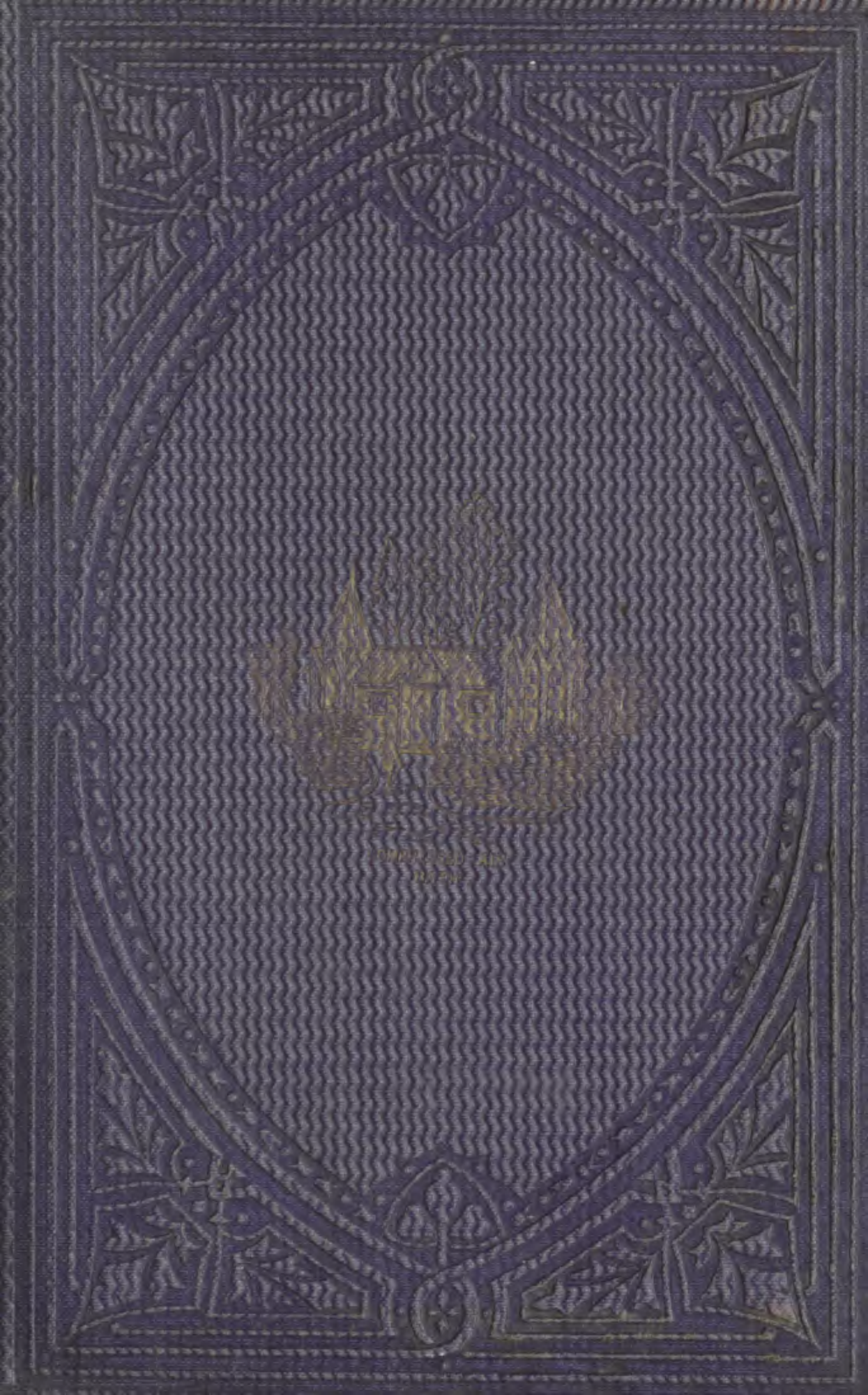

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BEN RHYDDING.

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THE

PRINCIPLES OF HYDROPATHY

AND

The Compressed-Air Bath.

BY

A GRADUATE OF THE EDINBURGH UNIVERSITY.

TOGETHER WITH

A CHAPTER ON THE TREATED BOOK OF ENGLISH PATH,

LONDON:
T. NELSON AND SONS, PATERNOSTER ROW;
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The effective curative agent in disease is emphatically the energy which we term the *Vital Force*,—that Energy of Life which assimilates external matter with our organism and sustains our complex functions.

Third Edition.

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PREFACE.

THE following work was occasioned by a visit which the Author lately paid to Ben Rhydding. It seemed that a book descriptive of the place and its treatment, which, while it aimed at correctness on scientific and professional points, would yet be sufficiently popular in its style for the general reader, was very much wanted. To supply this want, he was induced to undertake the present little work, Dr. Macleod readily furnishing him with such information as he required.

It has been the writer's aim to state and explain with as much brevity as possible, the various modes of treatment employed at Ben Rhydding. No special reference to these is necessary in this place. It may, however, be mentioned here, that there is

one marked respect in which Ben Rhydding differs from every other establishment of the kind in this country. It is, the writer believes, the only establishment into which the Compressed-Air Bath has yet been introduced for the treatment of disease. Dr. Macleod has the merit of being the first medical man in this country to make use of the Air Chamber; and his account of its beneficial properties, given in a letter embodied in this work, will doubtless attract the attention it deserves. Ben Rhydding holds, in my opinion, a close relation to the Asclepia of the Greeks, both as regards its situation and its aim. For like these Temples of Health it is situated "in an elevated, retired, and healthy locality;" "where systematic exercises and a regulated diet is prescribed;" "where the curative use of water is employed with high skill;" and where all the well attested modern improvements and discoveries in medicine are added to the rules of the mighty HIPPOCRATES, the illustrious SYDENHAM, and the wise ABERCROMBY.

Without wishing to make Dr. Macleod responsible for more than has been contributed by, or

quoted from, himself, the author may remark, for the satisfaction of his readers, that that gentleman has taken the trouble to look carefully over these chapters, and has expressed his belief in the general correctness of the views and statements which they contain.

EDINBURGH,
December 25th, 1857.

BEN RHYDDING.

CHAPTER I.

Ben Rhydding in general.

Wharfedale—General Features—First View of Ben Rhydding—Its Situation—The House and its Arrangements—Compressed-Air Bath—Exercises and Amusements—Ventilation, with a Dissertation thereon—Life at Ben Rhydding—Scenery within Easy Reach—Unwritten Poetry—Peacefulness and Repose.

YORKSHIRE has many charming dales, but none more charming than the Valley of the Wharfe. From its source at Cam Fell, to its junction with the Ouse below Tadcaster, the Wharfe passes through a tract of country presenting scenery of the most varied and interesting description. "He runneth," saith Camden, "with a swift and speedy stream, making a great noise as he goeth, as if he were froward, stubborn, and angry; and is made more fell and testy with a number of stones lying in his channel, which he rolleth and tumbleth before him in such sort that it is a wonder to see the manner of it, but especially when he swelleth high in winter. And verily it is a troublesome river, and dangerous, even in summer time also; which I myself had experience of, not without some peril of mine own, when I first tra-

velled over this country." This description is true of a large part of its course, but not of it all; for though, long after its rise in the wild upland moors, it frets between walls of limestone, or exerts its force against grit-stone and shale, it sometimes spreads out into a placid stream, and winds among pleasant meadows, as if, wearied with the turmoil of its earlier career, it would fain linger to rest amid these scenes of peaceful beauty.

Wharfedale can present to the lover of nature scenery at once of the wildest and of the loveliest description. Away up in the moorlands at its source, the prospects are savage and bleak, yet the towering forms of Cam Fell, Whernside, Ingleborough, and Pennigant, give to this wildness and bleakness a character almost of sublimity. As the stream descends, its course is less wild, but more picturesque. Lofty precipices in many places tower above the narrow but beautiful vale through which it flows. Here and there a small hamlet, with its church tower, and a clump or two of trees, nestles at their foot. Sometimes opening, and sometimes contracting, the valley is ever varying in its aspect as it proceeds. The bold heights, which crown the dale from Kettlewell downwards, contribute highly to its picturesqueness. Passing Kilnsey Crag, Burnsall, and Barden, with the ruined tower of the good Earl Clifford, the Shepherd Lord, the Wharfe rushes impetuously through the Strid, and enters the grounds of Bolton Priory, winding among scenes rendered classic by the painter and the poet. Then it flows onwards past Ilkley through a wide and lovely valley, pleasantly divided into meadows and corn-fields, with here and there a group of houses, or one of the "stately homes of

England" standing "amid its tall ancestral trees." Near Cawood, interesting from its associations with Cardinal Wolsey, the Wharfe terminates its individual course by joining the Ouse.

A mile below Ilkley, on one of the finest sites in this lovely dale, stands BEN RHYDDING. We think we shall not soon forget the first view we had of this celebrated shrine of Hygeia. We had been wandering among the dales of Yorkshire, and had spent a good many quiet but happy days exploring their beauties. Many an old abbey and castle we had visited in our pilgrimage, calling up in fancy, as we lingered by the "grey but leafy walls where ruin greenly dwells," the personages whom history and romance and poetry have associated with them. Nor did we leave unvisited the ancient city of York with its noble Minster—Scarborough with its picturesque Castle and its beach thronged with visitors—the busy and thriving towns of the South—and fashionable Harrogate. But we got tired of Harrogate; it was *too* fashionable. Staying just long enough to make ourselves acquainted with the manner of life there, we resumed our wanderings. One of our last stages was Keighley, where we paused to visit Haworth, the home and burial-place of Currer Bell and her sisters.

From Keighley, one fine morning in the beginning of September, we set out on foot for Ilkley and Ben Rhydding. Crossing the Railway, and the Aire, we ascended through the fields towards the heights of Rombald's Moor, pausing near the summit to enjoy the extensive view of Airedale,—Keighley, with its clouds of smoke gaining a strange lurid glory from the sunshine, forming the centre

of the picture. Crossing the ridge of the Moor, and beginning to descend, the beauties of Wharfedale began to open before us. The rugged heath which borders the dale on both sides gradually softened down to meet the cultivation of its centre. Below, we can see the village of Ilkley; the scattered houses of recent erection in its neighbourhood, and the well kept fields sufficiently attesting its prosperity. The winding Wharfe, sometimes concealed from the view, and sometimes glancing in the sunshine, is bordered by meadows and cornfields that seem to gain additional beauty by contrast with the wild moorland adjoining them. Westward the eye takes in an extensive range of the valley, dwelling with delight on its peaceful, lonely beauty. The wild and the gentle features of the scene combine exquisitely, and form a prospect on which we think we could never tire of gazing. And then, looking eastward, a prospect of perhaps still greater beauty meets our view, with Ben Rhydding as its central object. On a fine eminence, midway up the slope of Rombald's Moor, this almost princely structure at once arrests the eye. As it stands on its commanding site, with a flag floating gaily from its topmost turret, and with the adjuncts of foliage and bold hills, it presents a most imposing appearance. We might dwell on the different features of this scene, but it would be impossible for the most eloquent description to convey a just conception of it. Standing on the hillside, and looking down on that lovely dale, we wished, as our eye swept over it, that we could daguerrotype it in our own mind in all its forms and hues of beauty, and remember it for ever.

Ben Rhydding is finely situated on the slope of Rom-

bald's Moor, at an elevation of five hundred feet above the level of the sea. Whether from the natural advantages of its position, the variety and beauty of the scenery in its neighbourhood, the extensive and elegantly laid-out private grounds with which it is surrounded, or the perfection of its internal arrangements for the health and comfort of its inmates, this establishment well deserves the reputation which it has secured. Built on a sandy soil, rain never lies on its gravelly walks; and the springs which supply it with water are among the finest in England. From its situation, midway between the vast upland moors and the lovely banks of the placid Wharfe, Ben Rhydding affords not only a favourable position from which to admire the varied scenery around, but one from which, by a walk requiring little time or exertion, the valetudinarian may enjoy, when he pleases, an agreeable change of temperature. Should the sun beat too strongly on the lower levels, he can enjoy the breezes of the uplands, and when cold and storm are raging on the height, the grounds by which this establishment is surrounded will be found to command a more sheltered climate than even the banks of the silvery Wharfe. Within these grounds, and by the banks of the Wharfe, at all seasons of the year, with advantage, the delicate and consumptive may take exercise; for, as we intend to show by and bye, it is the opinion not only of Dr. Macleod, the eminent physician who takes the sole direction of this establishment, but also of many medical men of high standing, who are perhaps opposed to his opinions on other points, that a dry, bracing atmosphere is more suitable than a relaxing one in consumption, and that out-door exercise,

when properly regulated, may often be found even more beneficial in winter than in summer.

Ilkley had long been famous for its springs, and it was this circumstance, among others, that led to its selection as an appropriate site for the Hydropathic Establishment we have undertaken to describe. Ben Rhydding was erected nearly sixteen years ago, at an expense of about £30,000. The estate consists of about two hundred acres of ground; a great part of which is laid out with a view to the advantage and pleasure of the patients, affording them the opportunity for varied exercise, and communicating also with the extensive moors which crown the hills for many miles on both sides of the valley of the Wharfe. The House consists of a central building and two wings. The centre contains on the ground floor, the dining-room, the library, and sitting-rooms. On the first floor are the drawing-room, six private sitting-rooms, and four bed-rooms, all commanding exquisite and varied views of the surrounding scenery. The second floor is devoted entirely to double bed-rooms. The south wing contains the ladies', and the north wing the gentlemen's bed-rooms. To each landing is attached a bath-room; and the bed-rooms are each fitted with a bath and an unlimited supply of water direct from the springs. The bath-rooms contain each a plunge bath and a douche. There are also hot water, hot air, and vapour baths, as well as steam apparatus for local application in cases of stiffened joints from gout, rheumatism, affections of the nerves, or other causes. Of course, too, there are all the other means and appliances, too numerous to mention, of a first-class Hydropathic establishment. The library is

THE SHRINE.

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ly regulated, may often be found even
than in summer

COMPRESSED AIR BATH.

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THE SHRINE.

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supplied with a great variety of the leading newspapers, reviews, and magazines of the day. Gentlemen will find in the library that quietness for reading and writing which cannot always be secured in the drawing-room. Books in the various departments of literature may be had on application to the clerk of the establishment. A billiard-room, open from 9 A.M. to 10 P.M., affords the means of recreation to those who cannot be much out of doors.

But Ben Rhydding is not devoted solely to the Water Cure, BUT TO THE FULLEST CARRYING OUT IN PRACTICE OF THE ENTIRE ART OF CURE. Hardly inferior in importance to the hydropathic treatment is that by the COMPRESSED-AIR BATH. Dr. Macleod has the merit of having introduced this important invention into England. It is about two years since the Compressed-Air Bath was erected at Ben Rhydding, and to the best of our knowledge, it is as yet the only one in use in this country. We shall shew in other parts of this work the nature and effects of this important invention, and its immense value in the treatment of chest affections. At present, we only mention it as one of the leading features of Ben Rhydding. The Compressed-Air Bath, a strong chamber constructed of iron plates, firmly rivetted and air-tight, and with several small windows of strong plate glass, is on the west of the house, and so near, that the most delicate patient may walk, or be carried to it. We step across to it, and with the Doctor's permission, peep in at one of the windows. We see several patients sitting, evidently quite at their ease, reading the papers, or chatting to each other. We find, however, that though

they get more than the usual supply of air, they are required to be quiet and grave when under its influence, for the direction runs :—"Parties not to laugh or discuss in the Air-bath!"

