

knowledge of general as well as particular measures, and contend against those absurd expectations which many entertain of the power of medicine, and which the ignorant empiric, whether in or out of the profession, is always anxious to instil.

Under the head *anomalous*, we have included nineteen cases of obscure and principally chronic affections, to which, in our ignorance, we have been unable to assign a local habitation or a name; they are not sufficiently detailed to admit of useful analysis, though we believe much good would result from a faithful narration of difficult cases. Failures in diagnosis are often merely the consequence of individual ignorance, while others depend on the real obscurities of the case; in either respect good would result from the plan we are proposing, and many valuable suggestions from older and more experienced minds would reward the avowal of a junior's difficulties.

We have now brought to a close this rather long but we hope not wholly unproductive report. The most critical of our readers cannot be more alive to its feebleness and deficiencies than the writer, but we have been sustained by our conviction of the value of the method we have employed, and animated by the hope that our example might stimulate some more gifted and successful observers. While we are conscious of having performed our task to the best of our ability, we cannot but feel humbled at the scanty harvest we have reaped from so extensive a field, and in the daily practice of our art are painfully conscious of the want of that profound sagacity and deep practical wisdom which have thrown a flood of light upon the labours of a heaven-favoured few.

ON THE REMEDIAL LOCAL APPLICATION OF HEAT AND COLD.

By JAMES ARNOTT, M.D.

THE remedies which experience has proved the most valuable are not the most secret or rare. In harmony with the other beneficent arrangements of Providence, these are of easy access and are liberally supplied; and no improvement in the treatment of disease has excelled that which has resulted, in modern times, from listening to the instinctive dictates of nature, and abandoning practices, the offspring of crude or erroneous theories, which were in opposition to these dictates.

But we are yet far from understanding the full extent of the remedial uses of these common and obvious agents, or even the most effectual manner of administering them. The opinion is general that for the more

powerful remedies a deeper search is required, and the three kingdoms of nature are ransacked for these, while the agents which are ever at hand, and which force themselves, as it were, on our observation, are comparatively neglected.

The history of the *materia medica* would alone throw doubt upon the reasonableness of this preference. Of the vast number of substances that have been recommended at different times, each with the strongest testimony from alleged experience of its unfailing virtue, how few maintain even an insignificant place in the storehouse of the practitioner. Some who have so strongly recommended these have themselves been deceived; others may have practised deceit; but whatever may have been the cause, it is certain that with a few exceptions of medicines widely diffused by the hand of nature, and whose properties were probably of easy discovery, almost every substance which is capable of strongly affecting the vital powers, after having been employed in a great variety of diseases, with fresh admiration at each successive trial, has at last been allowed to settle down, if retained at all, to the humble condition of being deemed but one of many articles possessing similar and not less efficacious properties.

Amongst what may be termed the natural or instinctive remedies, the local applications of heat and cold occupy a prominent place. They belong to the unfortunately small class of remedies whose power in various morbid conditions has been universally admitted. Yet notwithstanding this general consent as regards their importance, a very little examination will satisfy the inquirer that not only is the application of these agents often trifling or inert from the imperfect modes of making it which are practised, but that injury instead of benefit is not unfrequently its result. A method of fulfilling the indication of applying locally, without interruption and for any desired length of time, a definite degree of heat or cold, and without exposing the patient to any hazard, suffering, or inconvenience, would supply the practitioner with a remedy that might be extended to the cure of more diseases than even the large number in which such applications have already been used with advantage; and would render unnecessary the exhibition of medicines of doubtful agency, which are now employed in conjunction with, and for the purpose of promoting the effect of, these external means. It is the object of this paper to describe such a method.

