shall return to this important point later.

6.9 The standard explosives placed on the TLC plates at this time were NG, RDX, TNT and nitrobenzene. These were explosives encountered in debris from explosions or from safe breakings. No PETN standards were used for this purpose. The water swabs were not tested: Mr Elliott said at the trial that they were included in the hand test kit because it had been designed for testing people who were known to have handled explosives, and in particular commercial explosives, which contained other ingredients which were water soluble. They were taken in order to carry out other confirmatory tests but for the current purposes the water swabs were not processed.

6.10 The TLC procedure as carried out in 1974 did not give a quantitative result and it was not possible to say how much explosive was found on a particular swab. I was told it was RARDE's practice to place a standard of 200 nanograms* of NG on the TLC plate and to report a positive when its colour intensity was at least as great. Thus even if the limit of detection was lower, a higher standard was used before a sample was reported positive.

*a nanogram is one billionth of a gram or 10^{-9}

7. Results of hand test swabs

7.1 Although control spots of other explosives were applied to the relevant plates, in this case positive results were reported only for NG. The control swabs were all negative indicating that the cotton-wool in the kits was uncontaminated before use. I summarise the results in the table below:

	Dry Swab		Ether Swab		Nails		Paper
	L	R	L	R	L	R	
Guiseppe Conlon	−	+	+	+	+	+	+
Shaun Smyth	+	+	+	+	+	+	+
Patrick O'Neill	−	−	−	−	+	+	+
Paddy Maguire	−	+	−	−	+	+	+
Vincent Maguire	−	−	−	−	−	+	+
Patrick Maguire	−	−	−	−	−	+	−
Annie Maguire	−	−	−	−	−	−	−
John Maguire	−	−	−	−	−	−	−

The first (dry) swab is designed to remove material from the surface of the hands. Any recent handling of explosive will be picked up on the swab unless the hand has been very thoroughly washed. The second (ether) swab is designed to draw out material which has been absorbed subcutaneously because explosives such as NG are readily absorbed under the skin.

7.2 The results showed that Shaun Smyth was positive on all the swabs, Guiseppe Conlon was positive for all swabs except dry left hand. The nails on both hands and paper scrapings were positive for Patrick O'Neill. The nails of Paddy Maguire on both hands, the paper and the right hand dry swab were positive. Vincent Maguire's right hand nails and the paper were positive. Patrick Maguire's right hand nails only were positive. There were no positive findings from the hands of Annie Maguire or John Maguire.

7.3 Mr Elliott's statement of 5th December 1974 recorded that he tested the swabs and nail scrapings for the presence of explosive traces. He then listed the results as either "no explosive detected" or "nitroglycerine detected". He concluded:

> "It is my opinion that traces of nitroglycerine found on the swabs and nail scrapers indicate that an explosive substance has been handled recently."

His statement contained no description of his testing procedures, let alone

detailed results. An inspection of Mr Elliott's notebook, an extract from which was an exhibit at the trial, showed that the Rf values obtained on the suspect samples and recorded as positive ranged from being identical with the NG standard, to a difference of 0.03 from the standard. 0.03 is the limit of the parameter that the RARDE witnesses said they would regard as positive for NG; this was the value recorded on Paddy Maguire's right hand dry swab and Vincent's right hand nails and paper. Both were reported as positive in Mr Elliott's statement.

7.4 It appears that positive results on this scale were something of a rarity in the laboratory. Mr Higgs gave the Inquiry a vivid impression of the impact these results had on the RARDE staff when he was asked whether he remembered viewing these particular plates:

> "Yes, indeed. There was a great deal of excitement. Never before had we seen so many positives on a plate at a reasonably high level of intensity. We just did not believe it, quite honestly. He brought them in to me, I was in my office writing at the time, so I have a distinct memory of those spots and their strength relative to the standard . . . My view at the time was that they contained a rather appreciable amount of nitroglycerine. The hue was similar to the standards."

The gloves

7.5 The 39 plastic gloves were apparently left in the drawer on the table in the living room overnight and remained there until 5 pm the following day, Wednesday 4th December, when they were collected by Detective Sergeant Lawrence Vickery in a single plastic bag.

7.6 He took the 39 plastic gloves with further exhibits (a pair of rubber gloves and 2 boxes of ointment) to New Scotland Yard where he put them all in a locked cupboard in the Bomb Squad Exhibits Room. They remained there for five days. The keys to the cupboard were in the possession of the Exhibits officers. Two exhibits officers, Detective Constable Napolitano and Detective Sergeant Holbrook gave evidence at trial to the effect that only a small number of authorised officers had access to the room.

7.7 On Monday 9th December Detective Sergeant Lawrence Vickery collected the plastic gloves with the other two exhibits and handed them to Detective Sergeant Alan Lewis who later that day took all the exhibits to RARDE at Woolwich where he handed them

to Mr George Berryman, Higher Scientific Officer. Annie Maguire's plastic gloves were tested for explosive contamination by Mr Wyndham using the TLC technique having washed the gloves through with ether. However Mr Elliott said in his statement of 13th December 1974 that he himself had carried out this test and continued: "It is my opinion that traces of nitroglycerine found on Exhibit LV/16 are consistent with either contact of the gloves externally with explosive material or internally from contaminated hands." The test was recorded in Mr Wyndham's notebook with an Rf value of 0.69 compared with an NG standard of 0.66. This is at the limit of the parameter described as acceptable by RARDE witnesses. Dr Hayes carried out a fresh ether wash of the gloves, subjected them to a TLC test and also recorded them positive for NG. In his notebook an Rf value of 0.60 is recorded but he did not record the Rf value for the standard. He also tested a control sample of 22 similar gloves from the RARDE laboratory and found them negative.

8. The trial

8.1 The essence of the Crown's case at trial was that traces of NG had been found under the fingernails of six of the defendants and on the gloves belonging to and used by the seventh, and that these were inconsistent with any other explanation than that they had all been knowingly handling NG for an unlawful purpose. The evidence was almost entirely scientific. It was asserted that the testing carried out on the Maguires' samples or gloves proved conclusively that they had been handling NG. The TLC test was, as Mr Michael Hill QC (then junior counsel for the Crown) told the inquiry, "specific and particular". In opening the Crown's case Sir Michael Havers QC (as he then was) said that the scientists would testify that the tests were like fingerprints. The presence of NG under the fingernails of all the defendants except Annie Maguire was, according to the Crown, proof that there had been not just touching but manipulating or kneading of NG. Mr Elliott said in evidence, "NG had been handled or, if you like, kneaded to use the bakery term rather than just touched with the hand" and he ruled out the possibility that NG could have migrated under the fingernails or got there by scratching the hand. It was, in particular, the findings of NG under the fingernails that, according to the Crown, ruled out the possibility of innocent contamination; in order to get NG under the fingernails, it was said, one must handle NG rather than just touch a surface already contaminated by NG.

8.2 The prosecution alleged that the arrest of Gerard Conlon in connection with the Guildford bombings and his father's arrival from Belfast, led to a great deal of activity at No 43 Third Avenue. The occupants of the house (with the exception of two of the children) were all in some way involved in moving or disposing of explosives. The Crown used the phrase "all hands to the pump" to describe the activity at 43 Third Avenue on 3rd December 1974.

8.3 The defendants' answer at the trial to the first part of the case for the Crown was that one could not be satisfied that a suspect substance was indeed NG solely by one TLC test using toluene as the eluent. In other words the TLC/toluene combination was not specific for NG. What was required was a confirmatory test, for instance by using another eluent. Mr Yallop, the principal witness for the defence, was a man with substantial qualifications who had been employed at RARDE for many years on work with explosives. He agreed that he had indeed given evidence on many previous occasions to the effect that the TLC/toluene test for NG was specific. He had, however, changed his mind since leaving RARDE. He clearly had done a number of experiments trying to find a substance which would mimic NG in the relevant test but had been unsuccessful. This notwithstanding, his evidence was that one could not exclude the possibility that at some time some other substance could mimic NG in similar circumstances. This became known as "substance X", a phrase which was used frequently in his summing-up by the judge and I think added to the sense of unreality about the unsuccessful search for the NG mimic. There is no doubt that cross-examination of Mr Yallop by Sir Michael

Havers QC was very effective. In the course of it Sir Michael clearly put to him that he had not been honest: that he had not complied with his duty to be frank with the court: that he had selected and given evidence about the results of experiments which best supported his thesis and discarded the rest. Reading the transcript of Mr Yallop's evidence at the trial, it is quite clear that an effective challenge was mounted not only against his scientific expertise but against his credibility generally.