The importance of exercising the different muscles of the body, as a means of assisting in the cure of disease, or preserving health, is fully recognized at Ben Rhydding. Not only are the "free exercises" enjoined as required, (a notice of which will be given in a subsequent chapter,) but a COVERED ARCADE or GYMNASIUM has been erected, measuring 115 feet long, by 59 feet wide, and furnished with Gas, so as to afford constant opportunities of amusement and exercise in all sorts of weather and at all seasons. Adjoining the Gymnasium, is a large BOWLING GREEN, whereon, as the muse of Ben Rhydding has ere now sung, many a roaring game, with varying success, has been contested between the lovely fair and their bearded foemen. We would gladly quote for the reader's edification, some of the stirring incidents of the peaceful war, but from respect to the maiden or matronly modesty of the fair combatants, if not that of their antagonists, we must leave them to the immortality of the "Ben Rhydding Ariel." Let us not, in enumerating the means of recreation possessed by this fine establishment, omit to notice the American Bowling Alley, and the Racket Court. All these are under the direction of an experienced Gymnast.

The GROUNDS are charmingly laid out. We believe they will compare favourably with those of any public establishment in England. Near the house there are flower beds pleasantly disposed. Winding about, the

they get more than the usual supply of air, they are required to be quiet and grave when under its influence,

RACKET COURT.

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walks suit themselves to the character of the ground, and, while care has been taken to have them sufficiently sheltered, no violence has been done to the natural features of the place. One of the most attractive spots in the grounds is THE SHRINE, a beautiful little temple where one may quaff water, which it is a positive luxury to taste. Such water, we are confident, can hardly be equalled, certainly cannot be surpassed, in England. We cannot dwell on other noticeable features of these grounds. The walks, which are both level and undulating, exceed a mile and a half in length.

There is one matter connected with the interior arrangements of Ben Rhydding to which we have not yet referred, but which, nevertheless, deserves especial mention. We therefore take it up now, having touched on the leading arrangements and details of the establishment. We refer to the marked care bestowed on its VENTILATION. This subject of ventilation is one, on the importance of which we feel tempted to enlarge. Everybody acknowledges the value of pure air, and yet few take the most ordinary precautions to receive it *in their houses*. What advantage is it that a house is surrounded by the purest and most bracing atmosphere, if we do not breathe a similar atmosphere within doors? The air as well as the sea needs circulation to keep it pure and healthy. When it becomes stagnant, it becomes so far poisonous. "Foul air," says Dr. McCormack, "is as a two-edged sword, and destroys more victims than the bloodiest battles or direst pestilence." The atmosphere of a close room becomes speedily unwholesome through respiration; and the vital functions cannot be carried on

as they ought, unless there is some provision for carrying off the tainted air. The remark applies to large apartments, as well as small ones: the quality of the air will be the same, only there will be more of it. We need not dwell on the evils produced by a simple want of circulation of the air in the dwellings and workshops of the people, evils experienced more or less by all classes, but experienced in a special degree by those who are crowded together in confined apartments at their occupations by day, or for sleep by night. "Fever, consumption, scrofula," it has been forcibly and truly remarked, "are mere questions of ventilation." Many a tale of misery would have been left untold,—many a young and hopeful life might have grown up to maturity and honour,—many a hard working and industrious man might have lived to attain a competence and independence at which he aimed, but for noxious effects of impure air. It is manifestly the dictate of wisdom to make every provision for the supply of a pure and healthy atmosphere, indoors. The object kept in view should be to render the air in our apartments as uniformly pure as that which we breathe in the open atmosphere. "By stringent ventilation," says Dr. McCormack, "through copious apertures, can we alone hope to escape the foul air-plague which proves slow poison to us all. At whatever cost, this great enemy of man should be suffered to escape. Once diffused through the boundless regions of the atmosphere, subjected to nature's purifying alchemy, it is no longer capable of doing harm, but, instead, becomes fitted for that fresh succession of marvellous operations, subservient

to animal and vegetable existence, as illustrative of the infinite diversity of the provident goodness of God!"

The most careful attention has been paid to this subject of ventilation at Ben Rhydding. The whole of the establishment is thoroughly ventilated according to Watson's system. In the roofs of each wing, and in that of the centre, are ventilating tubes which communicate directly with the atmosphere without. The double current of air circulating through these tubes, keeps the establishment, and that without the slightest perceptible draught, in a constant and thoroughly efficient state of ventilation. Hot water, in iron pipes, circulates through the building, and in this way keeps the atmosphere at a regulated temperature during the severe seasons of the year. A double current ventilation is placed over the door of each sitting-room and bed-room. These ventilators open into the various corridors, and in this way communicate with the large ventilating shafts in the roof. By these arrangements, the atmosphere within the entire building is as pure and fresh as the atmosphere without, while it is mellowed to a suitable and constant temperature by the currents of hot air circulating throughout the building. Each bedroom is so thoroughly ventilated, that the air contained in it is as pure and sweet in the morning on rising, as it was when the resident went to bed the previous evening. Thus, those who are necessarily confined within doors enjoy what is next in importance to the open air—a perfectly pure and healthy atmosphere in their own apartments.

It may not be out of place to give an account here, of the general manner of life at Ben Rhydding. All who

are able, rise early and get a special bath and a walk. Then comes breakfast, at eight a.m. in summer, and half-past eight in winter, the large bell giving a quarter of an hour's notice. Immediately after breakfast, there are short scripture readings in the drawing-room. Till dinner, at two p.m. the patient consults the doctor, takes his forenoon bath and the requisite exercise thereafter, and makes excursions in the neighbourhood. Dinner is plain, but substantial. There is no pampering the appetite by highly seasoned dishes, no pleasing the palate by generous wines; simplicity and temperance reign supreme. Roast meat and plain pudding form the staple dishes, though the bill of fare includes a variety of others.* The drink is pure water. It is a goodly sight to glance down the Doctor's hospitable table, and see how thoroughly happy and satisfied the guests appear with their temperate fare: we do not see one who seems to miss his wine. No one, of course, thinks of very active exercise or exertion immediately after dinner. Some move off to the billiard room; others lounge about in quiet meditation; while others betake themselves to the drawing-room. There is plenty of work for the afternoon,—the afternoon bath, and as brisk and long a walk in the

* "Roast mutton is always on the table at this meal, it being considered the most wholesome of animal food; beef and fowls occasionally, and certain kinds of fish, which are of allowed quality for patients,—cod, soles, turbot, and haddock. Of vegetables, there are potatoes, rice, cabbage, cauliflower, spinach, and asparagus; also, peas and beans, carrots and turnips. Of condiments, the only kind allowed, and proper, are salt and sugar. Of puddings, are those of bread, flour, rice, sago, and semolina. For drink, water."—*Horner on the Water Cure*, page 209.

grounds or on the moor, as the patient may think proper, and any of the exercises or relaxations, for which such abundant provision has been made. Then comes the evening meal, at seven o'clock. This meal should be lighter than breakfast, being composed of bread, white and brown, with fresh butter, water—pure and sparkling from the spring, milk, cocoa, and black tea. After tea, the patient seeks, of course, the humanizing influences of the drawing-room, and probably finds ten p.m. arrive all too soon. The gas in the public rooms is then turned off remorselessly. "Early to bed, early to rise," is the motto of Ben Rhydding. The extinguishing of the lights in the public rooms is an intimation to all, that it is time to be seeking "tired nature's sweet restorer." Some may linger for another hour, when the main gas stop-cock is turned off: but, as ten o'clock is the hour prescribed to patients for retiring to rest, the Doctor, for their sakes, wishes those who are merely visitors to adopt the same rule. So let each take his sparkling draught of Ben Rhydding's crystal stream, and then, "To bed, to bed, to bed!"

We shall not recount the other arrangements of the establishment. They are to be found in the "Prospectus," to which we beg to refer the reader. Let us, however, remark, that Ben Rhydding possesses ample facilities for locomotion. The livery stables of the establishment afford accommodation for upwards of twenty horses. Thus, those who bring carriages and horses with them, may have them well put up, while those who do not, may have them, when they please, on hire.

This reference to locomotion, tempts us to enlarge on

the scenery which is within easy reach of Ben Rhydding. But that is a task which we have not space, even if we had the ability, to perform as it deserves. Let the reader take up a county map, and he will see now numerous are the places of interest in the district round Ben Rhydding. Wharfedale is full of beauties. One may ride or wander for many a long summer day through it, without exhausting the attractions which it has to display. There is Bolton Abbey, hoary with its old memories of love and sorrow. Hard must be the heart which, amid this lovely solitude does not recal with pensive sympathy the "pang of unavailing prayer" of the lady Alice for

> "Her Son in Wharfe's abysses drowned,
> The noble Boy of Egremond;"—

or, the no less touching story of Emily Norton, "the maid of the blasted family," and the White Doe of Rylstone. The Strid, Barden Tower, Porforth-Gill and its Waterfall, and the Valley of Desolation, Kilnsey Crag, Malham Cove, and Gordale Scar,—these, and the many secluded glens and dells that open into the valley of the Wharfe, or are in its neighbourhood, as well as the heights, great and small, of Craven, are fitted, by their tranquil beauty, their wild magnificence, or their awful, almost horror-striking immensity, to charm or thrill the heart of every lover of nature. It is in scenes such as these that the Great Mother takes to heart those that love her, and inspires them with thoughts so soft and beautiful, sometimes so awful, that we can hardly shape them to ourselves in words. Words?—no they can never express that heart sensation of beauty. The poetry

which thus suffuses the spirit thoroughly in unison with nature, *cannot* be written. Even those who have been most successful in translating the language of nature acknowledge that words fail to render in their integrity the thoughts and emotions excited in the soul by its beauty and grandeur. But we are not going to launch out into a disquisition on Beauty. We just wish to assure the reader that, in the scenes we have mentioned, beauty of almost every type will meet his eye and gladden his heart. But the excursions are not to be confined to upper Wharfedale nor to the entire valley, though we could mention many a sweet spot worth visiting,

"Along the banks of crystal Wharfe."

Without referring to these, however, we would remark, that among other places, the following may afford agreeable excursions: SKIPTON, with its castle and delightful valley, and KEIGHLEY, farther down the Aire, picturesque in spite of its chimneys, about four miles from which is HAWORTH, with its homely old church, in which Charlotte Brontë is buried with her sisters, and the parsonage adjoining, in which she lived and died; LEEDS and KIRKSTALL ABBEY; HARROGATE with its many attractions; KNARESBOROUGH with its castle, its dropping well, and its memories of Eugene Aram; RIPLEY and its castle; STUDLEY and FOUNTAINS ABBEY,—a noble avenue and park, a fine mansion, and one of the most beautiful and interesting ruins in England; and, to name no more, RIPON and its magnificent cathedral. Such are some of the places which may be visited from Ben Rhydding. None of its inmates need feel the time hang heavy on

their hands, when they can make excursions to localities so attractive as those which we have so summarily mentioned.

One word more, and we shall conclude this chapter on Ben Rhydding in general. We have referred to the natural advantages of its position: let us add, that there is nothing to interfere with the charming, quiet, and peacefulness of the place. No factory chimneys mar the beauty of the vale, and no rushing trains startle it from its repose. The Railway is near enough for all practical purposes, at Skipton, Keighley, Leeds, or Arthington. The few remaining miles can easily be accomplished by an omnibus, or some other conveyance. To our mind, the great charm of such a place as Ben Rhydding is its quietness and retirement from the busy and noisy scenes of ordinary life, and the consequent relief it affords from many of the tiresome forms and conventionalities of town, and even of watering-place life. In this age of noise, and bustle, and hurry, one cannot help longing sometimes for a place where the charms of beautiful scenery, and at the same time all the comforts of polished life, may be quietly enjoyed, apart from the rougher disturbing sounds and influences of the every-day world. We cannot help sighing for a place where we shall not be startled by the shriek of the steam engine; where we shall not find ourselves in the midst of continual noise and hurry; where we may combine comfort with simplicity; where we shall not be looked upon as odd, if we discard for a time, "our customary suit of solemn black" for something of a lighter hue; where we may even venture to go in to dinner, sometimes, in our walking garb,

without the fear of being giggled or stared out of countenance, (as we once were at our fashionable hotel in Harrogate;) where, in short, without neglecting any of the real courtesies of life, we shall not require to be continually troubling our brains with matters of etiquette. Such a place is Ben Rhydding—such may it long continue!

CHAPTER II.

The Water Cure.

General Principles and Practice.

The time has not yet come for Hydropathy to be rightly understood, and fairly judged, either by the great body of the medical profession, or the public. Since its introduction into this country twenty years ago, it has gone through a part of the usual and necessary ordeal that always awaits newly enunciated truth. That ordeal has been a severe one, and it is not yet concluded; but from the rapid and steady progress of Hydropathy for some years past, we entertain no fear as to the result. Hydropathy—or Hydro-Therapeutics, as Dr. Macleod prefers to call it—had to suffer as much for a good many years after its discovery from the ignorance of friends, as from the opposition and misrepresentation of enemies. Priessnitz himself was in many respects an ignorant man, notwithstanding his remarkable natural genius. His immediate followers were equally ignorant, and destitute, moreover, of the great natural endowments and powers of observation to which he owed his eminence. Accordingly, it is not difficult to point out mistakes, both in theory and practice, some of them of the gravest kind, committed by Priessnitz and his early disciples. Priessnitz and his followers denominated the new system "The Water Cure," a term both inaccurate and unphilosophical when

applied to it now, yet, describing with sufficient exactness their own views and practice. Water with them took the place of the whole drug system. Observing its remarkable effects in the restoration to health of many persons whose cases had been considered hopeless, they jumped at once to the conclusion, which they asserted strongly and acted upon, that water, and water alone, could cure every state of disease. Add to this, that in the application of water, they were frequently acting as mere empirics, being ignorant of the physiological and pathological laws by which all therapeutics ought to be regulated. This ignorance on the part of the early professors of the new system—an ignorance, unhappily, not rare even in the present day, among those who undertake the water treatment—has been one great obstacle to the progress of what we believe to be the really natural system of medical treatment. In addition to this, Hydropathy has had to battle with the prejudice, often even with the ridicule, both of the "orthodox" profession and the public. The former have in most instances dismissed the subject with scorn, as unworthy of their serious consideration, while the latter have, in general, looked upon Hydropathy, as an excellent subject for ridicule: upon its professors as either enthusiasts or knaves; and upon its votaries—supposed to be continually shivering in wet sheets and cold baths—as at best the objects of compassion, mingled with contempt.

But now "we have changed all that." Hydropathy —we cannot help the unfortunate word; let it stand— Hydropathy has become respectable. It can no longer be summarily condemned, or contemptuously ignored,

by the profession, and laughed down by the miscellaneous public. It numbers among its supporters men of the highest standing in the medical profession; and we think that even the most determined opponents of Hydropathy will acknowledge, upon an examination of their writings, that such men as Dr. James Wilson, Dr. Gully, Dr. Edward Johnson, Dr. Edward Lane, and Dr. Macleod, are "foemen worthy of their steel." But Hydropathy has made more way in the favour of the general public than it has among professional men. The magnificent establishments which have been erected expressly for the practice of the new system, and of which Ben Rhydding is perhaps the finest, are in themselves proofs of the high reputation in which Hydropathy is held by the upper classes. Were we at liberty to quote names from the list of patients at Ben Rhydding, we could mention many whose rank or acknowledged eminence would serve to shew that the new system has overcome the old prejudices even in the highest quarters. And the establishments of a humbler kind, which are frequented by the middle and poorer classes, are a proof, if proof were needed, that the whole public is in a fair way for rightly understanding and appreciating that system. The day, we feel confident, cannot be very long delayed, when Hydropathy, instead of being regarded with distrust and opposition by the mass of the medical profession, will be adopted as the really philosophical and natural system of therapeutics.

