MS. FAHEY: Thank you. I have no further questions.

MR. BRADLEY: I have no questions.

THE COURT: Thank you.

(The witness stepped down.)

MS. FAHEY: John Abbott, please?

JOHN ABBOTT was duly sworn and testified as follows:

DIRECT EXAMINATION

Q (By Ms. Fahey) Would you identify yourself, please?

A John Cope Abbott.

Q Where do you work, sir?

A I'm employed by Serological Research Institute, East Coast Office, Burlington, Massachusetts.

Q And what is the Serological Research Institute?

A It is a private organization dealing exclusively with serology, which is the analysis of blood and other body fluids, hairs and their comparisons in forensic cases, principally.

Q And in what capacity do you work at the Serological Research Institute?

A I am a forensic serologist and the east coast office manager.

Q Where did you work before you worked for the Serological Research Institute?

A Prior to being employed by Serological Research Institute, I was employed by the Commonwealth of Massachusetts, the Department of Public Safety Chemical Laboratory, 1010 Commonwealth Avenue in Boston.

Q When did you stop working at 1010?

A I became employed by Serological Research Institute and ended my employment with the Commonwealth in January, 1982.

Q And in what capacity did you work at the 1010 Commonwealth Avenue chemistry laboratory?

A I was an assistant chemist, specializing in forensic serlology.

Q How long a time were you an assistant chemist specializing in forensic serology?

A I was employed by the Commonwealth from November, 1979, until the beginning of January, 1982.

Q And where had you worked before then, please?

A Prior to that, beginning in January, 1978, through November, 1979, I was employed by the Michigan Department of State Police, Bridgeport Crime Laboratory, Bridgeport, Michigan, as a forensic serologist, attached to the Micro-chemical Unit.

Q Ahd where did you work prior to working as a laboratory scientist for the Michigan Department of

State Police?

A Prior to being employed by Michigan, I was, for six years,, a senior laboratory instructor and lecturer at Carnegie Institute here in Boston. It was a school of medical technology.

Q And what is your educational background?

A I have a Bachelor of Arts degree in Pre-medical and Professional Biology from Gordon College in Wenham, Massachusetts.

I have a Master of Science degree in Forensic Chemistry from Northeastern University in Boston.

I'm a registered medical technologist.

Q And are you a member of any professional societies?

A Yes, I am.

Q Which ones?

Q I am a member of the Northeast Association of Forensic Scientists, the Midwestern Association of Forensic Scientists, and a member of the American Medical Technologists.

Q Have you testified as an expert in forensic science in the courts of this Commonwealth?

A Yes, I have.

Q And on how many occasions, please?

A Approximately fifteen to twenty times in the Commonwealth of Massachusetts.

Q On May 22nd of 1980, Mr. Abbott, were you working as a chemist at the chemical laboratory, the State Police, 1010 Commonwealth Avenue?
A Yes, I was.
Q Did you have occasion to receive on that date, May 22, 1980, some items from Kathleen Higgins?
A Yes, I did.
Q And was she employed as a senior chemist at that time in the chemical laboratory at 1010?
A Yes, she was.
Q And what, if anything, did you do with respect to the items that you received?
A The items that I received I analyzed for their blood groups.
Q What's involved in making an analysis as to blood groups?
A It depends whether you're talking about a whole blood sample or a fresh blood sample or a dried stain.
Q What's the difference?
A The difference is the type of testing. The principle is the same, but the technique varies.
Q What do you mean by a fresh blood or whole blood sample?
A A whole blood or fresh blood sample would be one

such as you're probably familiar with having been drawn from your arm by a medical technologist in a hospital for blood testing.

Q And what was the other type that you referred to?

A The other type would be a dried blood sample, which would be something either on clothing, after it has been wet with blood, it will dry out, or if blood is applied to a surface, it dries. Then it can be collected or the surface can be analyzed, and the blood at that point is dry.

Q I show you, Mr. Abbott, these items; and I ask if you made a determination with respect to those items as to blood group?

A Yes, I did.

Q And taking the items one at a time, would you tell us what each item was -- strike that.

Are all those items, is it fair to say, items you received from Kathleen Higgins on May 22nd, 1980?

A Yes, they are.

Q Taking the items one by one, can you tell us what they are, and what your evaluation revealed?

A Item identified as #2 was a sample of blood stained material, blood from the floor at the entrance to left back bedroom.

Q Did you make an analysis of that?

A Yes, I did.
Q And what did that analysis reveal?
A The blood contained on that item was Blood Group O.
Q And with respect to the next item?
A Item #4 was blood from the front of the left closet in the middle bedroom.
Q Did you make an analysis or an examination with respect to that as to blood group?
A Yes, I did.
Q And what did that examination reveal?
A The blood on that item was Blood Group O.

MS. FAHEY: The Commonwealth would offer these. Oh, I'm sorry.

Q (By Ms. Fahey) Is it fair to say, Mr. Abbott, that each of these envelopes contains a slide on which the blood was mounted for examination?
A There is a glass slide and a sample of blood-stained material.

(Slide marked Exhibit #66, and slide marked Exhibit #67.)