8.4 The defendants' answer to the second part of the Crown's case was that the Crown could not exclude the possibility of contamination of their hands and gloves other than by the knowing handling of NG.

8.5 In addition to the positive case put forward on behalf of the defence, however, the Crown's case also faced a number of inherent difficulties. The indictment alleged that the several defendants had had the explosive NG in their possession or under their control. The Crown disclaimed any intention of asking the jury for convictions based solely upon the very small amounts of NG on the defendants' hands which it was suggested was shown by the TLC tests. The Crown's contention was that from the traces of NG found on the defendants' hands, or on Annie Maguire's gloves, the jury could and should draw the inference that the defendants had been handling a substantial quantity of explosive. The way that the Crown's case was put to the jury by the Judge in his summing-up was this:

> "Now the Crown case on this is quite simple. They say that (the defendants) all had traces of nitroglycerine on their hands; they say that Mrs Maguire's gloves had traces of nitroglycerine on them; they say that they are all members of a group who were together on the 3rd December. The Crown say that the Guildford arrests would create panic amongst these people, that they were in possession of explosives, and they say that there is some evidence of panic, or at least of grave concern, in relation to the arrest of Gerry Conlon and the disappearance and subsequent emerging on the arrest of Hughie Maguire. The Crown do not say that all those people necessarily handled the nitroglycerine simultaneously, they do not express any view about that at all; they simply say they handled it somehow or other; they do not even say where it was handled. You may think that the probabilities are that if it was handled at all it was handled at or near 43 Third Avenue. You may also think it is probable that it was handled during the afternoon of 3rd December. But the Crown do not have to prove that and they do not allege any particular time of handling it or, as I say, that they all handled it together."

8.6 Although the Crown were making no specific suggestions as to where and when the several defendants had handled the NG, any observer considering the circumstances of the trial and convictions must ask himself

where the alleged bulk of NG which had been handled could have been and when each of the defendants, together or separately, could have handled it. The question also arises why the defendants, or at least some of them, should have been doing so.

8.7 There was no evidence that there had been any bulk in 43 Third Avenue. Indeed, all the relevant evidence was to the contrary effect. Although the house had been gone over with dogs and with a sniffer, these found no indication of any NG vapour, not even in the drawer in the kitchen in which it was said that the contaminated gloves belonging to Annie Maguire had been kept. Further, the substantial number of swabs from the house which proved on TLC tests to be negative and the absence of traces of NG on the defendants' clothing pointed strongly to there being no bulk at No 43 or nearby.

8.8 There was no other evidence of the existence of any bulk quantity of NG. The Crown asked the jury to infer its existence at some place and at some time merely from the minute traces which were found on the hands of the defendants.

8.9 Indeed, somewhat paradoxically, the Crown relied upon the absence of any evidence of a quantity of NG to negative any suggestion that the traces on the defendants' hands had been due to innocent contamination. As the Judge put it in the course of his summing-up:

> "The Crown say that there is really no chance of innocent contamination here transferred from hand to hand or hand to object and then onto the hands of the accused because they say there is no original source of the nitroglycerine which gives rise to this transfer by innocent contamination."

Indeed, it does not seem to me that the question of innocent contamination and whether this could have been the explanation of the traces on the defendants' hands was ever properly investigated at the trial.

9. Scientific investigation for this Inquiry

9.1 Before dealing further with the trial itself, it is convenient to interpolate here a description of the investigations which Professor Duncan Thorburn Burns carried out on my behalf. His study was of three main areas, namely:

i) a review of the current scientific literature and evidence on thin layer chromatography, including a consideration of possible mimics of NG on TLC;

ii) discussion of NG persistence on hands and migration under the finger nails;

iii) experimental investigation of contamination and persistence.

9.2 Professor Thorburn Burns initially examined RARDE's original test results; he concluded that the tests appeared to have been properly carried out and (with the possible exception of one) to have produced consistent results. The results indicated that there was an organic nitro compound present on the hand swabs and the gloves. Professor Thorburn Burns points out, however, that it is now common practice to determine Rf values of samples and standards by several thin layer systems. He knows of no substance which could be confused with NG in the TLC system used at RARDE other than the explosives PETN and EGDN. EGDN can be discounted because it always appears with NG. There is, then, no known non-explosive "substance X". On the basis of the TLC process alone, however, Professor Thorburn Burns concludes it is not possible to distinguish between NG and PETN. A TLC test carried out by Dr Lloyd of the Home Office Forensic Science Service showed slightly higher Rf values for PETN than for NG on the same plate, but this difference was not sufficient for distinguishing between the two. This TLC test also showed that although the quantities of NG and PETN were the same, namely 200 nanograms, there was no perceptible difference in their respective rates of colour development. The spots produced by the NG and PETN standards appeared with about the same, medium, intensity. This is of course a matter of subjective judgement and there was some disagreement between the scientists present at the experiment whether some slight difference was detectable.

9.3 As I have indicated, the scientists called for the prosecution asserted at trial that the traces of NG found under the fingernails of certain of the suspects established that they had been manipulating, or kneading explosives. Nevertheless, in a study carried out in 1977 and reported in 1982, Twibell and others, including Mr Higgs who had been a witness at the trial, found that NG can migrate under the nails without the explosive being kneaded.*

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* "Transfer of Nitroglycerine to hands during Contact with Commercial Explosives". J D Twibell, J M Home, K W Smalldon and D G Higgs, Journal of Forensic Sciences. 27 (1982). 783-791.

9.4 As part of his study, Professor Thorburn Burns designed a number of experiments to investigate the scientific possibilities of innocent contamination of hands, and also of plastic gloves. These experiments were conducted in the Home Office Forensic Science Laboratory at Birmingham with the full assistance of its staff. Scientists representing other parties with a significant interest in my Inquiry were invited to participate, and indeed played an active role in the experiments. It was decided to use a towel as a possible source of contamination because at their trial Shaun Smyth and Patrick O'Neill each gave evidence of washing and using a towel in the bathroom at 43 Third Avenue. Annie Maguire also gave evidence of her use of towels in the bathroom while Paddy Maguire gave evidence of going to the bathroom on his return from the public house. The process was started by the handling (kneading) by Professor Thorburn Burns of a cartridge of Gelamex, a commercially produced explosive containing NG. He washed his hands and dried them on a clean towel, which was then used by others; he also handled mugs and glasses and placed his hands in a cardboard box containing a quantity of plastic gloves of a similar type to those found in the kitchen drawer. The hands of those who handled the towel, mugs and glasses were then swabbed and the swabs were analysed by the more modern and more sensitive technique of high-powered liquid chromatography (HPLC), as well as by TLC. HPLC has the great advantage of providing not just a positive or negative but also a quantitative positive finding, indicating estimated quantities of NG present, measured in nanograms. No similar tests were carried out using the explosive PETN but PETN is reported to be more persistent than NG and the possibility of transfer is considered at least as great.

9.5 These experiments demonstrated that:

i) NG which contaminates the hands readily migrates under the fingernails; none of those with positive findings under the nails (except the Professor) had touched, let alone manipulated the NG. This confirms the finding in the Twibell paper;

ii) significant and detectable amounts of NG can be picked up from a contaminated towel, and varying smaller amounts can be picked up from contaminated objects such as mugs and glasses, though only some of the latter quantities would have been enough to be detected on TLC;

iii) NG's persistence on a towel is sufficient to contaminate a user of the towel at least 24 hours after the towel was first contaminated;

iv) a contaminated hand which riffles through a quantity of plastic gloves in a box readily contaminates the gloves.