Neither of the terms, "Hydropathy" and "Water Cure," we have said, is a sufficiently distinctive and comprehensive denomination for the system. They have,

however, come into such general use, and it is so difficult to find any one word deserving to be substituted for them, that we must be content to employ them, inconvenient though they are. Before proceeding to an account of the appliances and means which are employed at Ben Rhydding in the water treatment, we shall give a brief explanation of the Water Cure in general. This is rendered necessary by the misconceptions which still, to a great extent, prevail even among those who are otherwise well informed.

We cannot too strongly deny the correctness of the description given of the new system by its earliest professors, and by some who at the present time practise without a regard to those fundamental principles which should regulate all therapeutics. Water is undoubtedly the great and the principal means used in this system, for the recovery of the diseased human body; but *it is not the only one.* Equally important in the estimation of the really scientific practitioner of hydropathy, are the agents of air, exercise, and diet. Nor, (and we would call particular attention to this item) are the materials of the pharmacopœia renounced in hydropathy: for, though water in its various applications is the great restorative agent, the hydropathist finds it to be of advantage in certain cases to call in the aid of drugs*—

* "I had many excellent cases, and amongst them many proofs of the great advantage in the union of the two methods, where circumstances prevent the adoption of the exclusive water treatment—usually the best. Indeed, I tested the combination of the two systems so completely, that I am quite convinced of its great utility amongst general practitioners of medicine, who may possess the wisdom and resolution to adopt it."—*Horner on the Water Cure*, page 90.

these, however, being used only as subsidiary to the water treatment. We have the authority of several writers of eminence in hydropathy, for this statement, and we believe, that whatever objections may be brought against it by those who hold, more or less strictly, the old doctrine of the "Water Cure," this will soon be acknowledged by every properly qualified professor of the system.

Hydropathy or Hydro-Therapeutics, may be defined—the suitable application of water in various ways, at different temperatures, and with different degrees of force, to the surface of the body, together with its internal use. With this is associated gymnastics, dietetics, and regulation of habits. Its aim is to give strength to the nutritive force; to give vigour to the nervous power; to regulate the circulation of the blood over the entire surface of, and within the organism; to prevent, or to stop when it has commenced, the formation of lower structures in the place of higher ones; and to hasten the removal of extraneous and effete matters from the system, either through boils on the surface, by insensible perspiration, by means of diarrhœa, or through the urinary organs.

Hydropathy recognises and acts upon the great principle enunciated by Hippocrates, that OUR NATURES ARE THE PHYSICIANS OF OUR DISEASES. It is a principle granted, in one shape or another, by all physiologists, that there is a certain power or energy, which presides over the entire functions of organised structures, and gives harmony to the action of each individual part. This power is termed the VITAL FORCE. No physician who knows anything of his profession, will deny that it is to this

vital power that we must look to accomplish the recovery of the frame, or of an organ, and that the object which therapeutics, of whatever kind, has in view, is to *assist Nature* to accomplish the cure. We claim for the hydropathic treatment, as administered by really qualified and scientific men, the merit of accomplishing this more surely and effectually than any other method.

When the vital force of which we speak, is in excess, or when it is deficient, disease is the consequence. Diseases may conveniently be divided therefore into two classes—the division is sufficiently exact for our present purpose—according as they arise from one, or other, of these causes. The hydropathic physician is prepared to treat both classes.

In treating the former of these classes—that, namely, of diseases that may be said to arise from an excess of the vital force, however caused—the great object of the physician of course is to reduce it to a normal and healthy standard. The hydropathist seeks to do this by the aid of the various functions of the body, which are all called into service by the course of treatment which he employs. The regulation of the patient's diet is the first thing he attends to here, as in the other class of diseases. On the importance of this we need not insist, as it is a matter on which all physicians are agreed. Hardly inferior to this in importance is exercise in the open air, of a kind and duration suited to the patient's strength and the nature of his ailment. In addition to these, the more technical parts of the system are called into operation. The particular mode in which water is applied must depend, of course, on the individual case under treatment;

but we believe that in diseases of the class we now speak, the "pack" or wet sheet is commonly used to produce perspiration to a greater or less extent. On other technical details we do not dwell at this point. What, then, is the effect of this combined treatment? The secretions from the skin are increased, ridding the organism of what served only to clog it. The blood is more equally distributed in its circulation, conjestion in the internal organs is hindered or removed, and the blood itself is, in consequence, purified. Thus, by the application of natural stimuli, the functions of the body are brought into a state of harmony, and therefore of health, and are recovered from that unbalanced exaltation of the system, the continuance of which is incompatible with continued existence.

In the second class of diseases—those which arise from a deficiency of the vital force—the object of the hydropathist must be to strengthen and invigorate the system, that is, to assist the functions of the body to recover their normal, healthy, and harmonious state. This he does, not merely by the use of the natural stimuli to which we have referred, but also by availing himself of the assistance of highly reparative agents. As we shall proceed immediately to give some illustrative examples, we shall not here enter into any details regarding the general mode of treatment. Hydropathy undertakes the treatment of both these classes of diseased actions. It does not profess to be able to accomplish miraculous cures, or to ward off the common doom from its votaries. But it does profess—and no therapeutics can do more—to use the surest and most effectual means to enable Nature to

work her own cure. In this all human efforts must often fail, and the hydropathic physician, not less than the practitioner of any other school, must stand, hushed and awed, before the irresistible majesty of Death.

The processes employed in Hydropathy are too numerous and varied for us to undertake to describe them. We have not space, nor can we pretend to sufficient technical knowledge to dwell on the nature and effects of fomentations, wet sheet packing, the compresses, the sweating process, the wet rubbing sheet, the sitz bath, the shallow bath, the douche bath, the shower bath, the rain bath, the hand and foot bath, the plunge bath, hot water, hot air, vapour baths, and that most efficient agent of cure—the Turkish Bath. These, and other processes, are employed at Ben Rhydding with all that skill and care which are absolutely essential for the safe and efficacious practice of the water treatment. This assurance is sufficient, and we do not think that our reader would thank us, were we to swell out this chapter with a detailed account of the processes we have named.

Writers on Hydropathy sometimes explain their mode of treatment by over-increased waste of tissue, and sufficient supply of nourishment. This opinion we conceive to be erroneous, as quantative experiments made upon the amount of matter secreted by patients while under suitable treatment show that it is usually not more than what takes place during active exercise in health. The water treatment seems rather to bind the molecules more firmly together, and in this way developes heat, while, at the same time, it does not prevent the amount of waste necessary to the sufficient developement of the vital force.

One point requires to be referred to on the threshold of the subject, which has only incidentally been alluded to. There is a popular misconception, that the water treatment is dangerous—that it is at the best a kill-or-cure system; and that patients who undergo it have to submit to much bodily hardship and misery. We would ask any one who is inclined to make such objections, just to make the acquaintance of an individual who has experienced a careful course of water treatment, and we have no doubt he will speedily be disabused of his erroneous impressions. On this point we beg to call as witness, one, whose name, distinguished in every department of literature, is familiar in our mouths as a household word. Sir Edward Bulwer Lytton's testimony will meet with respectful attention from even the most inveterate opponents of the water cure. After describing the state of misery and exhaustion to which he had been reduced by sixteen years of intense and unintermitting mental labour, and from which he was restored by the hydropathic treatment, he proceeds to say:—"The first point which impressed and struck me was the extreme and utter innocence of the water cure in skilful hands—or any hands indeed not thoroughly new to the system. Certainly when I went I believed it to be a kill-or-cure system. I fancied it must be a very violent remedy; that it doubtless might effect magical cure, but that if it failed it might be fatal. Now I speak not only of my own case, but of the immense number of cases I have seen—patients of all ages, all species and genera of disease, all kinds of conditions of constitutions—when I declare, upon my honour, that I never witnessed one dangerous symptom produced by the water cure.

. . . . . The next thing that struck me was the extraordinary ease with which good habits are acquired and bad habits relinquished. The difficulty with which under orthodox medical treatment stimulants are abandoned is here not witnessed. Patients accustomed for half a century to live hard, and high wine drinkers, spirit bibbers, whom the regular physicians have sought in vain to reduce to a daily pint of sherry—here voluntarily resign all strong potations; after a day or two cease to feel the want of them; and reconcile themselves to water as if they had drank nothing else all their lives. Others who have had recourse for years and years to medicine, their potion in the morning, their cordial at noon, their pill before dinner, their narcotic at bed time—cease to require those aids to life, as if by a charm. Nor this alone. Those to whom mental labour has been a necessity, who have existed in excitement and stir of the intellect, who have felt when these were withdrawn, the prostration of the whole system, the lock to the wheel of the entire machine, return at once to the careless spirits of the boy in his first holiday. Here lies a great secret; water thus skilfully administered is in itself a wonderful excitant; it supplies the place of all others; it operates powerfully and rapidly upon the nerves, sometimes to calm them, sometimes to irritate, but always to occupy. Hence follows a consequence which all patients have remarked—the complete repose of the passions during the early stages of the cure; they seem laid asleep as if by enchantment. The intellect shares the same rest. After a short time mental exertion becomes impossible; even the memory grows far less tenacious of its painful impressions; cares and griefs are

forgotten; the sense of the present absorbs the past and the future; there is a certain freshness and youth which pervade the spirits and live upon the enjoyment of the actual hour. Thus the great agents of our mortal wear and tear—the passions and the mind—calmed into strange rest, nature seems to leave the body to its instinctive tendency, which is always towards recovery. All that instructs and amuses is of a healthful character. Exercise, instead of being an unwilling drudgery, becomes the inevitable impulse of the frame, braced and invigorated by the element. A series of re-actions is always going on—the willing exercise produces refreshing rest. The extraordinary effect which water, taken early in the morning, produces on the appetite is well known amongst those who have tried it even before the water cure was thought of—an appetite it should be the care of the skilful doctor to check into moderate gratification; the powers of nutrition become singularly strengthened; the blood grows rich and pure; the constitution is not only mended, it undergoes a change. The safety of the system then struck me first; its power of replacing by healthful stimulants the morbid ones it withdrew, whether physical or moral, surprised me next. That which thirdly impressed me was no less contrary to all my preconceived notions. I next fancied that, whether good or bad, the system must be one of great hardship, extremely repugnant and disagreeable. I wondered at myself to find how soon it became associated with pleasurable and grateful feelings, as to dwell upon the mind amongst the happiest passages of existence. For my own part, despite of all my ailments, or whatever may have been my cares, I have ever found ex-

quisite pleasure in the sense of *being*, which is as it were the conscience, the mirror of the soul. I have known hours of as much and as vivid happiness as can fall to the lot of man, and amongst all my brilliant recollections I can recall no period of enjoyment at once more hilarious and serene than the hours spent on those lovely hills; none in which nature was so thoroughly possessed and appreciated. The rise from a sleep sound as childhood's; the impatient rush into the open air, while the sun was fresh and the birds first sang; the sense of an unwonted strength of limb and nerve, which made so light the steep ascent to the holy spring; the delicious sparkle of that morning draught; the green terrace on the brow of the mountain, with the rich landscape wide and far below; the breeze that once would have been so keen and biting, now but exhilirating the blood and lifting the spirits into a religious joy; and this keen sentiment of present pleasure, seconded by a hope sanctioned by all I felt in myself, and nearly all I witnessed in others, that that very present was but the step, the threshold into an unknown and delightful region of health and vigour—a disease and a care dropping from the frame and heart at every stride."

We are now, we think, in a position for giving some account of the hydropathic treatment employed at Ben Rhydding. We believe that this will be best done by selecting a few illustrative cases from the records of that establishment. In the present chapter we shall notice in the first place those diseased actions in which the skilful application of the natural stimuli is sufficient to remove all morbid symptoms; and secondly, those in

which, in addition to the water treatment, various reparative agents are called into operation. The employment of the water-cure treatment of consumption, asthma, bronchitis, &c., is a subject of such importance, that we must reserve it for separate consideration in a subsequent part of this work.

1. Among those diseased actions in which the skilful application of the natural stimuli is sufficient to remove all morbid symptoms, are included all those diseases in which the nutritive force is capable of elevating the vital force sufficiently to subdue morbid actions, viz:—weakness of the mental faculties through over use of the brain; the physical results consequent upon great anxiety, and upon lengthened bodily exertion; diseased actions which are the result of medical substances retained in the system, and of morbid matters generated there; severe irritation of one or more of the organs of the frame; dyspepsia; bilious affections; chronic diarrhœa; extreme flatuleney; constipation; and those chronic functional diseases which are incident to women.

We shall not tax the reader's patience with examples of the successful treatment of all these states of disease; but shall select some of those which, while they serve to shew the range of pure hydropathy, are likely to be most interesting. We have mentioned first in the list of diseased actions which are the proper subjects of hydropathy —*weakness of the mental faculties through over-use of the brain.* This is a very common and a very distressing class of ailments. The reciprocal action of the mind and body upon each other is a fact as well known as it is inexplicable. When through intense study or anxiety the

mind has been enfeebled, the body is invariably found to suffer to a proportional extent. Skilful hydropathic treatment has been found, in numberless instances, to soothe and brace the mind, while it invigorated the body. We have already had occasion to refer to the case of Sir Edward Bulwer Lytton, which is a striking example of this. We take now an illustrative case from Dr Macleod's own practice at Ben Rhydding, and we think it better to give it in that gentleman's own words:*—

"A. E., aged 43, married; vasculo-nervous temperament. Had, when young, a good constitution. Took high honours at Oxford. Had been a severe student while there, and for two years after he left it, used to study fifteen hours a day. At length he became nervous, and his bowels very much constipated. For this latter complaint he took a compound colocynth pill,—at first once a week, then twice a week, then every other night, and at length every night. His stomach became deranged, and his physician prescribed for him tonics, and blue pill with a purgative in the morning. 'My memory,' he said, 'now became very bad, my head confused; a misty veil seemed to extend over the front of my brain. I went and travelled in the East but with no benefit. I then tried several of the baths on the Continent, but with just as little advantage. In Naples I was recommended by an English lady to take some patent pills, which she stated had done her much good. I took them, and at first I derived benefit from their use. Indeed, I fancied I was

* *Hydro-Therapeutics, or the Water Cure considered as a Branch of Medical Treatment. By Dr Willian Macleod.* Second Edition, London, 1856.

to be well in no time. My head felt clearer, my strength was better, and my spirits lighter. I continued taking these pills every night for about two months, when they began to lose their effect. I increased the dose, and once more I felt myself improving. I continued to increase the dose, until I took thirty every night. At last it became so troublesome to swallow the pills, that I had them dissolved in about the fourth part of a breakfast cup-full of water, and in this way I took my dose every night. I persevered in this treatment for fully two years, during which time I took fifteen thousand pills. I gradually became worse, and now I am miserable and useless.'

"This gentleman came under my care in August 1852. He looked then careworn; his features were pale, wrinkled, and haggard. He appeared as if he had shrunk into himself. Had a deep settled pain on the top of his head, and a thick misty haziness over the front portion of the brain. He had frightful and horrible thoughts. To use his own words again, 'I dare not read my Bible, or hear it read, my thoughts are so bad. I dare not tell them to you. I do not sleep above two hours at night, and then my sleep is restless, and my dreams frightful. My life is a misery to me. All good seems to have left my soul. I have no memory. I cannot grasp my ideas. My thoughts pour through my brain like water through a hole in a barrel—I have no power over them.' Tongue pale, soft, swelled, and covered with a thickish white fur. He had a bad taste in his mouth in the morning. Appetite, variable; sometimes voracious, and at other times he had none at all. Had great flatulency and acidity of

stomach. Bowels never opened without medicine. Enemas had no effect upon them.

