

open ones, but it is equally certain that water of temperatures from 110 deg. Fahr. to 120 deg. Fahr. will have just the opposite effect. Theoretically, what we require is that the irrigation fluid shall at the moment of contact with the nerve tissues contract the small vessels and at the same time not cause any heat coagulation of the cut surface of the brain. In my opinion, therefore, the temperature of the fluid should not exceed 115 deg. Fahr.—that is, about 46 deg. Cent.—but it is equally certain that it must not fall below 110 deg. Fahr., or 43.5 deg. Cent. If a large irrigator be used it is practically an easy thing to keep the fluid at the desired temperature on account of its mass, and it is gratifying, especially in a cerebellar wound, to see the oozing gradually cease during the steady flow from the irrigator 'hose' pipe."

In regard to the means of combatting shock after operations on the brain, according as the symptoms which threaten life affect the respiration, the circulation or the body temperature, the lecturer said the embarrassment of the respiratory centre in a stage of shock is "best dealt with by inhalations of oxygen until the effect of nutrient enemata begins to make itself felt, but it is above all in depression of the respiratory centre that strychnine is of use in combatting shock. In speaking thus favourably of strychnine I nevertheless agree with the elaborate and useful work of Dr. Crile on this subject, and believe that in many cases strychnine is used too empirically, too freely, or with undue reliance on its powers, and that in repeated doses it has a depressant action on the circulation."

In reference to the circulation, he said:—

"As regards cardiac stimulation, that has always seemed to me to be a clinical error. The heart does not require accelerating as a rule, but it does require feeding. Undoubtedly repeated enemata (every two hours) of four ounces of beef-tea in which is dissolved Brand's essence or pancreatised milk is the readiest means of beginning to follow this line. If time presses, a very small dose of atropine is useful, and in cases of peripheral vasomotor paralysis digitalis is also useful, but its use must be at once stopped if there is any acceleration of the pulse. It is, I believe, of universal experience that, compared to the foregoing drugs, alcohol is not worth mentioning, and as it has very definite depressant after-effects, I think its use is to be avoided. A small quantity of strong coffee gives all the psychic stimulation of alcohol without its depressant effects; and even if it be vomited within a few minutes, benefit results."

In regard to the effect of shock on the body

temperature, we learn that "in a large majority of cases the body temperature is somewhat lowered, but in certain instances, notably in children, one of the shock effects of operation is the losing of heat control and consequently the temperature, instead of falling, rises from the moment the patient is returned to bed. This rise may in a child become hyperpyretically dangerous, but can, of course, be, as a rule, like all neurotic pyrexia, controlled by cold sponging the upper limbs."

On the all-important point of septic infection as a possible cause of death, the lecturer said: "Nowadays, when many surgeons can show an unbroken record of successful operations for the radical cure of hernia or for appendicitis in the cold stage, I believe it is not completely realized how very different should be our estimate of the proclivity of the central nervous system to invasion by septic micro-organisms and the extremely feeble degree of its resisting powers. A survey of the literature of the last ten years proves this most distinctly, numbers of cases of sepsis arising in the practice of the most careful operators even for such simple conditions as a benign isolated fibroma compressing the spinal cord. The records of Queen Square Hospital of the past twenty years are somewhat vitiated by accidental infections traceable to causes unconnected with the special region of the wound. Thus of the seventeen cases in which death directly resulted from sepsis, one was due to the condition of the scalp before the operation, another to infection from the mouth, and two if not three from imperfect sterilisation of the ligatures. Of the remainder, the infection in a very large majority obviously originated during the after-treatment of the case, while the external wound was still open at the drainage spot, especially when such openings and avenues of infection had been kept open by tampons and plugs. Personally I believe that the present-day precautions are sufficient at the time of operation, especially if the irrigation fluid used be a weak antiseptic lotion, that for the subsequent dressings it is essential to use an antiseptic (I have only complete confidence in a mercury salt), and that so long as the cerebro-spinal fluid continues to escape the most vigorous disinfection of the skin and frequent changing of the dressings must be carried out, for not only so long as the cerebro-spinal fluid is flowing is there great danger of septic invasion, but the difficulty of closing a drainage sinus is increased the longer the cerebro-spinal fluid passes through it."

Summarising, he urged the sparing employment of drainage and early closure of the wound.

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