9.6 These findings demonstrated that there was a substantially greater scope for innocent contamination of hands and gloves than the evidence of the Crown witnesses at the trial (which must be taken to have been accepted by the

jury) suggested. In particular, the assertion of Mr Elliott that each male defendant must have manipulated or kneaded a primary source of contamination, that is a quantity or bulk of explosive, is not borne out by subsequent investigations. I do not overlook, however, the fact that these conclusions presuppose the presence in the Maguires' house of someone who had been in fairly recent significant contact with NG (or PETN). An explanation which cannot be excluded is that such a person had used a bathroom towel in the house. Although it is not being suggested that these experiments demonstrate that the towel was the source of the contamination, it is a possibility. It can thus be said that the results of the TLC tests alone did not prove the presence in the house or nearby of a primary source of contamination, such as a quantity of explosive which had been handled knowingly by all the defendants. But the results of the tests indicate that there must have been at least a secondary source of contamination sufficient to produce the recorded results.

10. Exhibit 60

10.1 I return now to a consideration of the trial of the Maguire Seven itself. By the end of the 26th February 1976 all the evidence and counsel's speeches were finished. The court did not sit on Friday 27th February, the trial judge intending to start his summing-up at the sitting of the court on Monday 1st March 1976. However, this was not to be. On about 25th February Mr Yallop came across in his files at home a document on the specificity of the TLC/toluene test for NG, a matter fundamental to the Crown case. Having found this document Mr Yallop got in touch with the solicitors instructing him and on Sunday 29th February a Mr Disley, who was the solicitor for Mr O'Neill, travelled to Mr Yallop's home in Devon and picked up the relevant document. This became known at the trial and ever since as Exhibit 60. With the document Mr Yallop provided an explanatory note, together with a written description of finding the document in his files on 25th February 1976. It is now accepted on all sides that the document was entirely genuine. It was a memorandum sent by Mr Elliott to Mr Yallop in June 1974 upon the identification of explosives by the TLC method. The material part of this document read as follows:

> "In order to overcome the difficulty of maintaining a constant proportion in the solvent system (as with ethyl acetate petroleum ether) a single eluent – toluene – is now used. Unfortunately toluene does not give a separation of NG and PETN although with experience the rate of colour development of the individual spots can indicate which compound is present."

The memorandum then went on to record that, using the TLC/ toluene test, the Rf values for NG and PETN had been observed as identical, that is to say 0.60.

10.2 Once Mr Disley had arrived at the Central Criminal Court on the morning of Monday 1st March 1976, and shown Exhibit 60 to counsel, both sides immediately realised the vital nature of the information which it contained. In the result, when the court sat Mr Quentin Edwards QC (as he then was), who appeared on behalf of Annie Maguire, asked that the jury should be sent out and told the judge of Exhibit 60 and its contents.

10.3 In reaching a conclusion about the events of this day, I have had the advantage of several accounts. First, a contemporary manuscript note made by Sir Michael Havers QC from information which he obtained from Mr Higgs. Secondly, the Inquiry was given a manuscript note made by Mr Higgs himself of the events of 1st March 1976 at the Central Criminal Court together with a typed up copy of this: it should however be said that at a material point the latter is not a wholly accurate copy. Thirdly, Messrs B M Birnberg & Co, the solicitors then acting for five of the defendants, also produced a manuscript note made by their representative of what took place. Fourthly, in the course

of my public hearings I heard evidence from Mr Antonio Bueno QC and Mr Patrick Mullen who were then junior counsel for some of the defendants, as well as from Mr Michael Hill QC and Mr Paul Purnell QC who were members of the prosecution team led by Sir Michael Havers QC. From all this material, albeit that it is now over 14 years after the event, I have been able to reach a clear conclusion as to what occurred in the discussions between counsel and about what was said by and to the trial judge.

10.4 When he first told the judge of Exhibit 60, Mr Edwards asked why the Crown experts, Messrs Higgs, Elliott and Hayes had not mentioned this potential confusion between NG and PETN in their evidence, suggesting that they had misled the court. The judge pointed out that so also in the circumstances must Mr Yallop have done. At that stage counsel for the defendants were minded to apply to the judge that Mr Elliott on the one hand and Mr Yallop on the other should be recalled. Mr Stephen Terrell QC, who appeared for Paddy Maguire and his two sons, reminded the judge that RARDE had claimed specific behaviour for NG in toluene and, it is interesting to note, also complained about the lack of information that had been given by the prosecution witnesses concerning other eluent systems. Before the judge rose at 11.05 am in order that the parties might have further discussions about what should be done, Mr Higgs recorded the judge as saying "this paper alters my mind concerning what I was going to say about the specific nature of toluene as an eluent but clearly if this is so, and no difference can be seen, then I cannot say so with knowledge of this information."

10.5 At the start of the adjournment at 11.05 am on 1st March, when counsel were discussing among themselves the sudden emergence of Exhibit 60 and its possible significance, I think the initial reaction on both sides was that the witnesses, Mr Elliott (for the Crown) and Mr Yallop (for the defence), should be recalled. The late appearance of Exhibit 60 presented both sides with a dilemma. Crown counsel were able to obtain immediate instructions on its significance. Sir Michael's handwritten note and Mr Higgs' note are in similar terms and show that Sir Michael was told that the sensitivity of PETN was 20–30 times lower than that of NG. I am satisfied that Sir Michael was told that because of this difference of sensitivity, PETN could be distinguished from NG by its markedly different rate of colour development when subjected to the TLC test using toluene as the eluent, and thus that PETN could be excluded on the strength of the tests actually carried out.

10.6 This conclusion is confirmed by the evidence of Mr Michael Hill QC before me:" . . . the clearest recollection I have is that I was told that for PETN to produce these results, there would have had to have been a wholly unrealistic concentration of PETN upon the TLC test, and that it really was not a viable proposition."

10.7 I am satisfied that Sir Michael obtained this information from Mr Higgs. I do not believe that Mr Elliott was also at court on 1st March. There is a reference in Mr Higgs' note to "Elliott and Wyndham awaiting call". However, Mr Higgs was passing on to Sir Michael what he (Mr Higgs) believed Mr Elliott could prove if recalled. The reference to Mr Wyndham is also significant. It confirms that the witnesses, if recalled, would have given further evidence of the tests actually carried out, and that Mr Elliott claimed to be able to exclude PETN on the strength of those tests rather than merely as a matter of theory. Though Mr Higgs does not now recall doing so, I believe he spoke to Mr Elliott (probably by telephone) before giving this information to Sir Michael.

10.8 This information reassured Crown counsel that they need not worry about PETN and could regard it as a red herring. They considered that since PETN could be excluded, the integrity of the TLC tests had not been impaired. The Crown experts had given their evidence that the defendants' hands had been contaminated with NG. Whether this was or was not to be accepted was a matter for the jury. However, they were prepared to deal with the problem in whatever way the defence requested, and would not have opposed the recalling of witnesses.

10.9 Defence counsel also considered at first that Mr Elliott and Mr Yallop should be recalled. As they considered the matter further, they realised that substantial criticism could be made of Mr Yallop for the late production of Exhibit 60. His description of coming across it in his files was considered to be lame. There was some doubt at the time whether the document was genuine, though there is now no doubt on any side that it was. Mr Yallop's credibility had been seriously damaged by Sir Michael Havers' effective cross-examination, and there was considerable reluctance, notwithstanding the importance of Exhibit 60, to subject him to the same experience again. It was felt that the final speeches of defence counsel had been effective.

10.10 Defence counsel realised, however, that Exhibit 60 enabled them to submit that whereas the Crown had consistently claimed that TLC using toluene as the eluent was specific for NG, this could no longer be sustained. Thus, they might be able to submit that there was no case to answer on an indictment alleging possession specifically of NG. There was some discussion in court about the possibility of amending the indictment to allege possession of NG and PETN in the alternative, but it was quickly realised that any such application at that stage in the trial would have little, if any, chance of success.