"This gentleman underwent a course of hydro-therapeutic treatment for a lengthened period. During the first three months he scarcely improved at all. But at the end of them he had a severe diarrhœa for four days. It commenced suddenly and stopped as suddenly. The odour from the matter evacuated was horribly offensive. After the diarrhœa he felt a great deal better in his bowels and stomach; but the head symptoms were in no way improved. Four weeks afterwards an eruption came out under his abdominal compress. The odour from this eruption was exactly similar to that of the vapour of aloes and scammony; and his compress became filled with a substance having a similar smell. So great was the quantity of matter eliminated, and so strong the odour, that the patient was obliged to rince out his compress every hour, and every time he did so, a dark brown substance, like lightish coloured finely ground clay, remained at the bottom of the basin. At the end of the fourth day the secretion had very much diminished; and on the seventh day it had entirely disappeared. The fœtid matter was extracted by the abdominal compress about every five weeks, for several months. After that time, large boils began to break out on different parts of the body, and they continued to appear for about three months. The pus of these boils had an offensive odour, was thick, and of a darkish green colour. The patient now felt himself well. His appetite was good. The dyspeptic symptoms had disappeared; the bowels operated of themselves daily. The head symptoms were

greatly improved. He could now read his Bible with comfort. This gentleman, fearful of a relapse, remained under my care for months after he was apparently cured. Before he left Ben Rhydding, the head symptoms and the uncomfortable ideas had entirely disappeared. His memory became gradually stronger and stronger. At present he holds a living in the Church of England, and performs his arduous duties vigorously, and with comfort to himself."

This is a very interesting and satisfactory case. It exhibits the wonderful effects which can be accomplished by the very simplest and most natural means. How many of the most appalling ills to which men are subject —the diseases of the mind—might be avoided by an attention to the simplest requirements of nature; or might be cured by a recurrence to them! Many a case of lunacy commences just in the same way as the above, and might, under similar treatment, have experienced an equally happy cure.

Our next instance is somewhat similar, though the origin of the mental disease was different. We give it, as it has been described by the author of "Memorials from Ben Rhydding." The writer prefaces his account of this case by remarking that it resulted simply and solely from prolonged overworking in business, and neglect of the primary symptoms of derangement.

"On a summer evening, Dr. Macleod was summoned to the ante-room to a gentleman just arrived. He found him walking up and down, in distressing excitement; he could not rest on a chair; and as he paced the room, his hands opened and shut convulsively; his pulse

was quick and irritable; his eyes large, slightly swollen and feverish. The poor man was depressed beyond description. He believed that he had killed his father and mother, and that God had forsaken him. He threw himself down to pray; but he saw no friend in Heaven—only a vengeful Judge. He could not sleep, but moaned all night: and what seemed the copestone of his misery, he thought he had induced his wife to take part in his crimes. Nothing whatever beyond neglected and extreme nervous dyspepsia occasioned these feelings. No well-marked improvement occurred, until after the lapse of six weeks, when the eye grew less restless; and the quick anxious grasping of the fingers also diminished. The visit of an old acquaintance brought on a fortnight's relapse; but assured progress re-commenced, and at the end of four months the patient's lease of happiness and life appeared permanently renewed,—at least, it has not been menaced since. I shall briefly indicate the curative process in this case: it exemplifies the variety of Hydropathic resources, and the discrimination required in applying them. The nervous temperament of the patient was too high for *energetic* treatment; and the Doctor prescribed, and persisted in the following local and general applications.—1. *Soothing* Baths.—Well wrung envelope for ten or fifteen minutes, followed by a dripping sheet. Slow vapour bath for fifteen minutes, once a week, with shallow bath. Compress over stomach.—2. *Derivative.*—Sitting bath and foot-bath, for four minutes at a time, frequently repeated.—3. *Bracing.*—Local—Spouting of back, and shower bath over stomach: moderate drinking. *General.*—Two pailfuls of water

thrown over the shoulders; shallow-bath at 60 for half a minute,—these are the simple, well-judged appliances by which health was restored to a frame so shattered."

In our enumeration of diseased states for the recovery of which the skilful application of the water treatment is of itself generally sufficient, we have mentioned those which are the *result of medicinal substances retained in the system.* The records of Hydropathic establishments can furnish such cases in abundance. Many a poor patient sick of being experimented upon by physicians, and with his body literally saturated with drugs, has, as a last resource, betaken himself to the water cure, and has not been restored until, by the hydropathic treatment, the accumulated medicines have passed from the very pores of his body, as well as by natural means of evacuation. Dr. Macleod has given several very interesting examples of this kind in his "Hydro-therapeutics." We quote two examples:

"A married lady, 56 years of age, had taken a pill every night from the time she was 26 years old. For 18 years she had suffered the most intense headaches. They were so severe as quite to overcome her. 'I am unable,' she said, 'to raise my head for days from the pillow, and I feel on the top of my head such a pressure as if it would force me down into the bed. The excruciating pain over my eyebrows and temples is such as almost to prevent me from opening my eyes; and I dare not speak a word, as the mere opening of my mouth increases the pain. Towards the end of the third day I vomit, and then my headache begins gradually to disappear. I have such a headache about every three weeks, so that I have scarcely

recovered from one attack before another comes on. The consequence is, that I am often very much weakened, my spirits depressed, and I am scarcely ever able to do anything in my family. No treatment hitherto has done me any good. I have taken carriage and horseback exercise. I have resided in the bracing atmosphere of the North, and in the milder climate of the South.' This lady, when I first saw her, presented an appearance slightly bilious, and as if the circulation of the venous blood through the abdominal viscera was sluggish. The abdomen felt flaccid and doughy. She had no appetite, and the bowels were never moved except by means of medicine.

"I placed this lady under a mild course of hydro-therapeutic treatment, and she continued to take an aperient every second night for a fortnight. Then I stopped all medicines, but I ordered an enema of the half of a tumbler-full of water every day, an hour after breakfast and after dinner. The bowels were not moved for eight days. Then there was a small natural motion. A week afterwards, the compress became coloured, gave out a most offensive odour, and required to be renewed every hour. After a fortnight, the whole body began to emit a similar odour, and so offensive was it, that she was obliged to keep her sitting-room. The baths became impregnated with it, and the smell of the sheet after the envelope was quite sickening. Even the sheet with which the patient was rubbed dry, retained it. The smell was distinctly that of the vapour of aloes. The lady herself remarked this, and a physician who was here under treatment at the same time, said to me, 'Doctor, one would think you dealt wholesale in drugs, there is such a strong smell of

aloes in No. 9 sitting-room.' At first the bowels did not act above once a week, and then only sluggishly. But when this elimination of matter had nearly ceased, they began to act every day; the headaches entirely disappeared; the appetite returned; the lady became strong; and she went home, as she herself said, 'made over again.' "

The other case of a similar kind, which we have to quote, is still more interesting than the above. It is one full of encouragement to those whose health, if not their constitution, has been wrecked by the administration of large and injudicious doses of mercury. Nothing can be more pitiable than the condition of a man who has become the victim of reckless and improper mercurial treatment. The slightest variation in the weather affects him. Cold or damp weather brings upon him pain of body and distress of mind. If he stir abroad, he must be wrapped up, and sheltered from every wind that blows. At home equal precautions must be taken; for often, unless a hot-house temperature is kept up, he is absolutely miserable. We need not dwell on the evils, bodily and mental, to which a person in this unhappy condition is subject. Such cases are popularly regarded as well nigh hopeless: all that can be done for them being supposed to be nothing beyond temporary alleviations. Such an example as the following satisfactorily shews that these cases are by no means hopeless. We regard it as so useful and important, that we make no apology for quoting it at length in Dr. Macleod's own words:—

"A. B., aged 40, of slim make and nervous temperament. When a young man, went out to India as a cadet.

Soon after his landing there he had a very severe attack of dysentery. To stop the progress of the disease, large doses of mercury were prescribed in rapid succession. He recovered; but in a few months afterwards he had an attack of yellow fever. Again mercury was prescribed frequently, and in large doses. He recovered from this attack of fever, but was left so shattered in his constitution, that he was no longer capable of performing his duties, and in consequence was obliged to return to England. For twenty-two years he had been an invalid, and was so liable to take cold, that he dared not go out except in the mildest weather, and then only when encased in flannel. So susceptible was he of cold, that unless his room was kept at a high temperature, he became ill. He suffered miserably at times from depression of spirits, and then even the presence of his wife increased sadness. His intellect was good. Had taken iodide of potash, and other remedies, but mercury not once these twenty years. He took a simple aperient pill every second night. Before leaving this country for India he was in robust health.

"This gentleman came under my care in the month of July 1848, and I placed him under a mild course of hydrotherapeutic treatment. Under this mode of treatment he began gradually to improve; he became stronger, and was able to walk almost every day at noon; his appetite returned, and his bowels were moved naturally, although only slightly, every third day. He continued to improve for about six weeks. On the evening of the seventh week I was called to see him, as he did not feel at all well. He continued to get worse for two days: his spirits became much depressed; he wept like a child; and all hope of

cure seemed to be extinguished within him. On the evening of the second day of this attack, a slight odour was perceived to come from his person. On the following morning the odour had become offensive. It was unmistakeably the odour of salivation, and as offensive as I had ever before perceived in any patient. Saliva began to pour from his mouth, and jug after jug was filled with it. He continued in this state for three days, when the salivation began gradually to decrease; and in a week it entirely disappeared. After the termination of this attack, he had for a while those joyous spirits which belong more to childhood than to mature age. Such unalloyed sensations he had not once felt since his return from India. His bowels now acted more freely. He was able to throw off a deal of his flannel coverings. He was able to sleep without fire in his bed-room. He continued in this state for about three weeks, undergoing treatment all the while. His spirits then began to flag; he became restless and irritable, his bowels were constipated, and his appetite failed. He was unwilling to go out, and he wished again to put on his flannels. In a few days after these symptoms had come on, a red, itchy, papular eruption appeared under the compress, and gradually extended over the entire body. The same sort of odour was again perceived to arise from the person; the salivation again showed itself; the spirits became saddened; and from the severity of the heat and irritation over the whole skin, occasioned by the acute eruption, he was unable to remain one moment at rest. So severe was the itchiness of the skin, that I was obliged to give him an envelope for forty minutes four times a day. This treatment soothed the erup-

tion, and the patient felt stronger after each pack. The attack gradually passed off as before, and he was left (to use his own expressive words) a 'new man.'

"This gentleman remained under treatment for eight months. During that period he had three more attacks, but each one was milder than that which preceded it; and before he left me, he had thrown off all his flannels, had no fire either in his sitting-room or bed-room, took all his baths cold, was able to go out in all weathers, mounted the hills as early as six in the morning, and wandered over them for hours together. He gained three stones in weight; and he slept so soundly, that he never turned round once from the time he went to bed until he rose in the morning at half-past five. This gentleman still continues well."

To pass on now to cases of a different kind, let us refer to the treatment of those diseases which arise from a *derangement of the functions of the stomach*. This is a wide subject, and we have no intention of entering upon it at length. Our purpose is merely to shew, by a few illustrative instances, that this class of ailments is peculiarly within the range of hydropathy. The serious character of the diseases arising from derangement of the functions of the stomach is too well known to require even a passing reference. Weakness of the stomach constitutes the simplest forms of *Dyspepsia*. This is shewn in a difficulty in the digestion of food; and the leading symptoms with which it is attended are oppression and uneasiness at the stomach, heartburn, flatulency, eructation of wind, regurgitation of the food, and sometimes vomiting. Dyspepsia has various stages. It is at first, as we have said,

only a weakness of the stomach. This is followed by congestion of the principal abdominal viscera, and a sluggishness in the performance of their functions, together with obstinate constipation. There is a perverted secretion of the glands of the stomach; the food is not well digested; the chyle is not sufficiently elaborated; and the blood is wanting in vitality and contains effete matter.

We quote a case from Dr. Macleod, illustrating the efficacy of the water treatment in dyspepsia :—

"Mrs. D., aged 44, had been a severe dyspeptic for about fourteen years. She had been under the care of most of our leading physicians in London. And she had visited a large number of the watering places on the Continent and in England; but with no permanent benefit.

"When she came to Ben Rhydding her skin was pale and sallow, and the muscles were soft and flabby. She was unable, from weakness, to walk more than two dozen yards at a time. Was subject to severe nervous headaches and depression of spirits. Tongue red, split, and swollen. Had frequently small ulcers, on the sides of the tongue and of the mouth. Had spasmodic contractions over the region of the stomach after taking food, and a continuous and incessant sensation of burning in it. Immediately after eating had fluid-risings and acidity. A glass of water rose acid soon after it had been taken. Appetite variable. Had a severe pain in the right shoulder-blade, and between the shoulders. Abdomen distended with flatus. Bowels never moved without medicines or enema, and the latter always occasioned great pain. The monthly periods were irregular and variable, and occasioned very severe pains during the first two days. The feet were

cold, and required to be kept warm at night by means of hot bottles. This was a most miserable case. Indeed, language is unable to describe her state, and the misery she underwent. But this lady, after six months' treatment, was completely restored to health.

"The course of treatment I pursued was as follows :—Rubbing of the stomach with the hand and cold water for fifteen minutes, morning and afternoon. Fomentation of the stomach for half an hour every second night. Wash down with cold water every morning and afternoon. To wear a compress covered with mackintosh round the stomach day and night. This mild treatment was pursued for a fortnight. The fomentations were then given up; but the rubbings continued. Dripping sheets were substituted for the wash downs, and a sitz-bath for eight minutes noon and afternoon. The patient was now ordered to drink four tumblersfull of water (the fourth of a tumbler-full at a time,) during the day. Breakfast :—Half a cup of weak tea with the same quantity of boiled milk cooled. Bread and the yoke of a lightly boiled egg. Lunch :—Dry bread and the fourth of a tumbler-full of water. Dinner :—One moderate helping of roast beef or mutton without gravy, with bread, one potato, and the fourth of a tumbler-full of water. Evening Meal :—Boiled milk and bread. To be as much out in the open air as possible, and to take daily a drive for one hour over the moors. Two or three weeks after this, the treatment was changed as follows :—Alternate mornings, shallow-bath one minute. Intervening mornings, dripping sheet. Three days in the week, at noon, towel envelope for thirty minutes, and shallow-bath afterwards. Every

afternoon, sitz-bath for fifteen minutes. The bath maid to rub the shoulders and back while the patient is in the sitz-bath, the patient herself keeping up at the same time a continuous rubbing over the stomach and liver. After a time the towel envelope was exchanged for the entire envelope, and the patient was requested to take a good deal of walking exercise in the pleasure grounds and on the moors, and to go through the drill exercise for half an hour every day. Under such treatment as this, modified according to the symptoms and the strength, the patient, as I before stated, was completely restored to health.

"This lady continues to visit Ben Rhydding now and then, but more as a visitor than as a patient. The periods are natural, and there is now no pain. The bowels act daily. The abdominal distension has disappeared, and the intestines are firmer. Her headaches, the depressed state of her feelings, and the spasms of the stomach, have likewise disappeared. Indeed, she is now in as perfect health as she remembers to have ever enjoyed."

A more advanced stage of dyspepsia is that which is entirely the result of a morbid condition of the blood. "The connection between severe chronic dyspepsia and the state of the blood," says Dr. Macleod, "is closer and more frequent than is generally believed; and, in my opinion, a hydro-therapeutic treatment is essential to the permanent removal of this pathological condition." Dyspepsia of this kind, it will be acknowledged by "orthodox" physicians, is rarely, if ever, permanently cured by medicines. The usual practice with physicians in dealing with such cases is, we believe, to send the patients to watering places—thus making some little approximation

to the natural system. The hydropathist undertakes such cases with confidence; and the experience of Ben Rhydding warrants us in saying, that, when sufficient time is allowed, they are almost always permanently cured. Let us take a case illustrative of the efficacy of the hydrotherapeutic treatment in the removal of this very painful and stubborn ailment. We quote again from Dr. Macleod:—

"Mrs. M., aged 36, had been ill many years. About ten years ago was exposed for about six months to great anxiety and distress of mind, which brought on slight palpitation of the heart, and a sensation of heaviness in the head, as if from too much blood. The menstrual functions became irregular and of a darker hue than natural, the bowels were constipated, and the skin began to feel harsh and dry.

