A THERMOCOUPLE FOR THE BRAIN

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It seems ludicrous that the reading of a rectal thermometer should be taken as a guide for deciding how long a major cerebral artery may be safely clamped by a neurosurgeon. Although the temperature of the brain must approximate that of the blood passing through it, temperature gradients are present throughout the body during hypothermia and the reading on the thermometer will vary with the distance that it is inserted.

There are no thermometers on the market which are suitable for recording brain temperatures, and it seemed that the simplest way of making a thermocouple for this purpose would be by adapting a brain cannula. Mr. W. E. Robinson of the Cambridge Instrument Company has very kindly done this for me.

The lower 1½ cm of the cannula were sacrificed. A copper-constantan thermocouple was threaded in and the tip welded in and rounded off, leaving the sensitive point flush with the surface. The rubber covered lead is 15 feet long and the instrument is used with a standard Cambridge skin temperature outfit. Sterilization is by autoclaving.

Parkinson, Jensen and Vars (1954) found that in dogs the brain would tolerate much lower temperatures than the heart, and it should be possible to reduce the temperature of the brain below that of the heart by local cooling, although some general cooling will probably always be necessary.

The arterial method that they used is hardly applicable to man, and although the internal carotid arteries pass close to the naso-pharynx it would be difficult to apply effective cooling to that confined space. The ventricular cavities do not offer much hope either, but there does not seem to be any reason why the surface of the brain should not be irrigated with cold saline.

REFERENCE