10.11 In the course of the morning there was a meeting between Crown counsel and defence counsel. Sir Michael Havers QC, attended by one or more of his juniors, met leading counsel and some junior counsel for the defence. The clear inference is that he explained to them what he had been told by

Mr Higgs about PETN. In particular, he must have told them that if recalled, the Crown scientists would be able to prove that the substance in the samples obtained from the defendants was not PETN, on account of its greatly different rate of colour development. Mr Higgs' own note records that Sir Michael later told the Court that "his evidence would show that the experts could show that the substance on the swabs was not PETN".

10.12 Defence counsel considered their position further in the light of this information. They realised that they could not credibly suggest that PETN might have been present on their clients' hands and on the plastic gloves, and they foresaw that the recalling of Mr Elliott and Mr Yallop would be likely to weaken the defence case as it then stood. Furthermore, they considered that to put in Exhibit 60, without further oral evidence but with a short agreed explanatory statement, would give them a legitimate forensic advantage in that it showed that the TLC test was not specific for NG as had been asserted. It undermined the uniqueness of the test.

10.13 Therefore, the defence agreed to this course, and the judge approved it. The agreed statement, as the Court of Appeal noted it, was:

> "This document was concerned with identifying explosives. There was an admission that the document was prepared by Elliott in June 1974 and sent by him to Yallop. The contents represent the correct scientific position. All the substances referred to in the document are explosives. It is clear that there is no suggestion by either the prosecution or the defence that PETN was a substance either on the swabs or the gloves."

The Court of Appeal later said that it was also agreed that the judge should be left to deal with Exhibit 60 in his summing-up as he thought right. However, defence counsel clearly expected the judge to make the point to the jury that the defence relied on Exhibit 60 as showing that the test was not unique. In exchanges with counsel in the absence of the jury during a break in the summing-up, he took this point. The transcripts of the summing-up shows that in one of these exchanges Mr Quentin Edwards QC said "Perhaps the real importance (of Exhibit 60) is not in relation to the facts of this case but it does undermine the Crown theory that the position of NG in toluene is unique. That is the point." To this the judge commented – "All right". In the event, however, the judge did not put this point to the jury.

10.14 In my opinion any miscarriage of justice which has occurred in this case was due in part to the late appearance of Exhibit 60 and to the way in which it was dealt with. In my view the judge ought not to have accepted the compromise agreed between the parties but should have insisted that witnesses be recalled to deal with Exhibit 60. However, it is clear to me that the Judge and counsel on both sides faced a very difficult dilemma. In addition they were

all misled into the belief, which is now known to be false, that the Crown scientists could have satisfactorily excluded PETN on the basis of the tests done on the samples in December 1974.

10.15 In their statements taken for the purposes of this Inquiry, both Mr Higgs and Dr Hayes said that rate of colour development could not be relied upon to differentiate between NG and PETN in this particular test. They gave cogent reasons for this view. Professor Thorburn Burns' experiments showed no difference in rate of colour development between the two compounds when applied to a single plate in the same quantities. Thus, whilst Mr Elliott believed at the time that he could rely on this feature to enable him to differentiate, he is now shown to have been wrong to do so. It follows that counsel acted on the basis of a serious, indeed fundamental, misapprehension in agreeing that Exhibit 60 could be placed before the jury without further oral evidence.

10.16 The agreement was, however, treated by the judge and by the Court of Appeal as if it were a formal admission that the substance was not PETN. Exhibit 60 raised the spectre of the Crown's inability to prove specifically the presence of NG. The agreement was treated as plugging the evidential gap created by the appearance of Exhibit 60. I am satisfied that defence counsel were not intending to make any implicit concession that if the Crown scientists could establish the presence of one or the other, then the substance on the swabs was NG as opposed to PETN. The interventions made by Mr Cripps and Mr Self confirm this.

10.17 In agreeing to the course taken, defence counsel were thus seriously misled, albeit through no fault on the part of Crown counsel. Because there was no procedural error, I do not consider that this amounted to a material irregularity within section 2(1)(c) of the Criminal Appeal Act 1968, but for myself I have no doubt that it is enough to render the convictions unsustainable. It is now clear that on the evidence the Crown were unable to prove a material allegation in the indictment namely the presence of NG. It was far too late at this stage in the trial to amend the indictment.

10.18 There remains the judge's failure to put to the jury the point relied on by the defence, that Exhibit 60 undermined the uniqueness of the test. In my opinion he did not appreciate the importance of Exhibit 60 and the defendants' approach to it. He agreed that a statement should be drafted to be read to the jury. However, his approach thereafter was to fasten onto the fact that no one was suggesting that it had been PETN on the swabs and he therefore thereafter directed the jury that they could ignore not only PETN but also the circumstances of Exhibit 60. This he repeated a number of times in the course of his summing-up. I think that he failed to appreciate that Exhibit 60 in fact removed the plank of the exclusivity of the TLC/toluene test which was the whole basis of the Crown case at trial, and failed sufficiently to explain this point.

10.19 Further, although the Court of Appeal upheld his summing-up, I regret that in my view that Court also did not appreciate the significance and real strength of the defendants' argument on Exhibit 60. It was wrong and insufficient for the trial judge to direct the jury that they might think that PETN could really be put out of their minds for the purposes of this case. I do not forget that he had earlier directed the jury in these terms:–

> "Substance X, if it exists at all, is not PETN. On the other hand it would be right, if you think it proper, to take account of the fact that there are two explosive substances which give similar results . . . two explosive substances, if you think that helps you at all on the selectiveness of the TLC test in toluene as applied to nitroglycerine."

However, in my opinion this did not put the defence answer to the Crown's exclusivity point sufficiently clearly. In my judgment the Court of Appeal erred in upholding the judge's directions to which I have referred.

11. The RARDE evidence

11.1 Extracts from the notebooks of the scientists who gave evidence at the trial were trial exhibits. In the course of preparation for this Inquiry in response to a request from the Secretariat, RARDE supplied the Inquiry with copies of certain documents from the case files. The hand test kits used in the case were also made available to the Inquiry. It was only during the course of the hearings, however, that the notebooks in use by the scientists at the relevant period were made available to the Inquiry (and it was only on the last day of the public hearings that I saw the case files themselves). Although I believe that RARDE officers were conscientiously trying to assist my Inquiry I do not think they appreciated the significance of the notebooks and case files to the issues under consideration.

11.2 They had not in fact been fully disclosed at trial and I have therefore considered them closely. Further Mr Higgs, Dr Hayes and Mrs Brooker gave oral evidence to me at the public hearings and were fully cross-examined. They returned to give evidence on a second occasion after the Inquiry's examination of the notebooks. Mr Wyndham declined to come and give evidence to me. He was only 17 years old in 1974 and had limited experience of TLC testing. Much has been made over the years of the alleged inadequacies of Mr Wyndham. Although I would have preferred to have heard him give evidence, I have seen or heard nothing which can support these criticisms. True he was young and inexperienced: nevertheless his work in the TLC testing technique was largely mechanical: he was, throughout, under the supervision of his skilled and qualified superiors. An error on his part could have led to a negative finding in favour of a defendant but could never have led to a positive finding when one should not have been made.

11.3 My investigation of the RARDE notebooks revealed a number of disturbing features.

NG and PETN

11.4 It is amply demonstrated by the RARDE notebooks that not only did the RARDE scientists know throughout the trial that PETN was potentially confusable with NG on the TLC test in toluene, but also that their work at RARDE had taken this fully into account.

11.5 The initial evidence to me of the scientists from RARDE who had given evidence at the trial was that PETN simply did not figure in their minds at the time of the trial. Dr Hayes said that PETN was known as an explosive or a component of explosives used by terrorist groups mainly working from the Middle East. It was not then found as the main charge explosive by groups associated with Irish terrorism, but could be found as the component of a

detonator (eg. Cordtex). Mr Higgs explained:

> "It was never raised in any of the previous trials as being in conflict with NG and, of course, we had decided that it just did not feature in the present IRA campaign as a possible explosive."