"State. Severe headaches; they are so severe that for a day almost every fortnight she is confined to her room. There is heat on the top of the head, weight and a sense of fulness over her eyes and in the forehead, with a dull heavy sensation in the back of the head and top of the neck. Feelings a good deal depressed; has a want of buoyancy of spirits. Sleep troubled by disagreeable dreams. 'I dream sometimes as if I were falling over a precipice, and at other times as if I were being crushed between the jaws of an alligator.' Skin harsh and dry. She has not perspired once for years. Beat of heart sluggish and laboured. Pulse soft and rather small. The vessels ramifying on the conjunctiva are venous and turgid. No appetite. Feeling of weight over the region of the liver. Bowels feel doughy, are much distended and

are very much constipated. Has large dark hæmorrhoids, about the size of the small finger. Tongue dullish red. The fauces streaked with veins. A disagreeable taste in the mouth in the morning, and the mouth feels clammy. Has severe pain over the cartilages of the fourth and fifth ribs. This pain is increased by whatever excites, such as pepper, wine, &c. The urine turbid and small in quantity.

"This lady came to Ben Rhydding in despair, and with much prejudice, her husband being one of our principal chemists. She was under treatment for ten weeks, and, after a large quantity of morbid matter had been removed from the system, she returned home quite well. When this lady left me, the headaches had entirely ceased, the appetite had returned, the bowels acted daily of themselves, and the hæmorrhoids had disappeared. The aim of my treatment in this case was to remove the venous congestion of the liver, and of the other abdominal viscera, to purify the blood, and to invigorate the vital force.

"As the skin began to act, the internal organs became less loaded with venous blood and acted with more vigour, the blood circulated more freely through them, and after several 'crises' had appeared on the surface of the body, the nutritive fluids became healthier, the vital force more energetic, and the entire organism was restored to health."

But we must hurry on to another part of our subject, after having referred to the efficacy of the water treatment in the chronic functional diseases incident to women. An illustrative case will better answer our purpose than any general remarks on the subject.

"Miss T., aged 25, of light complexion, and very feeble,

had been suffering for two and a half years from retention of the monthly periods, which previously had been regular though scanty. Body much emaciated. Face and head puffed. The eyes very yellow. Skin constantly covered with moisture. Pulse 125 beats in the minute. Severe palpitation of the heart. No appetite. Bowels never moved without medicine, and what was passed always of a white clayey colour. A great deal of leucorrhæa. Feet swelled. Not able to walk more than a few yards at a time.

"Treatment. *First*,—dripping sheet noon and afternoon. To have the stomach rubbed with the hand and cold water for fifteen minutes morning and night. To wear a wet compress covered with mackintosh round the stomach during the day. To drink five tumblers-full of water during the day. To take no warm drinks. Food to be plain and nourishing. To eat only three times a day. *Second*,—morning shallow bath one minute; to be well rubbed while in the bath. Noon, towel envelope thirty minutes, and dripping sheet. Afternoon, sitz bath ten minutes. To take out-door exercise. To have therapeutic movements of the inferior extremities for ten minutes, twice a day. Otherwise as before. *Third*,—morning, at six, shallow bath two minutes. To walk out for an hour afterwards, and to drink two tumblers-full of water before breakfast. Noon, every alternate day, envelope thirty-five minutes and shallow bath afterwards; intervening days, sitz bath twenty minutes. Every afternoon sitz bath twenty minutes. To take horseback exercise daily.

"This patient in three months time became quite well.

The monthly discharge returned freely, and the bowels operated daily, the excretion being of a natural colour and consistency. Her appetite became excellent, and she gained two stones in weight. The puffiness of the face, the pallidity of the skin, and the swollen state of the feet entirely disappeared. I need make no remarks upon this case as it speaks so plainly for itself."

We would gladly refer to the treatment of *Fever* by hydropathy, but must content ourselves with simply remarking that it has been successfully dealt with thus, in numerous instances.

2. What has been said must suffice for that class of diseased actions, for the treatment of which the natural stimuli employed in hydropathy, are in themselves sufficient. The water cure is not, however, confined to these diseases. There remains a large class of ailments in which the hydro-therapeutic treatment is most beneficially and successfully employed *in conjunction with other agencies*. Of course the physician may see fit to use other means, such as substances highly nutritive or medicinal, in addition to hydropathy, in his treatment of the diseases previously mentioned. But these are generally regarded as capable of being overcome by the application of natural stimuli alone. The diseases on the other hand, to which we have now to refer, are such as ordinarily require something more than the natural stimuli. Under this head are included all those diseases in which the nutritive power is weak, and the molecular is but feebly controlled by the vital force; and all specific diseases of structure, or of the nutritive fluids. Of the former description are consumption, scrofula, chronic gout, rheu-

matic gout, &c., of the latter are gout, inflammation of the brain, lungs, liver, &c.

Let not the reader be startled by this array. We do not intend to take them all up, but shall content ourselves with selecting a few cases as an example of the whole.

Consumption has been mentioned first. Ben Rhydding has appliances and means for the treatment of consumption, such as are possessed by no similar establishment in the kingdom. Dr Macleod has the high merit of having been the first to introduce the Compressed-Air Bath into this country; and its use, in conjunction with hydropathy, in the treatment of consumption, has been followed by the happiest effects. This treatment, however, we regard of such importance as to require a more distinct and lengthened notice than we can give it in this place, and we shall therefore reserve it for a separate chapter. Yet, since we have referred to the employment of the water cure in consumption, we cannot avoid quoting some remarks on the subject, from Dr. Edward Lane's Essay, recently published:—

"Of cod-liver oil, of course, it is difficult to speak overpraisingly, *when the patient can be got to digest it*, because it certainly seems to supply the economy in the lightest, and, on the whole, the most tolerable of forms with that fatty element which experiment would appear to show that it requires. But it is not always available, owing to the enfeeblement of the digestive powers; nay it sometimes creates such nausea as to do positive harm. And, on the whole, it may safely be said that its exhibition is a secondary matter in the cure, in point of time, requiring a certain improvement in the powers of life before it

can be of any utility. When that has been once accomplished, however, its value as an article of diet—for that is its true medical import—is immense, in exact proportion at once to its nutritive powers and to its digestibility.

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"If we have interpreted the nature of consumption aright, and if it be true that the disease, from whatever cause arising, resolves itself proximately into a morbid derangement of the digestive organs, by means of which impoverished blood is elaborated, with the tendency to transude into the lungs and form tubercle, then we must look for a natural check to the complaint, in the possibility of improving the function of digestion, with the view of thereby ameliorating the blood, and thus avoiding the risk alluded to.

"But how will this be effected? Once again, I say, by bringing into operation the combined appliances that constitute the natural system of treatment. In this way, and in this way alone. It is by endeavouring to exalt the natural powers of economy by means of the regulated agencies of air, exercise, water, and diet, with the addition of healthy moral influences, to the utmost that is possible, that we can alone hope to prevent the phthisical diathesis in the first place, and to cure the complaint in the next." *Pages* 71, 74, 75.

Pass we on now to *Rheumatism* and *Rheumatic Gout*. These are only different degrees of the same disease. The difference in their symptoms depends upon the extent of the derangement of the nutritive fluids, and upon the amount of vital force in the system. The nature of this ailment, and the rationale of its treatment by hydropa-

thy is ably and concisely stated by Dr. Macleod in the following observations, which we extract from his pamphlet on "Hydro-therapeutics":—

"Rheumatism is a disease dependent upon a *materies morbi* contained in the blood, which is occasioned by low nutritive power, and when removed from the system merely by artificial means, is again produced there. Should, however, the nutritive power become more healthy and the vital force stronger, then the reproduction of morbid matter in the system ceases—a result, which I believe, can be *completely* attained only through the proper employment of natural stimuli; for artificial stimuli do not of themselves develope the vital force, they only place the structures of the organism in a more suitable relation to the natural stimuli, whose office it is to develope the latent energy of that force. On the one hand, the *internal* use of pure spring water with the oxygen it contains, aids in removing the effete and other morbid particles of matter contained in the blood. Professor R. B. Todd, writing on rheumatism, says, 'The best diluent is pure water.' And on the other hand, the skilful *external* applications of that fluid improve the process of digestion, invigorate the nutritive force, and rouse into full play the vital energy. By these means the *materies morbi* is removed from the system. Thus those conditions are gained which are considered essential not merely for the removal of the complaint, but also to prevent the danger of its return. We have the blood purified, the nutritive force strengthened, and the morbid matters excreted from the system through the energy of the vital force. Continue these conditions until the habit of form-

ing the *materies morbi* in the system is removed, and the patient will be restored to permanent health. It is a great error to suppose that the mere elimination of morbid matters from the system by means of sudorifics, hot air, and vapour baths is sufficient to restore permanent health. On the contrary, before health can be permanently restored, not only must these matters be removed through the agency of the vital force, but that force must be kept in sufficiently vigorous play by the suitable employment of natural stimuli even for some time after the diseased symptoms have disappeared."

In the more serious kinds of this disease, going under the name of Rheumatic Gout, reparative agents must be associated with hydro-therapeutics, before the vital force can be sufficiently developed to effect a cure. We quote a single case as illustrating this :—

"Miss H., aged 40, had suffered from rheumatic gout for about fifteen years. When this lady came under my care she was bent double, and could only hobble a few yards with the help of crutches. Her finger joints were much enlarged and her hands were bent to one side. The knees were enlarged and stiff. She had most excruciating pains in the lumber and sacral regions, and her ankles too were enlarged and tumefied. She had been subjected to several kinds of treatment from which she apparently received no benefit. For three months before I saw her she had taken large quantities of cod-liver oil, and had this substance also rubbed daily over her back, sacrum, joints. But notwithstanding this treatment she was gradually becoming worse, and when I first saw her the disease was decidedly taking a rapid downward course.

"Under hydro-therapeutic treatment, however, this downward course was soon arrested, and then the lady began gradually to improve and went on doing well for the space of three months. But at the end of that time, the treatment seemed to be producing only little benefit. I now prescribed cod liver oil, bitter beer, and the tincture of muriate of iron. Improvement immediately recommenced. And by means of these remedies, associated with hydro-therapeutic treatment, the patient was restored to fair health, although the pains had not entirely left the loins and sacrum. In this state the lady left Ben Rhydding; but she persevered with the treatment at home under my direction for some months, when at length, all the pains gave way, and she is now as nimble as she was before she was attacked by the disease. During the progress of the treatment, this lady had four mild crises, and after each of them she felt herself greatly improved.

"In this case we have another illustration of the important truth, that while effete matters remain in the system to any extent, the action of medicinal remedies is always greatly, and sometimes entirely obstructed. Before this lady came under my care, cod liver oil and iron had been prescribed with no apparent benefit. But after a certain amount of effete matter had been removed from the system by means of crises, produced under hydro-therapeutic treatment, those same remedies, which were before so powerless, enabled me to carry the patient forward into complete health."

We would quote other instances of the successful treatment of this distressing complaint, but, from want of space, must forbear. We next notice the treatment

of *Scrofula* by the water cure and the auxiliary means used in conjunction with it, at Ben Rhydding and similar establishments. Scrofula is allied to consumption; the only difference between the two being, that in the former the vital force is stronger, and the disintegrating tendency less than in the latter. "Scrofula," says Dr. Macleod, "lies about midway between healthy nutrition and tubercular deposit, and I believe it will generally be found that a healthy constitution becomes scrofulous before it becomes phthisical." In the treatment of scrofula the hydropathic system can be used with peculiar advantage; but in order to effect a complete cure, hydrotherapeutics must be associated with the use of highly reparative agents, and with general artificial stimulants. We take a single example illustrative of this:—

"A. N., aged 25, lympathic temperament and scrofulous diathesis, came under my care about six years ago. He had ulcers in the neck, and several of the cervical glands were enlarged and painful. There was an ulceration of the head, of the right humerus, of the bones of the right wrist, and of those of the right ancle. He could not walk, but was wheeled about in a chair. He was in a sad state. This gentleman had taken a good deal of cod liver oil and of iron mixtures, but they seemed now to have lost all their effects, and he was growing rapidly worse. I put him under hydro-therapeutic treatment, and the improvement that he made was remarkable. He gained in strength and in flesh, and all the sores in the neck had nearly healed. The cervical glands had also greatly diminished, and they were now not at all painful. The ulceration of the bones

had ceased, and the sinuses put on a healthy appearance. After three months' treatment, the progress of the cure seemed to stop, and no improvement was perceived to go on in any of the diseased parts. I then prescribed cod liver oil, iodide of iron, and light bitter beer, when the patient seemed to leap at once into health. All the sinuses healed up. He was able to walk, although obliged to do so, from the previous extensive ulceration, partly on the side of his foot. He was able to use his right arm very well, although it was stiffened from partial anchylosis of the shoulder joint."

This case serves to show that the latent vital force can be drawn out only by the judicious application of natural stimuli. When this has been effected, nutritive substances and artificial tonics of a fitting kind can be advantageously used for perfecting the restoration.

But we need not multiply instances: we have given as many as are necessary for our present purpose. Our object in this chapter has been to give a general account of the water cure, as practised at Ben Rhydding; and we think that the cases which we have quoted are sufficient to shew the wide range, and the undoubted efficacy, of hydro-therapeutics. We shall deem ourselves happy, if what we have written have the effect, in even a few instances, of removing the prejudices which still to a considerable extent prevail in the public mind against hydropathy, and of inducing some of those who have hitherto in vain sought from the employment of medicinal remedies alone, health and strength, to give a fair trial to the system, whose principles and practice we have endeavoured to set forth.

Yet, one word before we close. It may be necessary to remind the reader that the hydropathic treatment requires *time*. Rome was not built in a day. Hydropathy does not act by magic, and at once transform the languid diseased body, into a strong and healthy frame. It is unreasonable to expect this—no human remedies can do it. The effects of years cannot be removed in a few days, or perhaps even a few weeks. Patients are naturally anxious to be restored to health speedily; and, though they may have for a long course of years been systematically ruining their constitution, they expect the physician to undo all the mischief immediately, and, with a week or two of the hydropathic treatment, to set them fairly on their feet again. This is a great mistake. Nature recovers herself gradually, not all at once; and the greater her prostration, the longer the time she must have for her restoration. The man whose constitution has been wrecked by the over-exertion of long years of study, or close attention to business, must have time for mental and bodily rest, time for the vital force to be invigorated, and for the whole frame to be nursed into health. Weeks, instead of days, may be required for this; and instead of fretting at their loss, let him thank God if thus he may escape the effects of his own imprudence or neglect. And so of others. The farther we have wandered from the paths of health, the longer we shall be in regaining them. Therefore, when Hydropathy takes us by the hand to lead us back, let us remember that the road will be long or short just in proportion to the seriousness of our case, and let us not fret if we find the way a little longer than we expected.

CHAPTER III.

The Compressed-Air Bath.

Rarefied Air, its known Effects—Condensed Air; its Effects should be exactly opposite—Description of the Air-Bath at Ben Rhydding—Effects of the Compressed-Air—Pressnre on the Ears—Use in Deafness and Sterility—Flow of Saliva—Action on the Respiratory Organs—Its value in Diseases of these Organs—Influence on Arterial Circulation and Animal Heat.

