

animals are placed together, and the arterial cannulas of each animal are connected to the other's jugular vein cannula with a short connecting piece of polyethylene tubing (No. 360, Clay-Adams). The necks of the two dogs are then snugly approximated with a plaster cast, leaving the central portions of the cannulas and the connecting pieces exposed. The animals are heparinized prior to and throughout the cross-circulation period, at a dosage of 2 mg/kg every 6 hr.

Recovery from anesthesia is uneventful, and the animals eat and drink well in the postoperative period. Ambulation is difficult in the first postoperative day but is much improved thereafter. A rigid anticoagulant schedule must be maintained if thrombosis is to be avoided. Blood flow may be determined by turning the dogs on their backs and inserting a flowmeter between the artery and vein tubings. Blood flow in our series, as measured with a rotameter, ranged from 200 to 700 ml/min.

Figure 1 shows a pair of dogs that had been in cross-circulation for 72 hr at a flow of 400 cc/min. In Fig. 2 may be seen the plastered necks and connecting tubings. Rectal temperatures do not differ more than 1 deg C in these cross-circulating animals, and blood flows remain relatively constant for days. They may be separated at any time by clamping the connecting tubings and removing the plaster. All eight pairs in this series were electively disconnected and used for studies in homotransplantation immunity. Two pairs were cross-circulated again at a later date, without untoward event.

The procedure of chronic uncontrolled cross-circulation results in rapid and continuous intermingling of the blood streams of the partners. With



Fig. 1. Pair of dogs in cross-circulation.



Fig. 2. Necks of cross-circulating dogs. Note nail connecting plaster struts to protect connecting tubings.

proper attention to details of cannulation, plastering, and heparinization, the technique is safe for at least 100 hr. There is no reason to believe that longer periods of cross-circulation would be unattainable.

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References and Notes

1. R. H. Egdahl, *Federation Proc.* 14, 42, 1955.
2. The opinions and assertions contained in this communication are my private ones and are not to be construed as official or as reflecting the views of the Navy Department or of the naval service at large.

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Systematization of Journal Practices

All authors who write for more than one journal must welcome the discussions in these pages [*Science* 121, 7A (21 Jan. 1955); 121, 444 (25 Mar. 1955); and so forth] of the advantages of uniform editorial requirements. I should like to add some definite proposals, some of which, I hope, will prove to be generally acceptable.

Although I should like to see a single system for references, I believe that there is too much rugged individualism among editors to hope for this sort of millenium. A more practical goal, it seems to me, would be the adoption of about three standard long forms, such that all the forms of all of the cooperating journals could be obtained by striking out appropriate portions of one of the long forms. This would minimize the difficulties of

preparation while requiring only incomplete agreement among editors.

Behind any agreement on style of references, there should be a keen realization that the references are there for the reader, not for the writer and especially not for the editor. To me this necessitates flexibility and the giving of necessary details—flexibility enough, for example, to allow citation of author and date in the text whenever readers are likely to be able to recognize the exact reference from this information. Necessary details will usually include, except possibly in review articles, at least an indication (in the list of references) of the title of each article.

Once upon a time, references to papers were crude and hard to use, at least by present standards. Giving author, journal, and year was thought to be enough. It was not felt necessary either to mention page numbers, or to single out one of the possibly many papers by that author in that volume. Today we do better, except with references to books! Citing a 900-page book without any further detail is apparently quite proper; yet the reader may have more difficulty in finding what is meant than he would have with a "volume only" reference to a journal. If references are to be oriented to the reader's use, then references to books should at least refer to chapters and often to sections.

In passing, it is my observation that more persons read the footnotes than read the text. Whether this is caused by the focusing of attention on rare events, the natural perversity of readers, or the hope of finding a reference to one's own work, I do not know. But if this observation is correct, only the most important statements should go in footnotes. Since this seems unlikely to come to pass, let us eliminate footnotes entirely or, perhaps, put them all together at the end of the article.

As a separate matter of specific technique, let us look at the technique of our legal colleagues, who deal with more references and cross references than most scientists do. They have for a long time found it convenient to place the volume number *before* the periodical's name or abbreviation. Why do we not do the same? Editors may find it strange, but 121 *Science* 444 flows smoothly from my tongue and makes a great saving in punctuation marks and space.

Is it not time for an editor to be heard from now?

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