Only when the notebooks became available to the Inquiry did the extent of RARDE's interest in PETN become apparent, from the amount of testing carried out, including the application of PETN standards, although not generally to hand test kits. There was also testing to distinguish between NG and PETN. This makes all the more disturbing the failure of the scientists to mention PETN.

11.6 It is hard to believe that PETN was far from their minds. At the trial Mr Higgs twice mentioned the rate of colour development in considering the characteristics of a substance which would behave like NG in this test. It must have been to these remarks that the judge referred in his summing-up when he recalled having heard the rate of colour development mentioned but he could not think where.

11.7 At the trial Mr Higgs said:

> "I have a high level of confidence that no other substance, other than possibly nitro-esters, will give the Griess reaction on the Rf value under those conditions comparable with nitroglycerine."

He added: "There is that vague possibility."

In his evidence to the Inquiry, Mr Higgs gave two accounts of what he had in mind when giving these answers. His first account was that he gave them in the context of the search for a non-explosive "substance X", to which the existence of PETN was irrelevant. Later, however, he told me:

> "If I may refer you back to the place yesterday, where in my answer I said there was a possibility of other nitro-esters. To a learned counsel, this would not mean anything, but to a scientist versed in explosives technology, this must have meant, possibly PETN. Mr Yallop did not pick this up, and therefore I came to the conclusion that it was not in his mind either at that stage."

In referring to "possibly nitro–esters", I am satisfied that Mr Higgs had PETN in mind but did not mention it. PETN was a nitro-ester, which he knew to have an Rf value similar to that of NG when tested by TLC using toluene. His evidence that there was a "vague possibility" of the existence of nitro-esters which could mimic NG was at least seriously misleading. He claims to have relied on Mr Yallop picking up his signal, and to have been reassured by Mr Yallop not doing so. In my judgment Mr Higgs' failure specifically to refer to

PETN (as a nitro-ester which could mimic NG) was less than frank.

11.8 Furthermore, the Court of Appeal attached some weight to this piece of Mr Higgs' evidence, in rejecting criticisms of the summing-up in relation to Exhibit 60. Lord Justice Roskill (as he then was) said:

> "Furthermore, although this test with PETN had been forgotten, PETN was a nitro-ester and Mr Higgs had said in evidence that there was a possibility that a nitro-ester existed which would give the same Rf as NG."

I do not think the Court could have relied on this piece of evidence in this way had they known that Mr Higgs had not forgotten PETN, but had chosen not to mention it knowing it to be a particular nitro-ester which would give the same Rf as NG.

11.9 The failure to mention PETN at the trial was, I believe, wholly misleading. But the omission of PETN as a substance which could be confused with NG predated the trial. At the consultation with prosecution counsel on 4th July 1975 Mr Higgs (not I believe Dr Carver as the note of that consultation records) was asked to prepare a list of all the substances "which have been analysed either because they are nitro-esters or because they have been suggested by the defence in other bomb trials as giving a like reaction to NG on the TLC test". This was to combat the anticipated attack on TLC by defence scientists.

11.10 There is no record of any response to this request until 13th January 1976, the day before the trial, when Dr Carver, Mr Higgs and Mr Elliott attended a further consultation with counsel. For that consultation Mr Higgs prepared a long note headed "*Summary of information for meeting with Sir Michael Havers* ... 13.1.76". In that note he referred to the existence of 196 nitro-compounds, adding that:

> "25 simulate NG at 20-30 microgram level, of these only 11 simulate NG at 200 nanogram level but are distinguished by UV spot, or different colour at final stage, or different Rf value from NG. ALL ARE EXPLOSIVES."

PETN is not in fact distinguishable from NG by any of these three criteria, and the failure of Mr Higgs and Mr Elliott to mention it to counsel on 13th January 1976 is simply inexplicable. To say, as Mr Higgs now does, that PETN simply did not spring to mind because it was not an explosive used in the current IRA campaign is an inadequate explanation, because what he was being asked for by counsel was a theoretical paper.

11.11 After the trial and appeal there were continued attacks on the RARDE evidence from independent scientists and Mr Higgs sought at various times to rebut the criticisms. In a note prepared by him in 1983 and provided by him to the Inquiry he said he did not include PETN or EGDN in the list of nitro compounds giving positive Griess test results because "it was already known that they could not be distinguished from NG using toluene as the eluent." Later in the note he hinted at another reason for the omission:

> "It was always understood during the giving of evidence that no other known compounds referred to non-explosive compounds. ..... The significant reaction obtained by our TLC tests show gross contamination of explosive and, in our view, it little mattered whether this was NG, EGDN or PETN – none of which was at all likely to be picked up in such a concentration by chance contamination."

11.12 I think that Mr Elliott and Mr Higgs failed to appreciate the significance of the omission of PETN. They ruled it out for practical purposes and instead of admitting to its existence when pressed in court about any other substances that could mimic NG, chose to convince themselves that any other substance meant a non-explosive substance. They failed to grasp the significance, in legal not scientific terms, of the omission. When Mr Yallop finally drew attention to PETN and its potential confusion with NG, Mr Higgs (possibly after talking to Mr Elliott) attempted to retrieve the situation by telling counsel that PETN could be excluded on the basis of its much lower rate of colour development.

Second tests

11.13 Evidence was given at the Maguire trial that second tests were not necessary or practicable. Dr Hayes, for example, told the court that he had not considered the possibility of using alternative solvent systems. But the Inquiry's examination of the RARDE notebooks revealed for the first time that there had been a second test on the samples taken from the Maguires.

11.14 The court was not told that second tests, which were for nitro-toluenes, were in fact carried out by Mr Elliott on both sets of hand swabs and on the gloves, using a different TLC system. Dr Hayes suggested to the Inquiry that Mr Elliott probably applied this test to the residues of the suspect samples contained in the beakers. These second tests were negative. Both Mr Higgs and Dr Hayes denied knowledge of these second tests until they examined the papers at RARDE shortly before my public hearings began. Even then, when they first gave evidence to me, they did not tell me of the second tests.

11.15 On the evidence, some nitro-toluenes would have been present in Frangex, an NG based explosive, and it is possible that the negative results could have been taken to undermine the positive results on the original tests.

Even though it would probably have been possible to counter this with an argument that the second tests were less sensitive than the first, it is clear that the second tests should have been disclosed to the court.

11.16 It was made clear at my Inquiry that a specific test was also available at the time to distinguish between NG and PETN. This used a different eluent, namely a mixture of petroleum ether and ethyl acetate, and became known as System 2. By the time of the trial it was in regular use. Dr Hayes told the Inquiry that it was designed primarily to distinguish the stabilisers in propellants, but it was also used to distinguish NG from PETN because toluene did not form a satisfactory eluent for that purpose.

11.17 Dr Hayes told the Inquiry that there were three possible methods by which a sample could be obtained for a second test, namely

i) using the residue in the beakers as already explained;

ii) scraping off the residue of the pink spots and the chemicals in them from the used TLC plates; and

iii) rewashing the original swabs with ether.

11.18 In the case of the gloves the negative finding for nitrotoluenes could have been of particular significance because it preceded the second test for NG reported positive by Dr Hayes.

11.19 The misapprehension that no further testing was possible was allowed to persist. In 1983 Mr Higgs wrote in a note for a meeting at the Home Office that the technology as it existed in 1973/74 did not permit an alternative TLC procedure to be used. Furthermore, at his first appearance before my Inquiry Mr Higgs maintained this position.

Experiments during the trial

11.20 Another serious omission revealed by the RARDE notebooks was that *during* the Maguire trial certain experiments were carried out at RARDE but the results were only partially disclosed. There were three sets of experiments.

i) Fingerprint ink

It appears from notes taken at the trial that Vincent Maguire in his evidence on 12th February 1976 said he had been fingerprinted before he was swabbed. The jury passed a note to the judge asking whether there would be any adverse effect on the swabs if fingerprints were taken before swabs. This was very properly picked up by the prosecution who

clearly asked RARDE to do an experiment to enable the jury's question to be answered.