The effects of rarefied atmospheric air upon the vital functions are familiar to every one, either from personal experience, or from the narration of others. Balloon voyagers, and travellers on the summits of lofty mountains, have only felt in an intensified degree the sensations experienced by ourselves at less elevated points. It is invariably the case, that as the mercury sinks in the barometer, the vital functions become proportionately depressed. The organs of respiration, in particular, are effected by the diminution of the density of the air. Strong men breathe with difficulty in very elevated regions, while the sensations of the invalid may become positively painful. The uneasiness produced by a slight diminution of the density of the air becomes aggravated to a morbid degree as the rarefaction increases. Such are the invariable effects.

The question naturally occurs:—Will not an augmented density of air have an exactly opposite effect? It would

have been well for medical science, had this question been generally propounded and answered long ere this. The subject has, at various times, presented itself to the minds of a few thinking men, but it has not yet attracted that attention which it deserves. France has the merit of first recognizing the value of compressed-air as a therapeutic agent, and employing it in a scientific manner. M. Emile Tabarie, in 1832, made a communication on this subject to the Institute, and, after a series of careful researches, commenced the use of the *bain d'air comprimé*, in 1836. Since that date the compressed-air bath has been in use, and, as we learn from the pamphlet of M. E. Bertin, published in 1855, has been successful beyond the anticipations of its inventors.

In this country, the use of compressed-air has attracted very little attention. A few random experiments, now and then, with the diving-bell, form the sum total of medical practice in this direction. We entertain the hope, however, that this state of things will soon change; and that when the valuable effects of compressed-air come to be known, the employment of it as a therapeutic agent will become general among medical men. Dr. Macleod was the first to introduce the Compressed-Air Bath into this country. Since the period of its construction in 1856, he has had abundant evidence of its highly beneficial effects in the treatment of consumption, asthma, chronic bronchitis, and other diseases.

The Compressed-Air Bath is a chamber constructed of iron plates rivetted together like those of the boiler of a steam engine, so as to be perfectly air-tight. It is provided with a close-fitting iron door, and several small

windows, each of a single piece of plate glass, strong enough to resist a much greater pressure than that of the compressed-air. The interior, which is lined with wood, is furnished with seats, a couch for weak patients, means of communication with the attendant by a bell or whistle, and a contrivance for passing in and out small articles, such as letters, without disturbing the pressure of the air inside. A steam engine, of power proportioned to the size of the chamber, works a pair of force-pumps, which communicate indirectly with the chamber by a pipe opening under its floor, which is pierced with numerous small apertures, so that the air may enter with as little noise as possible. From the roof of the chamber, a pipe similarly arranged passes out; and this is furnished with a screw valve, by means of which the amount of air passing off may be regulated, while the amount of that which enters is regulated by the rapidity of motion of the engine and pumps. While the air is being condensed, and after it has been brought to the maximum pressure desired, a sufficient quantity of air is constantly allowed to enter and escape, to keep that in the chamber of sufficient purity for respiration. By means of a barometic tube placed inside, and communicating by its upper extremity with the atmospheric pressure, while the mercury at the lower end is subjected to that of the air in the interior of the bath, the patients are constantly made aware of its amount, and can regulate it by the valve in the escape-pipe, and by the working of the steam-engine. An apparatus is attached, also, by which the temperature of the air entering the bath can be regulated, as it undergoes considerable variation during the condensation and subse-

quent rarefaction of the air, and also by the heat evolved by the friction of the pumps.

It is found that the beneficial effects of the use of condensed air are best attained by raising the pressure gradually, maintaining it steady at the pre-determined maximum for such a time as may be necessary, and then lowering it as gradually as it was raised. As a general rule, the pressure is raised about the $\frac{1}{2}$ of an atmosphere, that is, about $7\frac{1}{2}$ lbs per square inch above the ordinary pressure of the air. This is done at the rate of one pound in four minutes, the rarefaction taking place at the same rate. The duration of the bath and the amount of pressure, however, require to be regulated by a regard to the character of the disease, the organ in which it is situated, the vital force of the patient, and the condition of the nervous system. The same laws which regulate the use of water in the treatment of disease, apply to the employment of compressed-air.

The sensations experienced by a person in health, when under the action of the compressed-air, are few, and frequently so slight as to be almost imperceptible. Its effects are more distinct in the case of those who are in a diseased condition, and the sensations may vary in their nature and intensity, with the physical state of the patient.

The first effect of the compressed-air bath is a feeling of pressure in the ears. This pressure is generally slight and somewhat disagreeable. It is occasioned by the continued changing pressure of the atmosphere upon the walls of the different canals of the organism, and generally ceases when the pressure becomes steady. Sometimes the eustachian tube does not become quite free till after seve-

ral baths; in which case the uncomfortable feeling in the ears continue. It is frequently found that, after a few baths, the sensation of pressure is not felt at all. The feeling of gentle pressure can commonly be relieved by swallowing several times in succession, or by making an expiratory effort, with the mouth and nostrils closed. The sensation of pressure returns generally while the air is being rarefied, and from the same cause as that which occasioned the feeling during the persistence of the continuous increasing pressure.

These effects of the air-bath on the ear indicate its applicability in the treatment of deafness, which has been produced by obstruction of the eustachian tube. The compressed-air is a much easier and we believe a more certain means of opening the tubes for the communication of sound, than any surgical instrument can be, however skilfully used. Its value in curing deafness has been already proved by various cases.

Similarly, the compressed-air bath has been found of use in cases of sterility depending on a relaxed state of the lining membrane of the cervix uteri and fallopian tubes; and its stimulating action in these organs has been proved by increasing their secretion, when it has been deficient. Dr. Macleod mentions two cases, in which this secretion had been subjected to all the ordinary methods of treatment without success, but where, after the use of the air-bath, the function was restored.

Another effect of the compressed-air bath, is an increased flow of saliva. This may be produced partly by the mere mechanical effect of the pressure of the air upon the salivary glands, and partly by its stimulant

action on the secreting membrane. M. Bertin, in his work* on the compressed-air bath, is of opinion that the flow of saliva thus induced might be turned to useful account in certain kinds of dyspepsia, which depend more or less on insufficient salivation.

But the most important of the effects of the compressed-air bath are those which it produces on the organs of respiration. These are generally not very noticeable in a person of sound health, who, will however, be conscious, when his attention is directed to it, of an increased facility and diminished frequency of respiration. The influence of the air-bath on the pulmonary functions is very marked and decided, when these functions are in a state of disease. In most cases of difficulty of breathing arising from lesions of the tissues composing the air passages and pulmonary structure, the patient, on being subjected to the increased pressure in the air-bath, becomes sensible of a greater facility of breathing, a feeling of greater expansion of the chest, and of increased comfort; and if his respirations have previously been too frequent, their frequency is diminished. Each inspiration, without being more lengthened than usual in the ordinary atmosphere, takes in a greater quantity of air in the same bulk. Thus an increasing supply of oxygen is afforded to the blood, and to this higher oxygenation are perhaps to be attributed the increased appetite, buoyancy of spirits, and general improvement of the functions, which are the effects of

* *Etude Clinique de l'emploi et des effets, du Bain dair comprime dans le traitemant de diverses maladies, etc.* Par M. E. Bertin. Paris, 1855.

the compressed-air bath. Besides, the increased quantity of oxygen in the air-vesicles, by enabling the lungs to perform their functions more efficiently, removes congestion of those organs.

A most important action of the compressed-air, in connection with the respiratory organs, is that which it exerts on the mucous membranes. This is most easily seen in cases of chronic congestion of the soft palate, and neighbouring parts, where we have the membrane red, tumefied, soft, and relaxed, with alteration, sometimes approaching to extinction, of the voice, as in the affection called the "clergyman's sore throat." In such cases, the compressed-air has produced relief, although rarely, even at the first sitting; and by its means, even in long-standing cases, the parts, in a comparatively short period, are restored to the normal condition—the softened engorged state of the membrane, and the enlargement of the glands, rapidly giving way. The compressed-air has the same therapeutic influence in similar or allied affections of the mucous membrane of the air passages.

From what we have thus briefly said regarding the influence of the compressed-air bath on the organs of respiration, its important and beneficial effects on the diseases to which these organs are subject, may be conceived. It was for the treatment of consumption, asthma, chronic bronchitis, and other diseases of this kind, in particular, that the air-bath was introduced into Ben Rhydding. We regard the treatment of these diseases by the compressed-air bath, in conjunction with the other therapeutic agencies of that establishment, as a subject of

too great importance to be noticed in a summary manner in passing, and shall therefore reserve it for a distinct consideration.

Another noticeable effect of the compressed-air bath is its sedative influence on the arterial circulation—a fact of the highest importance when we consider how very frequently, in cases of consumption, the physician has to combat accelerated circulation and general excitement. This sedative action is not dependent merely on amelioration of the pulmonary affection; for it is manifested quite as strongly, and often indeed more so, in cases where no pulmonary affection could be supposed to exist. The compressed-air has at once a stimulating and a sedative effect on the heart, diminishing the irritation of its nerves, and increasing the vigour of its muscular tissue; and where degeneration has commenced in this tissue, it is overcome, the degenerated particles removed, and their place taken by healthy structure; enabling the heart to perform again its functions with vigour and naturally.

An interesting point in connection with the compressed-air bath is, its influence on animal heat. There can be no doubt that its tendency is to diminish it. Any manifestations of an opposite kind will probably be found, on examination, to be entirely owing to the temperature of the air itself. The compressed-air produces an internal diminution of heat, in some cases so slight, as to be almost imperceptible, but in others very decided. It is particularly useful in this respect from its power to dissipate inflammatory congestion by diminishing the morbid heat which attend certain diseases. This sense of internal

ILLUSTRATIONS

OF

GYMNASTIC EXERCISES.

THE manner of performing the movements given in the following Illustrations is explained by and practised under the Gymnast at Ben Rhydding. The three separate numbers at the bottom of each Illustration mark how often each movement is performed by the beginner; after a fortnight's performance, and after a lapse of six weeks. This standard is calculated for a male adult. For those over sixty, for very corpulent persons, for females, and for children, half of the amount will be sufficient.

1. 2. 3.

4. 5. 6.

1. Rotatory Head Movement—10, 20, 30 *times.*

2. Circular Arm Movements—8, 12, 20 *times.*

3. Unequal Breathing—6, 8, 10 *times, but repeated four or five times daily.*

4. Extension of the Arms by Force—10, 16, 20 *times.*

5, 6. Two Sorts of Extension and Flexion Movements of the Arms—10, 20, 30 *times.*

7. 8. 9.

10. 11. 12.

7. Bending of the Body Forward and Backward—10, 20, 30 *times each way.*

8. Swinging the Arms Apart—8, 12, 16 *times.*

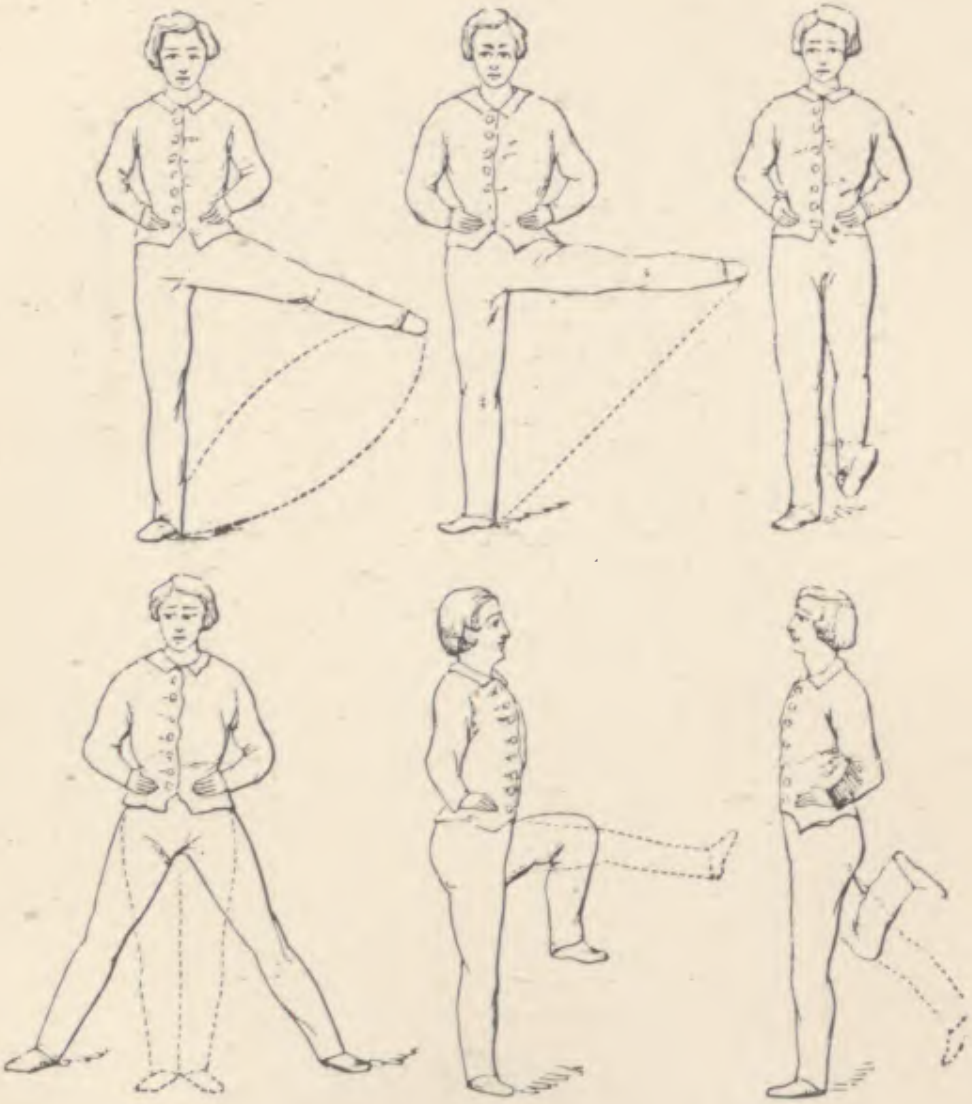
9. Raising of the Trunk—4, 8, 12 *times.*

10. Twisting of the Body—10, 20, 30 *times.*

11. Twisting the Arms—30, 40, 50 *times.*

12. Circular Movement of the Trunk—8, 16, 20 *times*

13. 14. 15



16. 17. 18.