When cold is applied locally (or in more philosophical language, when heat is abstracted from a part,) for the prevention or cure of inflammation, hæmorrhage, and other diseases arising from an accumulation of blood or nervous energy, it is usually done by placing on the surface to be cooled a piece of lint or linen rag which has been

dipped in cold water, either pure or medicated, and by dipping this afresh in the water, and reapplying it when it becomes heated or dry. Were the orders of the practitioner respecting the frequent renewal of the cold cloth attended to, and the necessary opportunity afforded for the desired evaporation of the fluid, a certain amount of advantage would usually be gained; but neither of these conditions is generally complied with. Even were an intelligent attendant to remain constantly at the bed-side, and to renew the cloths at very short intervals, the application of cold would be very imperfectly made. The temperature of the surface increases before the cloth is removed, and at every renewal there is a shock from the sudden alternation of temperature, and probably an injurious reaction in consequence. Moreover, the frequent slight renewal of cold at short intervals, by its influence being confined to the surface, may, where the disease is deep seated, instead of lessening, increase the evil, by driving the blood inwards. The effect of evaporation, under common circumstances, is very limited; and the addition of the substances increasing it, is often forbidden by the morbid or denuded state of the skin. The reaction from sudden alternation probably counterbalances any advantage gained in promoting evaporation, by the repeated application of a wet sponge. Ice kept in contact with the part is a more uniform application of cold than can be obtained from the other measures, and in certain cases, as in affections of the brain or its membranes, is a valuable remedy; but under ordinary circumstances so great a degree of cold would be highly injurious, especially if suddenly applied, and it is consequently seldom employed.

What I have to propose, in place of the above measures, is the production of a constant change or current of cold water upon the surface intended to be acted upon, by causing water to run from a reservoir into a thin bladder of the required dimensions, or a bag of India-rubber cloth, and permitting its constant escape from the upper part of the bladder into a receiving vessel. By this expedient the reduction of temperature is constant and nearly uniform—it may be farther lowered by increasing the rapidity of the current as well as by employing water of a lower temperature—the transition to a very low temperature may be gradually made, an important point wherever reaction is to be avoided—there is no trouble nor necessity for an attendant, except for replenishing the reservoir—the application may be made to any part of the body under the bed clothes, and it is exactly limited to the part of which it is desired to reduce the temperature. If the practitioner confides in the alleged sedative qualities of Goulard or other medicated waters, he is not prevented from placing a cloth steeped in these under the bladder, or

from impregnating the cloth with them, by which, at small expense of conducting power, the bladder may be covered for the sake of cleanliness or appearance.

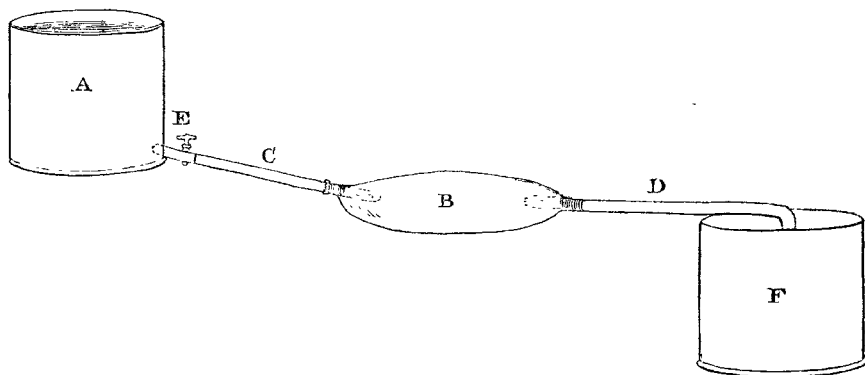
Although so simple an apparatus as this scarcely requires a more minute description, it may yet be advisable, in order to prevent annoyance during the first employment of it, and to enable the surgeon to construct it himself, and from instruments or materials always at hand, to recommend attention to the following points, which a little practice in the use of the apparatus has shown the advantage of. That the tubes supplying and emptying the bladder should be of sufficient diameter to prevent obstruction, and to allow of a rapid current, if desirable—that these tubes will be more convenient if long and flexible—that in order to prevent closure or obstruction at their extremities in the bladder, or where they may be joined by caoutchouc or membrane, they should be pierced at the side as the catheter is—that the ends of the canulæ entering the bladder should have ridges to prevent their slipping from it, which ridges may be easily formed by touching the heated catheter with sealing-wax—that it may be convenient to draw the water from the reservoir by means of a syphon; but in emptying the bladder it is better not to use a syphon, and to regulate the depth of fluid in it by the elevation or depression of the end of the waste-pipe. Although it sometimes would be advisable to obviate the weight of the bladders by keeping them only partially filled, or by contriving that they shall preserve a flattened form of moderate depth when distended, in other cases there would be a very important advantage arising from such pressure, if means be taken, by retaining the bladder in close contact with the skin, to ensure its being perfectly equable, or hydrostatic, and that the counter-pressure shall be pretty equally diffused. The degree of pressure may be regulated by raising or lowering the supply and waste tubes. The advantages of fluid pressure over that of the bandage in the treatment of tumours, diseased joints, swelled glands, and other diseases for which pressure is deemed amongst the principal remedies, are not yet generally understood. The subject is adverted to in my recent publication upon the application of fluid pressure to surgery as a dilating power.