This was done by a Mrs Brooker, then a Scientific Officer at RARDE, who was called to give evidence on 19th February 1976. She said that she had carried out on 13th February TLC tests with fingerprint ink and NG to establish whether the former could interfere with the performance of NG in the TLC test. She told the court that mixing fingerprint ink with NG produced a lower Rf value.

ii) Fingernail scraping tests

According to Mr Gray's (junior counsel for Annie Maguire) notes of the trial, Annie Maguire gave evidence of in-patient treatment for her skin problem. Her hands had been very itchy and she kept scratching (although there was no current problem). This evidence was given on 8th February 1976. The next day Mr Yallop gave evidence on the possibility of migration by NG under the fingernails after no more than touching a contaminated object. Mr Higgs had already said in evidence on 27th January 1976 that he could not see how NG could be transferred under the fingernails after merely clenching the hand. Mr Elliott had maintained the assertion contained in his statement that NG under the fingernails indicated manipulating and kneading.

It was not until the RARDE notebooks were shown to the Inquiry that it was known that hand trials had also been conducted by Mrs Brooker on 11th February 1976 to investigate the presence of NG on the hands and under the nails after the fingertips and nails of one hand had been scratched on the other. The procedure was carried out on a person with long nails (Dr Carver, who has no current recollection of the experiment) and a person with short nails. The results indicated a faint trace of NG under Dr Carver's nails but nothing under the short fingernails.

Mr Higgs told the Inquiry that he was unaware at the time that the test had been carried out.

iii) "Sustac" heart tablets

On Wednesday 21st January Mr Elliott gave evidence to the effect that when heart tablets containing NG were crushed on the hand a positive result for NG was obtained. But if the hands were left for a period of time no NG was detected.

Three weeks after this evidence was given there is a note in Mrs Brooker's notebook of a test carried out on 12th February involving crushing one tablet in the left hand and three tablets in the right hand. Each hand was swabbed 3½ hours later and produced a positive result for NG. This result clearly conflicted with the evidence given earlier in the trial by Mr Elliott. As far as we can ascertain the results of the test were not made known.

Again Mr Higgs has no recollection of either how the tests came to be done or why the results were not disclosed. He did not learn the results of the test because he says he was not, during the trial, in contact with his staff at RARDE.

11.21 Both the question of contamination by heart tablets and the possibility that NG could be transferred under the fingernails after scratching were raised at the trial and were both important. As I would have expected, prosecution counsel told me that had they been made aware of the tests they would have ensured that the results were made available to the defence. It seems to me clear that the results were not communicated by RARDE to the prosecution despite the fact that the experiments were carried out on three consecutive days a week before the person who conducted them gave evidence. While I accept that it was not Mrs Brooker's responsibility to convey the results of her tests, it is to say the least strange that no one at RARDE saw fit to tell at least the office of the Director Public Prosecutions of the two further tests Mrs Brooker had done. She can only have been asked to do them by a senior scientist at RARDE and one who knew what questions were being raised at trial. As Mr Elliott has died since the trial and thus I heard no evidence from him, I am not able to identify who this senior scientist was. Whoever he may have been, however, it should have been apparent to him that prosecuting counsel ought to have been told of all three further tests.

Inconsistent application of parameters

11.22 Inspection of the RARDE notebooks also shows that positive results were recorded on several occasions despite wider parameters than given in evidence at trial or to me. For instance, in one case at which the Inquiry looked quite closely, a positive finding was recorded and reported to the police where the Rf value was as much as 0.12 lower than the standard. Dr Hayes who had confirmed the results was unable to give an explanation so long after the event. I subsequently learned, however, that the suspect had been arrested during a search of a public house. There was nothing in the file to suggest that anything positive was found in that search, but on the file asking for the test Dr Hayes had been referred to another file which recorded a find of explosives at another location. The scientists' explanation of the acceptance of wider parameters was that the interpretation of results depended on the context in which the samples were taken. Thus, if swabs were taken of the debris of an explosion, a wider parameter was accepted because the purpose of the test was to establish which explosives were present and not whether explosives were present. This may well have been the reason for the acceptance by Dr Hayes of the parameter of 0.12 to which I have referred. But the converse does not appear to have applied – where there was no evidence of bulk explosive RARDE did not limit the acceptable parameter as strictly as one might expect. In the Maguire case, of course, no bulk was ever found but the forms submitted recorded the Maguires as suspected of bombing offences. Although I am advised by Professor Thorburn Burns that a parameter of 0.03 is acceptable, it

is questionable whether in the absence of this prompt RARDE would have recorded a finding of NG on one suspect (Patrick Maguire) when the only positive result was 0.03 from the standard. Similarly the gloves were reported as positive at an Rf value of 0.03 away from the standard. In this case it was the context, that is to say the suggestion of involvement in bombings and the fact that other members of the family gave positive results, which made 0.03 a safe parameter to the RARDE scientists.

Rate of colour development

11.23 As I have said Sir Michael Havers QC must have been told by the scientists that they could distinguish PETN from NG through the rate of colour development. Yet there is no reference to the recording of rate of colour development in the RARDE notebooks seen by my Inquiry, nor of this being used as a means of differentiating one explosive from another. Furthermore, the material supplied to the Inquiry by RARDE which included research papers describing trials of different intensities of sodium hydroxide spraying, shows no such differentiation. In all these NG and PETN appeared indistinguishable. Apart from Mr Elliott none of the other RARDE scientists was prepared to rely upon rate of development of colour. As I have already indicated, it was an extremely subjective test.

The 916 random tests

11.24 There is one other aspect of the trial which has caused me some concern. In an attempt to strengthen the Crown assertion that there was no other substance, particularly a non-explosive one which might be in ordinary household use, which would mimic NG on a TLC/toluene test, Mr Higgs conceived the idea of sending a substantial number of hand test kits to scenes of crimes officers throughout the Home Counties asking them to take swabs from members of the public as and when opportunity offered. Mr Higgs received back well over 900 hand test kits and of these it was possible to test the contents of 916 kits by the TLC/toluene technique. Notwithstanding objections by defence counsel, Mr Higgs was permitted by the trial judge to give evidence that all 916 kits had proved to be negative for NG or for any other substance which might have mimicked it in the TLC tests, on the basis that the 916 kits had been tested either by Mr Higgs personally or at least under his direct supervision.

11.25 Even on this basis I would suggest that there are substantial grounds for saying that the evidence was inadmissible. To start with, there was no evidence about how the various scenes of crimes officers had taken the swabs which they then returned to RARDE. This point was clearly in the minds of the Court of Appeal because in the course of their judgment they said:

"What Higgs himself could not directly prove, for he had no personal knowledge of the matter, was how these samples had been taken from various places all over the country, or whether his instructions how they should be taken had been carried out. But the facts to which his evidence was primarily intended to be directed were the results of the testings of these samples. This was direct evidence and was plainly admissible and the massive number of objections to that evidence on the score that it was hearsay were, with respect, misconceived."

11.26 It was certainly correct that the principal thrust of Mr Higgs' evidence was that the tests on the 916 kits had proved negative. If he had conducted the experiments himself or had seen them conducted by either Mrs Brooker or Mr Wyndham under his close supervision, then it may be that this part of Mr Higgs' evidence would technically have been admissible, so far as it went. It still leaves unanswered, however, the complaint that there was no evidence at all of how the samples had been taken.

11.27 This matter of the 916 test kits was further investigated at the oral hearings before me. It soon became clear that the TLC/toluene tests after the return of the kits to RARDE had been carried out by junior staff including Mrs Brooker and Mr Wyndham, not under the direct supervision of Mr Higgs, but merely on the basis that they reported the results of the tests to him and he then gave the evidence which he did at trial. It is clear that this raises a further doubt about the admissibility of this evidence. The trial judge and Court of Appeal clearly believed Mr Higgs was giving direct evidence of seeing the results of the tests.

