

mischievous than a temperature of 106° or 107° , which remits promptly, as in malarial and relapsing fevers.

Statistics show that with a purely expectant treatment, where the temperature did not reach 104° , in typhoid fever, the mortality was about 9 per cent.; where it passed 104° , but did not reach 105° , the mortality was about 29 per cent.—when it passed 105° but did not reach 106° the death-rate exceeded 50 per cent.; and where it passed 107° recovery was rare. In all febrile diseases one of two factors is present and in a majority of cases both; they are, 1st, excessive heat production, and 2nd, faulty heat elimination. Antipyretic treatment consists in the administration of medicine to prevent this excessive production;—and the energetic application of cold water and other means to hasten its elimination by abstraction.

In order to accomplish the best possible results by this plan of treatment it must be *begun early and persisted in until the danger is passed*. This is a four weeks' fever. During the first week there is a gradual but persistent elevation of temperature, at the close of which, in a vast majority of cases, the maximum is reached; the temperature then is persistent with slight diurnal variations until the latter part of the third week or beginning of the fourth when the disease begins to decline, and the temperature is characterized by daily remissions of several degrees. If this period is reached without any serious complication or intercurrent disease arising from excessive heat, the patient ought to recover unless death takes place from the specific lesions of the disease, the manner of which has been already discussed.

In the application of cold water as a therapeutical agent, we are using a means of great power, and one that must be used with care or harm may follow. An agent that will lower the temperature in febrile conditions four or five degrees in ten or fifteen minutes, accomplishing this by actual abstraction of heat is not intended for the amusement of the patient and his friends, while nature cures the disease.

In applying all thermo-therapeutical remedies, we should be guided largely, if not solely, by the revelation of the clinical thermometer. This instrument was introduced into clinical medicine by Dr. Antonius de Haen, of Vienna, in 1754, but did not attract the attention it merited. Dr. James Currie of Liverpool again brought it into notice in 1797, but the profession, always slow to indorse

great improvements and new discoveries, failed to recognize its importance until nearly three quarters of a century later. I regard the revival of clinical thermometry with its daily application at the bedside of more importance to the sick than any improvement of the 19th century.

Heat may be abstracted by affusion, immersion, the cold pack, sponging, or the use of Kibbee's cot. Affusion is the most effective, but is most unpleasant to the patient. This is Dr. Currie's method, as described in his work, published in England in 1797. He claimed that typhus fever could be aborted by this means, and that scarlet fever and small-pox were rendered mild and tractable affections. His method consisted in dashing upon the naked body of the patient five or six gallons of cold water, the temperature of which was, in some cases which he reports with full particulars, as low as 44° Fahr. This process was always followed by a rapid reduction of temperature sometimes reaching the normal. I have used the cold affusion in malarial and scarlet fevers with the same happy effect described by Dr. Currie. I have treated one case only of typhoid fever in this way of which I shall speak more fully presently.

I am convinced, however, after a somewhat extended trial of these different methods of abstraction, that what is known as the graduated bath of Von Ziemssen is most suitable for a majority of cases, and this is especially so for children and old people, because the shock of this bath is much less to the patient, and, if properly applied, the abstraction is none the less perfect. Fifteen or twenty gallons of water, a Knowlton's portable rubber bath-tub, a clinical and an ordinary thermometer, are all the implements necessary to administer these baths. The same water can be used if necessary for several immersions. The patient should be immersed at full length in the water, the temperature of which should be about ten degrees lower than that of his body, and after remaining two or three minutes, cold water should be added gradually until the temperature of the fluid in the tub is reduced to 70° or even 65° in obstinate cases. From fifteen to twenty minutes will be required to reduce the temperature of the patient to one hundred or below; while plunging him into cold water of 60° , according to the method of Liebermeister, will accomplish the reduction in ten or twelve minutes, but is much more unpleasant to the patient. The effect of a bath is to lower the pulse and respiration corres-