By passing hot instead of cold water through the above apparatus, and wrapping the bladder in moistened flannel, an advantageous substitute may be obtained for the modes at present in use of applying heat and moisture, it is unnecessary to do more than allude to the great remedial virtue of this application in various states of inflammation and irritation. In inflammatory disease of the abdomen, or of its contained viscera, for instance, it is only second to the lancet, and can be employed where bleeding is inadmis-

sible. The usual methods of applying heat are, perhaps, more efficient than those employed for abstracting it; but they have still many defects, especially with respect to the graduation and steady continuance of temperature. The power of gradually increasing the heat, when the principal indication is to

effect a determination of blood to the surface, is not the least advantage of the plan proposed. The defects of the ordinary means will not be deemed unimportant, or be neglected by him who reflects that upon such apparently little circumstances the issue of a doubtful case must often depend.

Figure illustrative of the Apparatus for the effectual local application of Heat or Cold.



A. Reservoir of hot or cold water.

B. The bladder or bag for containing either the refrigerating fluid or the fomentation. When a large surface is to be acted upon, several bladders may be joined together. It may be proper in certain cases to keep the bladder closely applied by an appropriate cover.

Brighton, June 3, 1842.

C and D. The supply and waste tubes.

When hot water is used the waste pipe should be inserted into the lower part of the bladder.

E. Stop-cock for regulating the current.

F. Receiving-vessel for the waste fluid.

MR. STEVENS' NEW APPLICATION OF AN OLD DOCTRINE IN MEDICAL TREATMENT.

To the Editor of THE LANCET.

SIR,—I am anxious to call attention to a new application of an established doctrine in the treatment of specific diseases, and have no hesitation in saying that, simple as it may appear, it is one of greater practical value than any which has been discovered in medicine of late years.

By specific diseases is generally meant such as are capable of reproducing themselves: but here may be included all which depend upon morbid poisons, whether contagious or miasmatic. The doctrine, therefore, applies to a very wide and important division of diseases in general.

The morbid type which suggested this principle is that of syphilis, the virus of which we usually destroy by the action of mercury. I have elsewhere, and several times in your Journal, explained the *modus operandi* of mercury in syphilis as follows:—“There is a physiological law that few things can be absorbed without being decom-

posed or altered in quality; that is, cellular tissue and bone are not absorbed as cellular tissue and bone, but their elements or new forms. Also, when the virus of a primary venereal sore is absorbed into the general constitution, it produces there the secondary form of syphilis, which is much modified in its characters from the primary affection, and which is best cured, not by mercury alone, but by a combination of mercury, iodine, and arsenic. Thus, it is plain that in the process of absorption the qualities of matter are considerably altered; and that mercury, by acting on the absorbents, without purging the virus of syphilis from the system, as generally conceived, forms, by degrees, innocuous compounds of the elements of the poisonous secretion.”

Now, though we have been in the habit, for many years, of destroying the virus of syphilis by the action of mercury, yet it has not been the custom to treat other viroid diseases in the same way. For example, what is the usual mode of treating scald-head? This disease is very generally quacked, and the constitution is obliged to do its own work; so the disease lasts twelve or eighteen months, or more; whilst, under this rational plan, I would undertake to cure the most in-