11.28 A more disturbing point arose from our examination of the RARDE notebooks, and in particular that of Mrs Brooker, recording the results of the TLC tests which she had made. Although she recorded them all as negative, she in fact also recorded that in a number of the tests she found spots with an Rf value not far removed from the NG standard. When Mrs Brooker gave evidence before me, however, it was throughout to the effect that any interpretation of the TLC tests which she carried out would have been made not by her but by one of her superiors who would have been present when she actually sprayed the plate with the caustic soda and then with the Griess reagent.

11.29 When Mr Higgs came to give evidence about this point he did not say that he had in fact seen the plates involved. When he was then asked if he could explain the recording of Rf values against a number of the tests, in the light of the overall expressed opinion that they were negative for NG, he told me that he had cross-examined Mrs Brooker at the time about the entries that she had made and had satisfied himself that the spots that she had seen and recorded had not been pink ones but of some other colour and thus of no

relevance to the particular investigation involved. I regret to have to say that at least on this particular point I could not accept Mr Higgs' evidence. I believe that the truth of the matter is that he left junior staff to carry out these 916 tests and accepted without question their reports that all were negative. I do not think that he inquired of Mrs Brooker at all about the few entries where she had entered an Rf value. Further, when I looked at Mr Wyndham's notebook, it was quite clear that it was not a contemporaneous record of the results of the tests which he had carried out: it was merely a listed fair copy of some other notes somewhere else.

11.30 In my view these considerations reinforce the submission that the evidence which Mr Higgs was allowed to give at the trial was in law inadmissible. It was an important piece of evidence because it demonstrated to the jury, if true and if accepted, in a homely way how nebulous was "substance X". It was given particular emphasis by the trial judge who mentioned it several times in his summing-up. I should add that in dealing further with this question, the Court of Appeal held that its admission had been a matter for the judge's discretion and continued –

> "the Learned Judge over-ruled this objection, and, seeing that the object of this evidence was to prove the results of these tests and not the taking of the samples, we think that he was right to exercise his discretion in the way that he did. Thus the value of this evidence regarding the results of the samples became a matter for the jury, whose duty it was to attach such weight, be it great or little, to the evidence as they thought fit."

With respect, evidence of the results of the 916 tests could not have been relevant, even if the other objections to the evidence are overcome, without evidence informing the jury of what the tests were. Without such evidence, the 916 test kits could have been returned to RARDE without any of them being used at all, when it would not be surprising that the results of the TLC/toluene tests upon them proved negative.

Observations on RARDE witnesses

11.31 I finally consider whether the failure to disclose the confusion of NG with PETN was the result of a conspiracy between the scientists, as was suggested to me, or is capable of some other explanation.

11.32 It is clear from the notebooks that when hand kits were tested RARDE was not looking for PETN. The explanation advanced to me for this exclusion of PETN by Mr Higgs and Dr Hayes, that in the context of IRA terrorism they believed it to be irrelevant, I accept as genuine. It was nonetheless improper for the scientists to presume in that way to exclude it. At the time the material tests were carried out and reported on the failure to report the confusion of

NG with PETN was honest but mistaken. However, before long an element of calculation crept into the continuing failure. When Mr Higgs prepared a list for the consultation on 13th January 1976 which purported to exclude all substances which might mimic NG by reference to three criteria, he deliberately left out PETN which could not be so excluded.

11.33 It had become clear to Mr Elliott and Mr Higgs following the consultation in July 1975, if not before, that the Crown's case rested on the specificity of the TLC test using toluene to identify NG. They knew that the test was not specific for NG when advising the prosecution team and when giving evidence, but they failed to say so. They knew that a second system was available to resolve the two substances but they did not mention it. Whilst these failures were in my view deliberate, I do not believe they were borne of a conspiracy to deny justice to the defendants. The scientists had honestly reported positive results for NG on 4th December 1974. Once charges were laid and the defendants were committed for trial, there was no going back on what had been said. The scientists wrongly believed that they could rationalise their exclusion of PETN. They imperfectly understood their duties as forensic scientists and as witnesses. That much is demonstrated not only by the manifest inadequacies of their treatment of PETN but also by their failure to report the second tests for nitrotoluenes, their selective reporting of the results of tests conducted during the trial, Mr Elliott giving evidence that he had carried out the tests on the gloves (which Mr Wyndham had done) and Mr Higgs' approach to the results of the "916".

12. Disclosure of evidence

12.1 In April 1975 Birnbergs wrote to the Director of Public Prosecutions asking for a copy of a further statement by Mr Elliott served at committal and asking if they could have sight of "any more detailed notes or reports that there are by Mr Elliott or his assistants who did the tests, to explain more precisely the procedure used and results obtained." The request was pursued on 9th October 1975 and on 22nd October a reply was sent on behalf of the Director: "On the advice of Counsel I regret I am unable to supply you with copies of any notes made by Mr Elliott. The procedure used was the normal thin layer chromatography process."

12.2 The matter was raised at the pre-trial review on 18th December 1975, and Birnbergs' note of the review records that the prosecution refused the request from the defence for the notes on the grounds of irrelevance. It appears that it was agreed at the consultation on 13th January 1976, the day before the trial began, that photocopies of Mr Elliott's notes should be supplied to the defence at once and that laboratory notes would be available at trial.

12.3 Mr Paul Purnell QC was the member of the prosecution team involved who was concerned with this aspect of the case and he was given notice in the course of my public hearings that he might be criticised for the prosecution's attitude to disclosure. He explained in evidence to the Inquiry that his reluctance to agree to disclosure stemmed from anxieties about security. He believed that other similar trials could be anticipated and he wanted to ensure that RARDE did not disclose accidentally any other notes and that the notes which they did disclose were indeed relevant. He was also anxious that the prosecution should know in advance of any unusual features about the notes before disclosure was made. He told me that he asked for steps to be taken to meet those concerns. In an Advice on Evidence Consequent upon Summons for Directions dated 22nd December 1975 Mr Purnell noted "Defence seek in advance of trial bench notes of Elliott. Prosecution hedge." He explained to the Inquiry that this was no more than a report that at the pre-trial review he had hedged on this point.

12.4 I think that this attitude to the disclosure of the scientists' notebooks was both regrettable and significant. It is not clear from the documents or the evidence available to me now whether any steps were taken to meet Mr Purnell's concerns. We know from the case files made available towards the end of our hearings that Dr Carver did not believe that any objection could be taken to Mr Yallop's having access to the notes. I believe that had the prosecution been more open minded to disclosure of the scientists' notebooks it is very possible that events would have taken a different turn. The respective responsibilities of counsel and of those who instruct them are general matters of importance with which I propose to deal at a later stage of this Inquiry.

13. Dr Truter's evidence

13.1 Before turning to my final conclusions, there is one further point to which I should refer for completeness. In the course of the Crown's preparation for trial an independent expert who could if necessary speak to the integrity of the TLC test was consulted and a statement obtained from him. This was a Dr Truter, a research chemist from Leeds University. At an early stage of this Inquiry the question arose whether, and at what stage, Dr Truter's statement ought to have been disclosed to the defence solicitors.

13.2 Having now heard and considered all the evidence on this point, I am not satisfied that even following the practice which obtained in 1976 there was any obligation to disclose the statement. In any event it is quite clear that the failure to disclose, if this had been required, disadvantaged the defendants in no way at all. Finally, the position about such disclosure at the present time is substantially different from what it was 14 years ago following the publication in 1982 of the Attorney General's guidelines at [1982] 1 All E.R. 734 and the implementation of the Crown Court (Advance Notice of Expert Evidence) Rules, 1987.

14. Conclusions

14.1 It was clear to me from the start of this Inquiry that under my terms of reference I would have to investigate a number of wider issues over and above the particular circumstances of the cases of the Maguire Seven and the Guildford Four. A summary of these has been circulated to all interested persons. In addition, the first phase of the Inquiry, which I have just completed, has shown that there are some further such issues into which I should enquire. A list of these is contained in Appendix C to this Interim Report.

