DISCUSSION

ROSEN (Leeds): I should like to confirm some of Dr. Rowinski’s results, namely that there is no significant difference in the distribution of blood flow between the normal and auto-transplanted kidney and that the normal kidney may redistribute its blood flow following insertion of the catheter. However, a closer look at some of our results reveals some important differences. The mean of our values for the percentage of blood flow supply to components 1, 2 and 3 is significantly different from those shown by Dr. Rowinski. Our values are strictly comparable with those obtained by Sorbonne and his successors in Barret’s laboratory, and I wonder whether this difference in values between ours and Dr. Rowinski’s is because of the method of analysis of the curve. We analysed the curve as the sum of four exponential components and we did this because there are definitely four different rates of flow of blood in the kidney and this has been confirmed by radio-autography. Analysis of the curve as a three component system must inevitably lead to spurious results and will not have any anatomical or physiological correlation.

The second major point of difference is that we concluded that the redistribution of blood flow in the normal kidney following insertion of a catheter was due to the effect of laparotomy rather than haemorrhage. We made this conclusion on the following observations: not all our normal kidneys that redistributed their blood flow had haemorrhage. Secondly, some of the dogs had a second laparotomy without disturbance of the catheter and without any haemorrhage and those normal kidneys also redistributed their blood flow. Thirdly, we did a separate experiment, and we demonstrated that haemorrhage will only cause redistribution of blood flow if it is associated with severe hypotension.

ROWINSKI (Warsaw): I must say I have expected this comment and question from Dr. Rosen! We have obtained only three components because the time of the recording in our experiments was only 15 minutes and in yours, I believe, approximately 45 minutes. We would not have been able to analyse properly this last part of the curve with our recordings. But this should influence only the third component, not the first or the second. I do not know the reason why our first and the second components are different from yours.

HALL (Exeter): I should like to ask Dr. Clegg whether hypothermia had any effect on the survival of the kidney. We very often find in people with head injuries who give their kidneys that they have been hypothermic for some time.

CLEGG (London): No, I did not examine the period of hypothermia in head injury cases. Our group of donors came from a wide range of subjects and in fact only two of them were head injuries. I did not examine the effect of hypothermia in these cases.

The Chairman: Dr. Clegg, you showed us the analysis of your seven paired donations but you did not show us each pair compared one against the other, which I would have thought was interesting. What did you find in that comparison?

CLEGG (London): I found on that comparison the same as what we show here, in fact, that the period of warm ischaemia is very highly significant in these cases and this is a point to be really watched during the course of the operation on these patients.

The Chairman: If you are one of two recipients, you should get down to the theatre first?

CLEGG (London): That is right.
**DISCUSSION**

**Cosgrove (Glasgow):** With reference to the first paper, we carried out some studies similar to Dr. Rowinski’s on normal and autotransplanted kidneys measuring renal blood flow using Kr<sup>85</sup> and beta counting. I am able to confirm that the cortical blood flow in the normal kidney is the same as in the autotransplanted kidney. This is really what one would expect. What we found of interest was that under abnormal conditions, such as conditions of arterial hypoxia, the transplanted kidney behaved in a totally different way. It was much more sensitive particularly in respect to its reduction in cortical blood flow than the normal kidney. I wonder if you had any experience of studying the transplanted kidney in abnormal conditions?

**Rowinski (Warsaw):** We have not, actually. It just happened that all four cases of arterial bleeding happened after the insertion of the catheter into the normal kidney, but we have found on five occasions a partial renal artery thrombosis in autotransplanted kidneys. This is a similar situation and we found a corresponding redistribution of the blood flow.

**White (Bristol):** In Dr. Clegg’s paper, he is considering the significance of the immediate function of the kidneys with reference to their ischaemic time. Surely, what is more important is to know the ultimate function of those kidneys in relation to the ischaemic time following the donor’s death. It has been shown in Dr. Hume’s series in Richmond that the ultimate function of the kidney, even if it does undergo a period of acute tubular necrosis, is probably as good as those that do not have a period of acute tubular necrosis following transplantation.

**Clegg (London):** I would not really agree with that. We found that though we had kidneys function after 140 minutes of warm ischaemia, the longest period of warm ischaemia associated with actual survival beyond the first month was in fact 125 minutes. The results are similar with cold and total ischaemia; those that functioned with survival had ischaemic times somewhat less than the ones I have given you.

**Kulatilake (London):** In reply to Mr. White’s question: Dr. Clegg was considering the immediate onset of function inasmuch as it makes the postoperative management easy. The important thing, as he mentioned, is the onset of function within four days, because, once the patient starts passing urine, you know what is happening in the kidney; you can detect possible rejection and treat it.