Q (By Ms. Fahey) With respect to the next item, can you tell us what that is and whether or not you examined that as to blood group?
A Item #4A is blood from a freezer in the hallway, and the blood on that item was identified as being

Blood Group B.

Q With respect to Exhibits 10A through -- A, B, D, E and F, do you have those items there?

A I have Items #10A, B, D, E and F, yes.

Q Did you examine those items?

A Yes, I did.

Q What were they?

A Those were as follows: 10A was blood from a light green terry cloth; Item 10B was blood from a white cotton cloth; Item 10D was blood from a pink, gold and white floral print cotton cloth; Item 10E was blood from a pink cotton cloth, and Item 10F was blood from a white cotton cloth with a multi-colored floral print.

Q Did you examine those items, Mr. Abbott, and determine the blood group present on each?

A Yes, I did.

Q What did you determine the blood group on those items to be?

A The blood on each of those items, 10A, 10B, 10D, 10E and 10F, was Blood Group O.

MS. FAHEY: The Commonwealth offers these, your Honor.

(Pieces of fabric marked Exhibit #68A; pieces of fabric marked Exhibit #68B, and pieces of

fabric marked Exhibit #68C.)

Q This item, can you identify that, please?

A Item #21 was blood from carpeting from the living room.

Q And did you examine that item with respect to blood grouping?

A Yes, I did.

Q And what, if anything, did that examination reveal?

A The blood on that item was Blood Group O.

MS. FAHEY: The Commonwealth offers this.

(Carpeting marked Exhibit #69.)

Q (By Ms. Fahey) You said that was from carpeting in the living room, Mr. Abbott?

A Yes.

Q And with respect to the next item, can you identify that?

A Item #22 was blood from a curtain on the front door window.

Q Did you make an examination, Mr. Abbott, with respect to that item as to blood grouping?

A Yes, I did.

Q And what, if anything, did that examination reveal?

A The blood on that item was Blood Group O.

MS. FAHEY: The Commonwealth would offer this item.

(Curtain fabric marked Exhibit #70.)

Q (By Ms. Fahey) And with respect to the last item, Mr. Abbott, did you make an examination -- can you tell us what it is first?

A Item #23 was blood from the inside, front door.

Q And did you make an examination with respect to that item as to blood grouping?

A Yes, I did.

Q What, if anything, did that examination reveal?

A The blood contained within that item was Blood Group O.

MS. FAHEY: The Commonwealth would offer this item, please.

THE COURT: It may be so marked.

(Slide marked Exhibit #71.)

Q (By Ms. Fahey) Did you also, Mr. Abbott, conduct some blood grouping with respect to the blood from the victim, Katharina Brow?

A Yes, I did.

Q And what, if anything, did you do with respect -- did you determine with respect to the blood of Katharina Brow?

A I determined the blood groups within four blood groupings systems.

Q What's a blood grouping system?

A A blood grouping system would be a group of related

proteins within the blood having characteristics of a similar style or type.

Q Did you make an initial determination, Mr. Abbott, as to what blood group Katharina Brow was?

A Referring to the -- commonly referred to A, B, O blood group system, Katharina Brow would be identified as Blood Group B.

Q That would be inconsistent with the type of blood, the grouping of blood, that you found on the items that you've just described?

A On all of the items except Item 4A.

Q And after you determined that Katharina Brow's blood grouping was B, did you further break down the blood grouping?

A Yes, I did.

Q In four further ways?

A Yes, I did.

Q What else did you determine about Katharina Brow's blood group?

A The blood of Katharina Brow was also identified as Type Ns, within the MNs System, RhD positive, C positive, E Negative, c positive, e positive, within the RHHR system, and was Lewis A positive, B negative.

Q For those of us who have no idea what you just explained, would you just tell us briefly what that

all meant; what it is?

A What it is is to go back a second to the ABO system, you're familiar with the four basic blood groups within that, A, or B, or AB, or O. Well, each person in each of those catagories can be also grouped in the other blood group systems; such as, the MNs system, where a person could be Type M or N or MN, and would also have either big S or little s or both. That's within the MNs system. And in that system, Katharina Brow was MNs.

Also, again being a little more familiar, the RHHR system, or formerly Rh. you are classified as positive or negative. That has to do with what we commonly refer to as big D. If you are positive for big D, then you are termed, in lay terms, Rh positive. If you are negative for big D, then you are Rh negative.

However, the RHHR system contains more proteins than that. There are at least four others. There is big C, little c, big E and little e; and each of those was classified in this case for Katharina Brow.

Q And when you were making the examination of what different blood groupings Katharina Brow's blood was, were you using dried blood or whole blood?

A I was using a whole blood sample provided from the

victim.

Q And with respect to the blood you determined to be Type -- Blood Group O, the exhibits you previously described, did you make a further determination of those as to any of the other blood grouping systems?

A No, I did not.

Q Why not?

A The systems as described just previously, the MNs system and RHHR system, on dried blood samples, there are a number of discrepancies that can occur between fresh blood or wet blood, whole blood, and dried blood testing.