14.2 In the course of his final submissions, counsel for the Director of Public Prosecutions told me that the Director accepted that the convictions of the Maguire Seven were unsafe and unsatisfactory. He made it clear that that conclusion was based only on the issue of innocent contamination. If it were possible to uphold the jury's finding, implicit in its verdict, that the possibility of innocent contamination could be excluded, then the Director would have argued strongly that there was no remaining basis for concluding that the convictions were unsafe.

14.3 I agree with the Director's stance on the issue of innocent contamination, but I am also quite satisfied that there are other aspects of the case which in my own opinion render these convictions unsound. To some extent these are inter-related. In fairness to the original jury I emphasise that this opinion is based on material which was not before them.

14.4 The first point is the basic question whether in any event the Crown can now be taken to have proved that the traces on the defendants' hands and upon the gloves were of NG. The TLC/toluene test upon which the Crown relied as being specific for NG has been shown not to be so. At best, it could do no more than establish the presence of either NG or PETN and there was nothing in the evidence to prove that the traces were of NG rather than PETN. If, contrary to my view, the agreed statement was correctly treated as a defence admission that the traces were not of PETN, this admission was clearly made under the influence of a fundamental mistake of fact and should no longer be treated as binding on the defendants.

14.5 Secondly, to establish all the elements of the prosecution case the Crown relied on the evidence of the RARDE scientists. Their accuracy, reliability, fairness and credibility were fundamental to the convictions. The credibility of Mr Yallop as a witness for the defendants was severely damaged in cross-examination, on the grounds that he had been selective in his evidence and had taken extraneous "non-scientific" factors into account in forming his conclusions. It is now clear to me that some at least of the RARDE scientists, notably Mr Elliott who was the principal case officer

concerned, did the same. If the jury had been aware of some of the contents of the notebooks which I have seen, particularly relating to the scientists' knowledge of but failure to disclose the existence of PETN and its mimicry of NG in the TLC/toluene tests, the fact of second tests themselves and the experiments carried out during the trial, I believe that they would have viewed the evidence of the RARDE scientists very differently. In his submissions to me Mr O'Connor, acting on behalf of Mrs Conlon as the personal representative of Guiseppe Conlon, quoted passages from Sir Michael Havers' cross-examination of Mr Yallop:

> "An expert witness such as yourself has the obligation to be frank with the court . . . not to be selective about his experiments . . . not to pick the best and discard the worst . . . not to select the ones that suit the case you were supporting and discard the one that casts doubt upon it. . . . You have not followed good scientific practice by disclosing all the tests; you have just been selective and picked out the one you wanted."

Had any of the counsel acting for the defendants at the trial had the material which I now have, he could have cross-examined the RARDE scientists effectively on precisely the same lines as did Sir Michael Havers challenge Mr Yallop. In my opinion it has been shown that the whole scientific basis upon which the prosecution was founded was in truth so vitiated that on this basis alone the Court of Appeal should be invited to set aside the convictions.

14.6 Thirdly, in my respectful opinion the conduct of the trial can itself be validly challenged on at least the two points to which I have earlier referred. I do not think that the jury were adequately directed about the effect of Exhibit 60 on the foundation of the Crown's case, namely the exclusivity of the TLC/toluene test for NG. In addition, in my opinion Mr Higgs' evidence about the negative results of the tests on the 916 hand test kits was inadmissible. By itself this may not be a fundamental point, but the evidence clearly supported the alleged exclusivity of the test upon which the Crown case was based, in a homely way, and I feel could well have had an important effect upon the jury's mind.

14.7 Finally, I return to the question of innocent contamination. The prosecution had to establish the knowing handling of an explosive substance. To do this they set out to prove that each defendant directly handled a bulk quantity of NG, by showing that the traces found on hands and gloves could not have come there innocently by transfer through contact with a contaminated object or surface.

14.8 In the absence of any evidence of a quantity of NG in the house or nearby, the prosecution relied essentially on the findings of traces of NG

under the fingernails of one or both hands of each male defendant as establishing direct handling in the sense of manipulation or kneading the explosive. It is now clear that this is not a conclusion which can safely be drawn, as Mr Higgs frankly conceded before me.

14.9 There remains the question how such contamination could have occurred. There was and is no evidence of any primary or secondary source of contamination in the house, other than the evidence of the TLC tests themselves. However, the defence were under no burden of proof to establish the presence of a particular source from which such contamination could have come.

14.10 The evidence of Professor Thorburn Burns shows that if a bathroom towel had become contaminated, this could have contaminated the hands of those who used the towel thereafter. It also shows that the plastic gloves could have been contaminated by a contaminated hand handling them in the drawer. Having regard to the lack of any search or examination of the bathroom, I myself am satisfied that innocent contamination by this means is a possible explanation which cannot safely be excluded.

14.11 Having regard to all these matters it is quite clear to me that I should recommend that the Home Secretary should refer the case of the Maguire Seven to the Court of Appeal under the provisions of section 17 of the Criminal Appeal Act 1968. I accordingly do so recommend.

14.12 In the case of the late Guiseppe Conlon, if a reference be not legally possible, then I recommend that immediate consideration be given to finding another way of dealing with his case.

LIST OF PARTIES AND THEIR REPRESENTATION

1. Mr David Clarke QC, Mr Timothy King and Mr Ian Burnett of Counsel, instructed by the Treasury Solicitor, appeared on behalf of the Inquiry.

2. Mr Anthony Scrivener QC and Mr Patrick O'Connor of Counsel, instructed by B M Birnberg & Co, appeared on behalf of Mr Gerard Conlon and Mrs Sarah Conlon.

3. Mr Anthony Arlidge QC, Mr Anthony Clover and Mr Michael Cousens of Counsel, instructed by George E Baker & Co, appeared on behalf of Mrs Anne Rita Maguire, Mr Patrick Maguire (Snr), Mr Patrick Maguire (Jnr), Mr Vincent Maguire, Mr Shaun Smyth and Mr Patrick O'Neill.

4. Miss Ann Goddard QC and Mr Michael Austin-Smith QC of Counsel, instructed by the Metropolitan Police Solicitors Department, appeared on behalf of the Commissioner of the Metropolitan Police and Members of the Metropolitan Police Force.

5. Mr Neil Butterfield QC, Mr Jonathan Barnes and Mr Martin Edmunds of Counsel, instructed by and appeared on behalf of the Director of Public Prosecutions and Members of the Crown Prosecution Service.

6. Mr William Hoskins of Counsel, instructed by Mishcon de Reya, appeared on behalf of Mr Douglas Higgs and Dr Thomas Hayes.

7. Mr Simon Hawkesworth QC and Mr Nicholas Price of Counsel, instructed by Stitt & Co, appeared on behalf of the Rt Hon Lord Havers, Mr Michael Hill QC, Mr Paul Purnell QC and Mr Philip Havers.

WITNESSES WHO GAVE EVIDENCE

Mr A Bueno QC

Dr F W S Carver

Chief Inspector A Clarke*

Chief Inspector K Day

Mr H Disley*

The Rt Hon Lord Havers*

Dr T S Hayes

Mr D G Higgs

Mr M Hill QC

Mrs P Kemp (formerly Brooker)

Mr P Mullen

Mr D Munday

Detective Constable P O'Connor

Mr P Purnell QC

Professor D Thorburn Burns

Mr B Vickery

Detective Sergeant L Vickery

Mr H J Yallop

* statements read

APPENDIX C

WIDER ISSUES RAISED BY THIS PHASE OF THE INQUIRY

1. Obtaining, preparation and presentation of forensic scientific evidence: the respective roles of experts (prosecution and defence), Crown Prosecution Service, counsel and the Court.

2. Advance disclosure of scientific findings including working papers and notes to the defence.

3. The process by which a prosecution based on scientific evidence is authorised.

4. Home Office procedures for assessing scientific evidence following representations of a miscarriage of justice.

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