On severe cold or congelation as a remedy of disease / by James Arnott.

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ON SEVERE COLD OR CONGELATION AS A REMEDY OF DISEASE.

By James Arnott, M. D.

Many powerful physical agents which are destructive when they act in an uncontrolled manner on the human body, become remedial when they are regulated and applied under appropriate circumstances. Excessive heat may be so limited or controlled, even when it is of so high a degree as to render iron white, as to furnish an useful therapeutical means; and the opposite extreme of temperature, or a degree of cold causing congelation of the animal textures, which has hitherto been only regarded as the cause of disease, constitutes, when it is not too low, too extensive, or too much prolonged, a remedy of great importance, and of very general application.

Intense cold or congelation would probably, long ere now, have obtained a place amongst the more potent therapeutical means, but for a mistaken notion respecting its effects on the animal structure. It has been always dreaded as a cause either of violent reaction and inflammation, or, if longer continued, of the immediate gangrene or death of the part subjected to it; and the common accidents from intense frost in severe winters and high latitudes, have appeared to justify this apprehension. But, although it is perfectly true that the body thus exposed to intense cold may suffer as severely as when it is exposed to intense heat, or is burned by accidental fires, yet when severe cold is regulated as has been just described, it becomes an agent of a very different character, producing neither reaction nor mortification. When limited in degree, duration, and extent, it exerts an anti-inflammatory power; it appears to depress the vascular and nervous energies permanently, and yet within the bounds of safety; and, probably, while it depresses, it considerably modifies the vital actions. When severe cold has been used to remove the sensibility of parts previously to surgical operations, the wound has appeared, in every instance, to heal more speedily than under the usual circumstances.

As it is only my wish, at present, to establish the right of congelation to be admitted amongst our principal remedies, I will not enter into details respecting the diseases in which I have had recourse to it. If the above explanation of its action be correct, it is obviously applicable to a great number of the most formidable maladies to which the human frame is subject. As respects its anæsthetic action on the nerves, it exerts a most beneficial influence in many painful diseases, the seat of which can be reached by it; but it is probably as a preventive and prompt remedy of vascular excitement and inflammation, that it will be chiefly valued. Cold has already a high character as a remedy of inflammation; but a continuous low temperature, such as has hitherto been employed, (or, rather, which it has been the endeavour to employ), may only repress the morbid energy, which a short application of a much greater degree of cold may altogether and at once destroy. A class of diseases in which both nerves and blood-vessels are in a morbid condition, are affections of the skin, and these were, naturally, from being so obviously under the influence of the new remedy, amongst the first in which it was used. The most obstinate cu-

* For Observations, by the same writer, on Cold as a local anæsthetic in Surgical Operations, see *The Lancet*, of 22nd Aug. and 9th Sept. 1848.

taneous diseases have yielded to congelation so speedily as almost, with respect at least to some of them, to suggest another explanation of its modus operandi. Had the cases of prurigo so treated been dependent, like scabies, upon the presence of parasitic animals, their speedy and permanent cure would be easily explained by the sudden extinction of the life of these animals by the cold. A most distressing attack of prurigo pudendi was completely subdued by two congelations, each of about thirty seconds duration, after a prussic acid lotion, and other routine applications, had been tried in vain.

Congelation to the degree which has been specified, may be produced by the common frigorific mixture of ice and salt; though for particular purposes, one of greater power might be prepared. The easiest mode of using the frigorific is, to dip a piece of ice into salt, and then apply it closely to the part. Congelation will be thus produced in half a minute. When the surface to be frozen is irregular, a little pounded ice and salt may be placed on a rag, or on a flat bit of sponge; or the mixture may be confined to the part by a deep ring or bottomless cup made of gutta-percha or bees'-wax, or by means of a thin bladder, each being provided with a small tube to carry off the warmer brine as the ice dissolves. The application of ice or very cold water to the skin is painful, but the severer cold of a frigorific mixture immediately benums the part. It has been applied to a carious tooth, an inflamed and ulcerated mouth from mercurial ptyalism, and an irritable ulcer, without causing pain; but when the congelation commences, there is, for a few seconds, an uneasy sensation of contraction, proportionate to its degree. In the case of ptyalism referred to (a patient of the Brighton Dispensary, who had been deprived of sleep for two nights by the affection of the mouth), there was no return of pain, except in mastication, after one application of the frigorific, which was sufficiently powerful to blanch the lower lip as it flowed over it.

As the prevalent erroneous notion that congelation of the animal textures must in every instance produce either violent reaction or gangrene, will probably prove some impediment to the reception of this important therapeutic agent, it may be well to direct the attention of such as would object to it on this account, to the vast difference between intense cold acting for a long period on the extreme parts of the body where the circulation of blood is never vigorous, and cold applied for a very short period to parts surrounded by, or overlaying other parts, where the circulation is vigorous, and ready to re-animate the portion in which it has ceased. There is as great a difference between the cases as would exist between that of opium taken in unlimited quantity by a feeble child, and when taken in a suitable dose by an adult. I have now employed congelation nearly a hundred times for anæsthetic and remedial purposes, without its being followed, in a single instance, by any injurious effect. Even if the congelation be kept up for several minutes, there is no worse consequence than a slight congestion, with redness, of a few days' continuance.

As respects the employment of severe cold for the production of local anæsthesia, it may be remarked that, although a fatal result now and then from the use of chloroform may not be thought a sufficient objection to its use, and although the intoxication or loss of consciousness during its action may be only deemed a slight inconvenience, still the facilitating of the healing process, by the prevention of an injurious degree of inflammation, ought, I think, to entitle the application of cold to a preference in the great majority of surgical operations.

65, Grand Parade, Brighton,
11th Nov., 1848.

—cancer &c.

Preventive after wounds, burns &c. &c.
Inflam.ⁿ of brain, membranes, large intestine &
end of various haemorrhages

Erysipelas & other acute affect.ˢ as well

The ice may be made of suitable for
a hot iron — & may be dipped in
ifted salt & nitrate of ammonia
or a thin gauze bag, with a spo
imbibe the escaping brine

— there being free access to the
erve of the tooth. Intolerable ulce
ne thus been soon converted into heal
tores.

— the inflam.ⁿ being thus subdu
has nearly 200 times, of clusem
Asperem.ˢ on animals *

The smallest operations as of suc
etons, ligatures, bleeding, will illu
trate the anæsthetic action of cold

wrapped in fl