13. Circular Movement of the Leg—4, 6, 8 *times with each leg.*

14. Sideward Movement of the Leg—6, 10, 16 *times with each leg.*

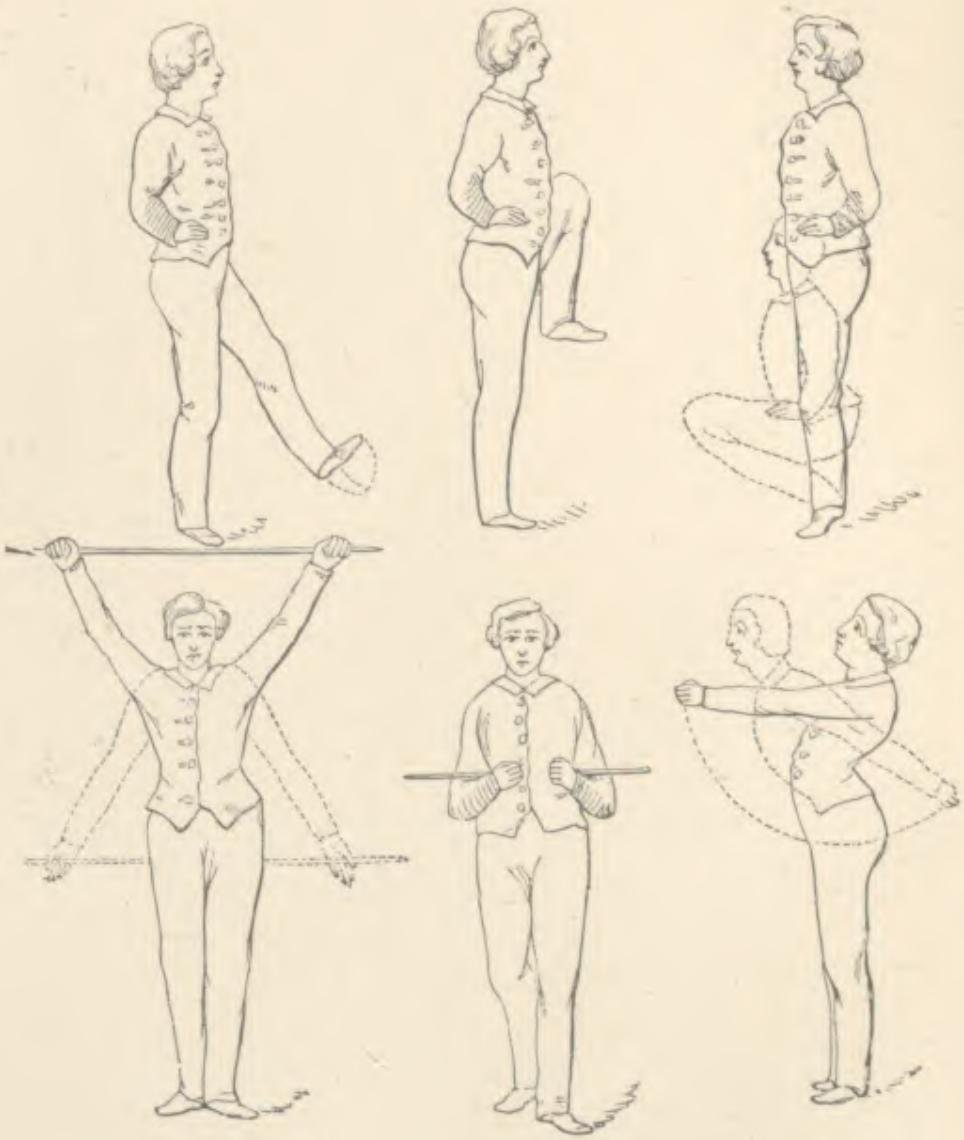
15. Twisting of the Legs—20, 30, 40 *times each leg.*

16. Drawing of the Legs together—4, 6, 8 *times.*

17. Bending and Stretching the Knee forward—6, 8, 10 *times with each leg.*

18. Bending and Stretching of the Knee behind—10, 12, 16 *times with each leg.*

19. 20. 21.



22. 23. 24.

19. BENDING AND STRETCHING OF THE FOOT—20, 30, 40 *times with each foot.*

20. RAISING OF THE KNEE—4, 8, 12 *times each knee.*

21. SINKING AND RAISING OF THE BODY—8, 16, 24 *times down and up.*

22. CIRCULAR MOVEMENTS WITH A STICK—4, 12, 16 *times backward and forward. The stick to be round, and five feet in length.*

23. WALKING WITH THE STICK UNDER THE ARMS—*from ten to fifteen minutes.*

24. SWINGING THE ARMS BACKWARD AND FORWARD—30, 60, 100 *times to and fro.*

25. 26. 27.

28. 29. 30.

25. SWINGING THE ARMS SIDEWAYS—20, 30, 40 *times to and fro.*

26. SAWING MOVEMENT—10, 20, 30 *times with each arm, up and down.*

27. CHOPPING MOVEMENT—6, 12, 20 *times.*

28. *This movement gives full activity to all the muscles of the Chest*—10, 15, 20 *times.*

29. FLEXION OF THE TRUNK—6, 12, 16 *times. The legs kept straight.*

30. FLEXION AND EXTENSION OF THE LIMBS—6, 9, 12 *times.*

31.

31. INDIAN CLUB EXERCISE—*each movement* 5, 10, 15 *times.*

cold is to be regarded as a symptom of the beneficial effect of the compressed-air; but, at the same time, is not indispensable to the success of the treatment.

We shall not dwell longer on the general subject. We have only touched on some of the principal effects of compressed-air, when applied as a therapeutic agent. Under its influence respiration becomes easy and natural; the blood gradually increases in vitality, and receives soon its former healthy state; the circulation becomes calmer, more regular, and is circulated more equally throughout the various parts of the body than it was before; and, in consequence, the general functions are strengthened. At Ben Rhydding, the compressed-air bath has been found to do more than justify the anticipations formed regarding its beneficial properties. As these properties become known, we cannot doubt that an agent, capable of accomplishing so much good, will come to be recognized by the great body of medical men, as a most important and valuable addition to the means and appliances of therapeutic treatment.

CHAPTER IV.

Medical Gymnastics.

Powers of the Body—Importance of Developing them—The value of Therapeutic Movements' for this purpose—Walking not sufficient for the full and healthy Development of the Muscles—Evils resulting from a Neglect of their Exercise and Development—Brief Sketch of a System of Free Gymnastic Exercises.

The importance of Gymnastics, when combined with other therapeutic treatment for the restoration or preservation of health, can hardly be over-estimated. By the term Gymnastics—or Medical Gymnastics, for we are not going to write a treatise on the whole subject—we mean, a series of well-regulated movements, fitted to develope the bodily powers, strengthening those parts which are weak, and restoring to their normal healthy state, those which are relaxed and have a tendency to disease. These therapeutic movements are regarded at Ben Rhydding as a very useful and valuable auxiliary to the other modes of treatment. A thorough knowledge of anatomy and physiology is requisite for the right direction of these movements; and Dr. Macleod regards them as of such importance, that, though the Gymnasium is under the superintendence of an experienced Gymnast, he takes care personally to overlook it. As our object in this work is to give as complete a view as possible of Ben Rhydding, and its therapeutic means and

appliances, we trust no apology will be needed for our devoting a chapter to Medical Gymnastics.

It is acknowledged by all medical men, that very many diseases are the consequence, simply of a neglect of the use and developement of the powers of the body. The employments of our social life, and especially those which lead to habits of a sedentary description, have a constant tendency to produce and perpetuate this neglect. The diseases to which particular classes are subject, can often be easily accounted for by this neglect in developing the powers of the body. Who wonders that the seamstress, bending all day long over her work, and never once giving her chest the expansion which nature requires, to carry on the vital functions aright, should pass by consumption to an early grave? Who wonders at the pale cheek, the delicate and stooping frame of the young student, who, in his ardour to win distinction, neglects all exercise, except, perhaps, a brief and hurried walk, and thus loses the greatest blessing in life—the *mens sana in corpore sano?* What is the reason, that in so many cases, the body never attains its full, healthy developement? Making every allowance for bad air, insufficient food, inherited defects, and other causes, we have no hesitation in avowing our belief, that this is owing to a great extent, to the neglect of those simple exercises which are so well fitted to develope the different parts of the body. A well-directed course of gymnastic exercises might have made many a sickly puny person a strong and stalwart man. And then the evils which flow from a neglect of exercise, when a man has already reached a vigorous maturity, are legion. Slowly they may steal upon their victim;

and if he neglect the first warnings of nature, they may at length thoroughly wreck his health and endanger his life. To this neglect may often be ultimately traced such complaints as—chronic abdominal diseases, hæmorrhoidal affections, congestion of the blood—precursors of gout, asthma, hypocondria, hysteria, melancholy, paralysis, apoplexy, &c.

Put in comparison with all this, the undoubted effects on the human frame of well-regulated therapeutic movements. They enlarge the cavity of the chest, and so allow of a free aeration of the blood; they strengthen the muscles of the frame, and thereby indirectly increase the vigour of the nervous system. They increase the peristaltic movements of the intestines, and consequently assist in the removal of venous blood from the abdominal viscera; and they so strengthen the structures which hold the different parts of the spinal column in position, that they materially assist in the removal of lateral curvature, irritation, and weakness of the spine. The salutary effects of gymnastics are not confined to those whose bodies still possess the flexibility of youth; though undoubtedly they are more marked and complete in such cases. It has been ascertained by actual measurement, that adults, after being subjected to gymnastics for only a few months, have gained from one and a half to two inches in the circumference of the chest, after making every allowance for the growth of muscle. The immense value of this expansion of the interior of the breast may be easily conceived.

Gymnastics act on the muscles. Their object is to bring *the whole of the muscles* of the body into play.

Walking cannot do this. After what we have said in a previous part of this work regarding the great importance of walking in the open air, as much as the patient's health, and the state of the weather will allow, no one will suppose that we mean to undervalue pedestrian exercises. All we say is, that they are not sufficient in themselves to accomplish the object which gymnastics have in view. Walking in the open air may be either wholly or partially interrupted by the inclemency of the weather—whence it is necessary to have some in-door substitute for it, better than the monotonous pacing of an apartment, however spacious. This, however, is only an accidental drawback to which this particular kind of exercise is subject; and we would not think it necessary on this single ground, to advocate the use of a system of gymnastics. The ground on which we argue for the employment of gymnastics, particularly in the case of all those with whom walking is almost the only bodily motion of any consequence, is that it employs only one set of muscles, while the others are neglected. Nobody will be so foolish as to say that any of the muscles of the human frame were given us that they might remain unused. It is manifest, that a thoroughly healthy state of the whole body must depend on the employment and developement of the different parts, and this cannot be accomplished without more muscular movement than is produced by walking. The man whose only bodily exercise consists in walking, neglects three most important sets of muscles—those of the shoulders and chest, of the abdomen, and of the back. The muscles of the shoulders and chest are unused, from the inactivity of the arms. These muscles serve both

for the movement of the arms, and for the regular distension and contraction of the walls of the chest in respiration. Even the unprofessional reader does not require to be reminded of the immense importance, for all the purposes of life, of free and full respiration. From want of movement of the arm muscles, the elastic framework of the chest is not expanded as it might be, and ought to be. The more contracted the space in which the respiratory organs work, the more imperfect will be their action, and the less healthy and vigorous the whole frame. From a neglect of the use of these muscles, the chest often becomes narrower and narrower; and we cannot wonder, that, when the vital organs are cramped and confined in their functions by having a smaller space to act in than nature intended, there should be developed in the system the germs of mortal diseases of the lungs and heart, as well as constant interruptions of the processes of digestion and elimination.

The muscles of the abdomen, we have said, are unemployed in exercise which is restricted to mere walking. This is owing to the want of sufficient motion of the trunk. These muscles, also, serve important ends. They promote and stimulate the functions of the abdominal organs; they secure those organs in their right position, and protect them from the effects of vigorous bodily exercises or violent exertions. These muscles are also called into use in respiration, and for the different movements of the trunk. Want of exercise causes them to be relaxed, and less able to fulfil the functions required of them. Hence arise visceral obstructions, hernia, and many other evils.

Equally important is it, that the muscles of the back should be exercised and developed; and this is not accomplished by the simple exercise of walking, there being not sufficient motion of the trunk to call them into action. These muscles serve for the support of the spine in its natural position, and for its movements, whether stretching in its upright normal position, or bending or twisting from it. They are thus requisite for the movements of the whole trunk. A neglect of the exercise of these muscles will be found to be the cause of the greater number of cases of curvature of the spine. The importance of using them, were it for no other purpose than to secure an upright and graceful figure of body, will be readily observed. But beyond this, if we consider how intimate is the connection between a firm and healthy state of the spinal cord (and consequently of the spine itself,) and the general health of the whole body—nay more, of the mind—we cannot fail to be convinced of the unspeakable importance of a right exercise of these muscles.

We hope the general considerations which we have advanced are sufficient to prove the great value of gymnastics as an aid in medical treatment. It would be easy to recount many advantages which may be derived from a course of such exercises, whether the person who undergoes them be ailing or healthy. We might shew their effects in giving to the mind a more thorough mastery over the body, in producing habits of prompt and precise action, and in making the spirits lively and cheerful. But we must pass on to give a little attention to the subject-matter of medical gymnastics.

The object of medical gymnastics, we have said, is to exercise the muscles of the body, with the view of rendering the different parts healthy and vigorous. It is to keep, so far as possible, the whole of this fearful and wonderful mechanism of ours going in the manner intended by its Maker. Where through neglect or abuse this has been rendered impossible, these therapeutic exercises may yet, to some extent, produce an amelioration. In all cases the object is to develope and strengthen the muscles by exercise; and they, in turn, exert a beneficial effect on the organs with which they are connected. It seems to us, then, to be both a simple and correct method, to divide the therapeutic movements into classes corresponding with the different sets of muscles called into play. We wish to premise, however, that we do not pretend to give a full and accurate view of the medical gymnastics employed at Ben Rhydding. Our object is simply to present a summary view of the principal therapeutic movements, which will be found, in one form or another, included in the routine of every really philosophical system of medical gymnastics. The exercises we present are what are sometimes called "free exercises," *i.e.*—such as do not require the aid of technical apparatus. In our description of these exercises, we shall mainly follow the system of Dr. Moritz Schreber, whose excellent work we cordially recommend to the attention of our readers.*

I. Let us first take *movements of the Head.*—It is re-

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* *Illustrated Medical In-Door Gymnastics. By Dr. Moritz Schreber, M.S., Director of the Leipsig Orthopedic and Medico-Gymnastic Institute.* London, Edinburgh, and Leipsig. 1856.

quired to set the whole of the muscles of the neck in motion. This is done by the following movements :—

1. Rotatory head movement.—The head describes as large a circle as possible. The articulation of the neck forming the pivot or axes on which it turns. This (and all other movements) should be done deliberately and carefully.

2. Turning of the head.—In this case the neck turns on its articulation, carrying the face round nearly half a circle. It will be found that the chin comes nearly over each shoulder. In both of these movements of the head the other parts of the body are to remain immoveable. The number of times they are to be repeated will depend on the strength of the patient, and the condition of the muscles of his neck. The average number is from ten to thirty times for each.

II. *Movements of the Shoulders and Arms.*—These, as we have seen, act upon a most important set of muscles —those, namely, which serve for the distension and contraction of the coats of the chest. These movements admit of being considerably varied; but we think the following exercises will be found to call into activity all the different muscles.

1. Raising of the shoulders.—The arms hanging by the sides, the shoulders are to be raised both together as powerfully and as high as possible. They should be lowered gently, and to avoid the pain which the jerking motion would be apt to give to the head. From thirty to sixty times.

2. Throwing back the elbows.—The hands rest firmly on the hips, and the trunk remains immoveable. In this

position the arms are forcibly thrown back as far as possible. This motion should take place at the same time as the inhaling of the breath. From eight to sixteen times.

3. Stretching the arms downwards behind.—The hands are clasped behind, the body maintaining a perfectly erect position. The arms are stretched downwards as far as possible, the movement being made at the same time as the breath is exhaled. From eight to sixteen times.

4. Circular movement of the arms.—As large a circle as possible is described with outstretched arms, the arms passing close to the head. The circle is to be described both backwards and forwards. From ten to twenty times.

5. Raising of the arms sideways.—The arms are raised from the sides, as high as possible. The elbow is not to be bent in the slightest degree. When the muscles required for this movement are thoroughly healthy and free, the arms will touch the sides of the head. From ten to thirty times.

6. Striking out the arms.—The arms are bent at the elbow, and vigorously stretched out in five different directions:—forwards, sideways, upwards, downwards, and backwards. This movement must be made with the fists firmly closed, and the arm muscles in a state of as rigid tension as possible. The arm must be drawn back to the original bent position, with about as much force as was employed in striking it out; but here again, care must be taken not to pain the head by too great a concussion. The movements may be made from five to thirty times.

