

normally under volitional control. The sequence of morbid processes in fever seems to me to be as follows: 1st, the generation within the body or the introduction from without of a poison; 2nd, excessive molecular motion in tissue undergoing disintegration as a result of the presence of such poison; 3rd, the transmission of the resulting heat to nervous centres, by the sympathetic filaments to their ganglia, by afferent nerves to the centres of the cerebro-spinal system, and to both by the blood. 4th. Reconversion of heat into motion as seen in increased functional activity of the heart, lungs, skin and some other organs, and in some cases in the violent explosions of force as manifested in convulsions of the voluntary muscles.

It will be found on examination that the successful treatment of fever has for its object the arrest of one or all of these diseased actions. We attempt to eliminate the poison that has initiated the train of morbid action, or failing to do so we try to arrest the undue metamorphosis of tissue by diminishing the oxygen-carrying power of the blood. We try to allay reflex action in the nervous tissue or we endeavour to convey from the body the excess of heat generated.

If we succeed in eliminating the poison or in neutralizing it, the patient is cured and our aim accomplished, but from the nature of the poison we are often unable in the present state of medical knowledge to do either, and so excessive molecular motion goes on, heat continues to be generated in too great amount, and we have no alternative but to interpose obstacles to the passage of oxygen to the tissues in which the morbid process is being carried on, and at the same time to aid in the removal of heat as fast as it is generated. The former we accomplish by the administration of various antipyretics as quinine, veratrum viride, aconite, digitalis, &c., while the latter is best accomplished by abstracting heat from the body by the external application of cold. Heat generally produces such violent action in the circulatory organs as to rapidly exhaust them and render them incapable of bearing further depression by therapeutic agents, so that many drugs acting as most of those just named are inadmissible. Their action moreover, is often too slow to render them availing in the preservation of life.

It is under these circumstances that the rapid abstraction of heat becomes of paramount impor-

tance in affording relief or in saving life. We know that a temperature of 106° F. or higher is incompatible with life if continued for even a comparatively short time, whatever the disease may be, and we know of no internal remedy that will reduce it to the health standard as quickly, safely and certainly as cold applied externally.

If a well developed child weighing thirty pounds and having a temperature of 106° F. be placed in a bath of water at 50° F. there will be no perceptible fall in the axillary temperature for three minutes; the mercury will then begin to fall very slowly and in about fifteen minutes will stand at 98½° falling much more rapidly the last three degrees. The rapidity with which the temperature falls is not the same in every case and cannot be prognosticated; it is well therefore to always keep a clinical thermometer in the axilla and remove the patient from the water when the mercury has fallen to 99½° as there will be a further fall after removal from the bath.

The temperature may be reduced with almost equal facility by sponging the whole body with whiskey or brandy and fanning the wet skin at the same time to promote evaporation. This method indeed is often preferable. As cold water is apt to alarm young patients and is unpleasant at first, it is better to have the bath tepid and rapidly cool it by the addition of cold water or ice until our object is attained. This precaution is unnecessary when from any cause the patient is insensible, which is generally the case in infantile convulsions.

The most notable changes that accompany the fall in temperature are those pertaining to the nervous and circulatory systems. The pulse becomes less frequent, slower and softer, nervous excitability is allayed, muscular spasm ceases, sleep is often induced while the patient is still in the water, and is almost certain to supervene on removal from it. In some cases, the temperature having been thus reduced there is no subsequent rise, the case progressing to rapid recovery; but in many diseases it is necessary to repeat the bath at such intervals as will be indicated by the rise in temperature. By keeping the patient in a cool, well ventilated room, and resorting to the use of the sponge bath and the use of a fan, the repetition of the cold bath will only be required at long intervals and may not be required at all. Experience has led me to the conclusion that children are more intolerant of in-