For instance, in the MNs system, it can be tested in the whole blood with easy interpretation. As with Katharina Brow, she was Type Ns.

However, on dried blood, the N being a weaker protein or weaker antigen can frequently be missed on a dried blood sample. Also the M can be interferre with, so that misinterpretations can occur.

With the RHHR system, the whole blood, again, there are positives and negatives; and the negatives are significant.

If a person is Rh negative in a hospital sense, that person cannot receive Rh positive blood without it being harmful. So that the positive or negative

is extremely important.

But in dried blood, the finding of a lack of a protein, for instance, lacking big D, or the positive, would not necessarily mean that person is truly Rh negative, because the protein may have deteriorated. There may have been insufficient quantity of blood which would also account for the negative finding. Therefore, lacking results does not truly mean that a negative is, in fact; and therefore, again, misinterpretation could be placed.

With those difficulties then in mind, it was my determination that the using of the minimal blood samples we had, in some of the cases, would not be best applied to these particular systems.

Q When you say, minimal blood samples, what do you mean?

A Some of the items did not have large quantities of blood; so that in order to perform the testing, I tried to use as small a sample of blood as possible to conserve it for other tests, if necessary, or for other parties to perform testing, if required.

Q Is it fair to say, Mr. Abbott, that some of the items you examined and determined to be Blood Group O were just merely droplets of blood?

A They apparently had been. What I had received were swabbings or wipings of those samples, and many of

them were very, very small amounts of blood.

Q Are you familiar -- strike that.

With regard to forensic science, is hair comparison a part of forensic science?

A Yes, it is.

Q And what's involved, Mr. Abbott, in making hair comparisons?

MR. BRADLEY: I pray your Honor's judgment.

THE COURT: I'm not sure I understand.

(BENCH CONFERENCE:

MR. BRADLEY: I didn't hear anything about him being qualified in hair samples.

MS. FAHEY: His expertise is in forensic science, and hair comparison is part of it.

MR. BRADLEY: I thought his expertise was limited to blood.

THE COURT: I thought in the beginning he said, hair. Are we not now being repetitive?

MS. FAHEY: It may well be, but I would like to ask him these questions. It would probably be another three to five minutes.

THE COURT: It would be my determination that he's qualified enough to be able to answer at least some of the basic questions. I don't know how far you're going to go, and I'll rule on each

one as they come along.

END OF BENCH CONFERENCE)

Q (By Ms. Fahey) What's involved in making hair comparisons?

A In making hair comparisons, basically two things are required: A sample of questioned hair, and then samples of known hairs. The known hairs have to be collected from all the various areas of the individual that are of suspect.

For instance, head hairs. If the questioned hairs appear to be head hairs, then all various areas of the scalp should be selected, not just a clump of hairs taken from one part of the scalp. For instance, take a handful of hairs or a small portion of hairs and cut them off. That would be insufficient.

What should be done is a few hairs from the front of the head, from each side, from the back, from the nape of the neck; a male, from the sideburns and so forth. Those should all be collected, so that a representative sample are obtained.

Q Why is that?

A Because the hairs of the various parts of the head are not all the same. If you were to take a sample of your own hair and look at it with a magnifying

lens even, you may see some differences.

If a forensic hair examiner looks at them, there are more differences that are obvious; and so therefore, for a representative sampling of hairs, numerous areas need be sampled.

The hairs should be pulled hairs, because any intact hair, meaning one with its root, will give an adequate idea of the length of the hair, and the root structure is very important in analyzing hairs.

Q You didn't have anything to do with analyzing hairs in this particular case though?

A In this particular case, the previous witness, Kathleen Higgins, did the hair examinations.

MS. FAHEY: Thank you, Mr. Abbott. I have no further questions.

THE COURT: We'll take a short recess at this time.

(Recess - 3:00 p.m. - 3:07 p.m.)

MS. FAHEY: Your Honor, if I might, I have two more questions of this witness.

THE COURT: All right.

Q (By Ms. Fahey) Mr. Abbott, did you -- other than what you have told us you examined and determined to be Blood Group O, is it fair to say that everything else you examined was Blood Group B?

A Yes, that is correct.

Q And did you examine Exhibit #64, this knife?

A If I may see it?

(Above-mentioned knife handed to the witness.)

THE WITNESS: Yes, I did.

Q (By Ms. Fahey) And what, if any, blood group did you determine to be present on that knife?

A The blood group on that knife was Blood Group B.

MS. FAHEY: Thank you. Your witness.

CROSS-EXAMINATION

Q (By Mr. Bradley) The general blood grouping, A, B, AB, O, which of those groups is the most popular?

A I'm not sure what is the most popular.

Q What do most people have?

A Most people have Blood Group O.

Q And do you know the ratio?

A Approximately 48% of the Caucasian population. Approximately 47% of the Black population.

Q From the amount of old blood in that apartment, somebody did a lot of bleeding?

A Well, I'm not certain I would say a lot of bleeding. Someone of Blood Group O did bleed.

MR. BRADLEY: Thank you.

MS. FAHEY: Nothing else. Thank you.