7. Swinging of the arms together, and apart.—In the former of these motions the arms, first stretched out on either side, are swung vigorously together, but without touching. In the latter the movement is reversed, the arms being swung as far back as possible. From eight to sixteen times.

8. Twisting of the arms.—The arms are stretched out sideways, or in any other direction, and the movement is that produced in boring with a gimlet. From thirty to forty times.

9. Turnings of the hands.—The hands are turned outwards, with the knuckles down; inwards, with the knuckles up; outwards, with the knuckles outwards; and inwards, with the knuckles inwards. Or the hands may be made to describe in the air the figure ∞ horizontally. From ten to forty times.

10. Bending, stretching, and spreading of the fingers.—The fingers are stretched out as much as possible, and then tightly clenched. With the stretching may be associated spreading of the fingers. From ten to twenty times.

11. Rubbing the hands together.—This may be done with more or less of force. In very many cases a smart shock by the forcible striking together of the hands may be highly beneficial. In many, however, the less energetic exercises of rubbing the hands backwards and forwards is preferable. From forty to eighty times.

III. *Movements of the Trunk.*—These movements call into exercise the muscles of the abdomen, of the back, breast, and sides, and, partially, of the hips. Of the importance of employing these muscles we have already

briefly spoken. Their use strengthens the spine, and through it the whole framework of the body, and assists the abdominal viscera rightly to discharge their functions.

1. Bending of the body forwards and backwards.—The body is gently bent forwards as far as possible, the legs being kept unmoved and their muscles rigid. The same is done backwards. From ten to thirty times each way.

2. Sideways movement of the body.—The body is inclined to the right and left as far as possible, but without any severe effort. The hands may either rest on the hips, or accommodate themselves to the movement. From twenty to forty times to and fro.

3. Twisting of the body.—This movement consists in twisting of the trunk round its own longitudinal axis the same distance on each side, the body maintaining its upright position, the legs being immoveable, and the back well stretched. From ten to thirty times to and fro.

4. Circular movement of the body.—This movement is analogous to that of the rotatory movement of the head previously described. The legs remaining immoveable, the trunk turns on the hips, describing as large a circle as possible, from left to right, and from right to left. From ten to thirty times.

5. Raising of the trunk.—The body must be in a horizontal position on a matress or carpet. The trunk is to be raised to an upright position without moving the legs. To accomplish this, it may at first be necessary to have a weight of some sort put across the legs, to serve as a compensation weight, but soon this will cease to be required. In cases where there is a peculiar difficulty in accomplishing this movement, or where it is feared the effort may be

attended with injurious effects, the upper part of the body may be placed in a position slightly elevated from the horizontal. If, on the other hand, it may be desired to make the movement still more difficult, dumb bells may be held in the hands, which will be kept close to the body. In first trying this exercise the hands may be crossed over the breast: afterwards they may be placed behind the head. From six to ten times.

All the movements of the trunk should be done gently. All sudden and violent straining should be carefully avoided. This is a direction which we wish particularly to impress upon the attention of those who practise these exercises.

IV. *Movements of the Legs.*—Walking, though a very valuable exercise, does not employ all the muscles of the legs so fully as may sometimes be desirable. The exercise of the muscles of the legs and feet, by such movements as we are about to notice, is not of so much importance to those who regularly take a walk of some length every day, as is the exercise of the other muscles of the body. Yet even they may profitably combine the movements of the legs with those which we have already described: while those whose opportunities of taking pedestrian exercise are few and far between will find in these movements the best substitute for what is for the present denied them.

1. Circular movement of the leg.—Either leg in turn, fully stretched, describes a circle as large and as high as possible, from the front backwards, returning to its former position by the other leg. The body is to be kept as

immoveable as possible. From four to eight times with each leg.

2. Sideways movement of the leg.—Either leg in turn is for a number of times raised sideways, being fully extended. The leg is raised as high as possible, without any violent effort. From five to fifteen times with each leg.

3. Twisting of the leg.—The leg, fully stretched, and raised a little from the ground, with the toes upwards, is twisted outwards. From twenty to forty times with each leg.

4. Drawing of the legs together. The body rests on the toes, the legs being a moderate distance apart, and the knees immoveable. The legs are drawn together by sliding them along the ground, still on the toes. From four to eight times.

5. Bending and stretching the knee.—This movement may be done in two ways—forwards and behind. In the former case either leg, bent at the knee, and raised in front of the body, all the muscles being in a state of full tension, is stretched out vigorously to its full length. In the latter, the leg, similarly bent, is raised behind as high as possible, and then vigorously stretched out to its full length. From six to twelve times with each leg.

6. Bending and stretching of the foot.—The leg is held forward, and the foot is raised by means of the ancle joint. The foot may be also exercised with a circular movement. From twenty to forty times with each foot. (The bending and stretching of the toes may be combined with this movement.)

7. Raising of the knee.—The body is kept as immoveable as possible, while the leg, firmly bent at the knee, is raised so high that the knee may touch, or approach near to, the breast. The upward motion is to be energetic, but not violent. This movement is one which should be used with caution. In cases where there is inflammation in the region of the abdomen, or hernia, or a disposition to bleeding, it should be avoided. From four to twelve times with each knee.

8. Sinking and raising of the trunk.—The body resting on the toes, with the heels close together, it is let down as low as possible, the trunk retaining its upright position. From eight to twenty times down and up.

Such are the fundamental therapeutic movements. We have not space to notice those of a more advanced description, but must content ourselves with remarking, that patients and visitors at Ben Rhydding will find that the most careful attention is given to every branch of these important therapeutic exercises.

It is manifest that much depends on these movements being done regularly and carefully. It would be absurd to expect much good from them, when they are only performed by fits and starts. A definite time daily should be set apart for them, *before* one or more of the meals—for it is advisable, with regard to at least some of these exercises that the abdomen should be as empty as possible while they are being gone through. All articles of clothing, which interfere with the free action of the various parts of the body, should be laid aside. All jerking and violent motions, in performing these exercises, ought to be avoided. With regard to the amount of these exer-

cises, it must be regulated by the capability of exertion of different individuals, and an index of this will be afforded by the sensations produced by them in the muscles called into action. Pain or a feeling of fatigue should serve as a limit to the performance of these exercises, even though the general average may not have been reached. In this, as in everything else, perseverance and patience will infallibly meet their reward.

CHAPTER V.

Consumption, Asthma, &c.

Preface to Dr. Macleod's Letter.

Ben Rhydding, Otley,
September 1860.

The Compressed-Air Bath, associated with the Water Cure and residence in a dry, bracing atmosphere, is the most efficient means possessed by the physician for the cure of Simple and Bronchitic Asthma. This opinion is entirely the result of experience, and in no way consequent upon any theory. It is now six years since the bath was added to Ben Rhydding, and from that time till now it has been in daily use. The asthmatic cases treated have been from the mildest to the most severe—from pure nervous asthma to bronchitic asthma, where, from collapse of the air vesicles, more than one half of the lungs have been rendered useless for carrying on the process of respiration. Patients *from all* these degrees of asthma have been cured at Ben Rhydding by the method referred to, and it can with confidence and truth be asserted that those patients who have not been cured, have had the symptoms of their disease greatly alleviated. Indeed, I have not seen a single case of asthma, uncomplicated by organic disease of the heart, which has not been greatly benefited by means of the method of cure advocated. It is therefore with full confidence, and without any hesi-

tation, that I recommend the use of the Compressed-Air Bath, associated with the Water Cure, to persons suffering from Asthma in any of its stages.

WM. MACLEOD, M.D.

LETTER FROM DR. MACLEOD, ON HIS TREATMENT OF CONSUMPTION, CHRONIC BRONCHITIS, ASTHMA, &C.

[The treatment of Diseases of the Chest and Lungs by the means and appliances of Ben Rhydding is a subject of so great importance, that we were unwilling to run the risk of giving an imperfect or incorrect view of it, by drawing up our account from the materials we had been able personally to collect. Accordingly we applied to Dr. Macleod, requesting him to favour us with a brief statement on the subject. That gentleman at once forwarded to us the following letter.]

BEN RHYDDING, OTLEY, YORKSHIRE,
October 24, 1857.

DEAR SIR,

You wish me to give my opinion of the Compressed-Air Bath, and to state in what diseases I find it to be decidedly of service, also to give you a short account of my treatment of consumption, chronic bronchitis, and asthma, for insertion in your work on Ben Rhydding. I gladly do so. I am anxious that the efficacy of the Compressed-Air Bath, as a curative agent, should be brought more fully before the public than it has yet been; and I am happy to have an opportunity of pointing out the distinctive merits of my treatment in the diseases just mentioned.

I have now had the compressed-air bath in full operation, for nearly eighteen months; and on an average

during that period, twenty patients, all very seriously ill, have been daily subjected to its influence. This bath has a most powerful effect in stimulating and strengthening mucous membranes, especially that lining the nostrils, fauces, windpipe, and lungs. It has at the same time a soothing effect on the system, removing irritation, diminishing the rapidity of breathing, and lowering the pulse. It powerfully assists in removing congestion, and in stimulating glandular organs to action. It is very efficient in subduing nervous palpitation of the heart. I have found it of great value in curing deafness, occasioned by an affection of the eustachian tube, or by a deranged state of the membranes of the ear itself; and its power is very marked in overcoming the stoppage of the monthly periods. Indeed, with regard to the latter effect, experience leads me to consider the compressed-air bath to be the most powerful curative agent we possess for restoring, and that even in the worst cases, this natural secretion. I find the compressed-air bath to be very serviceable in inveterate chronic jaundice. In this disease the skin is of a pasty yellow colour, the conjunctiva of the eyes strongly bilious, and all the actions of the organism are torpid, and badly performed. It seems as if the increased quantity of oxygen taken into the system by this process causes increased waste, and gives increased stimulation and vigour to the liver and to the other abdominal viscera. I shall refer to only one more complaint in which I have found the air-bath to be of great service—chronic headache, arising, especially in youth, from over study. This distressing affection, which frequently prevents young men for years from pursuing their studies, depends en-

tirely upon atonicity of the brain, occasioned by too continuous and prolonged mental application. Previous to my use of the air-bath, I found this affection to be one of the most inveterate I had to treat; but now, with the aid of compressed-air, I can cure it with greater certainty and much more rapidly.

I may add, that, with all these striking advantages, there is no danger connected with the use of the air chamber. DURING THE WHOLE PERIOD I HAVE HAD IT IN OPERATION, I HAVE NOT SEEN ONE PREJUDICIAL EFFECT ARISE FROM ITS USE.

I shall now proceed to the points on which you wish somewhat more detailed information. The first and chief of these is *my treatment of Phthisis.*

For practical purposes I may divide Phthisis into three sections:—

1. That in which the parents of the patient, although weakly, are not consumptive.

2. That in which the disease first made its appearance in the parents or grand-parents of the patient.

3. That in which the disease has been continuous for several generations in the family of the patient.

I believe the curability of consumption to be great in those cases which belong to the first class. In such cases, cures are effected even when cavities have been formed in the lungs, and after a half or even three-fourths of one lung has been seriously diseased.

In the second class, a cure is to be looked for, only when the disease is limited to a small portion of one lung. In that case it may be accomplished even after a cavity has been formed. If, however, the deposit of mat-

ter has taken place to any extent, a cure is rarely effected; and the physician's principal aim must be to retard, or, if possible, entirely stop, the further progress of the disease.

I believe the third class of phthisis to be incurable in all its stages. Its progress may, by judicious treatment, be very much retarded, but that is all that can be effected.

The constitution of patients belonging to the first class, although weakly, has not a strong tendency towards consumption. All the functions, except those of the lungs, although performed with greatly diminished vigour, are usually healthy, and capable of being invigorated up to a certain point. *The overlooking, or the not bringing into play of this capability of invigoration, is the reason why Phthisis has not hitherto been so successfully treated as it ought to have been.* The patient is sent to a warm relaxing climate; or he is swaddled up in flannel to prevent his taking cold: and, as the skin becomes more sensitive and relaxed, additional layers of flannel are ordered from time to time, until at length the patient is composed more of flannel than of frame. The necessary result of such treatment is, that the immense amount of blood, which ought to circulate freely through the skin, is thrown back, principally upon the lungs and the liver. The consequence is, that conjestive irritation is produced in both these organs. This is a condition suitable, on the one hand, for promoting the deposit of tubercular matter in the lungs; and, on the other, for retarding, or injuriously modifying the secretions of the liver, and producing, according to circumstances, either constipation, or irregular and weakening irritation of the bowels. *Now the fact is,*

and it cannot be too strongly urged, that consumptive patients, when properly treated, are much less liable to take colds than those labouring under most other diseases. Physicians, by their usual treatment have made phthisical patients susceptible of cold; and then, as the result of conclusions drawn from observations imperfectly made, they have unhesitatingly promulgated the notion, that such patients are very susceptible of inflammatory colds, especially those of the mucuous membrane lining the air tubes. I have no hesitation in asserting that this opinion is erroneous, and that the carrying of it out into practice produces the most prejudicial results. My heart even now sinks within me when I think of the treatment of consumption —of the close hot-room, the anti-inflammatory potions, the debilitating blisters—to which I have seen many a miserable young patient subjected, while the inflammatory theory was dominant in Great Britain. *Phthisis is not an inflammatory disease,* and it has, primarily, no tendency to inflammation. It *arises, rather, from a depraved state of the blood, associated with low nutritive, and weak vital force.* For such a state the best treatment is assuredly not residence in a relaxing climate, blistering, and other lowering processes. *Phthisis is best cured, or its course best retarded, by a nourishing diet, moderate tonic treatment, daily out-door exercise, and residence in a bracing mountainous district, where the valley is broad, the mountains not high, and composed of sandstone, the soil porous, and the water pure, fresh, and stimulating.* The leading idea in the treatment of phthisis ought to be, gradually to invigorate the system UP TO ITS CAPABILITY OF INVIGORATION; to lessen the relaxation of the mucous

membrane of the air tubes and air vesicles, and to diminish the secretion by these parts of muco-purulent matter; to promote the process of digestion, in order that better blood may be elaborated, and the nutritive power so raised as to enable the vital force to act with a vigour suitable to the powers of the organism in health. When these points are effected, all that is possible is gained. And the problem requiring to be solved is—How is all this to be accomplished?

I believe that the method followed at this establishment contains the solution of the problem. The object aimed at in the treatment which I employ is:—

1. To invigorate and purify the system by the suitable external and internal use of water; the regulated use of gymnastic exercises; properly timed out-door exercise; suitable clothing; and prescribed hours of rest and sleep.

2. To build up the frame by a well selected and simple nourishing diet, by a free use of calorefacient substances, and by the judicious employment of artificial stimuli.

3. To change, to modify, or to overcome diseased action by means of the compressed-air bath, and certain other special remedies.

All these varied means are of importance in the successful treatment of phthisis; but I shall limit myself to a description of the action of two or three of the most important of them.

The skilful use of water has a most beneficial effect in phthisis. It stops night perspirations, produces quiet sleep, and lessens or entirely removes feverishness. It increases the appetite, improves the digestive process, soothes the bowels when irritable, and removes constipa-

tion where it is present. It makes patients much less liable to take colds, and causes a free circulation of blood over the entire surface of the body. In a word—it gives tone to the whole frame, and assists in developing the vital capability of the organism to its highest power.

The compressed-air bath produces three very marked effects in phthisis. It lessens very materially and rapidly the amount of muco-purulent matter secreted by the air tubes, or by cavities situated in the lungs, and stimulates these cavities gradually to diminish in size, and at length entirely to heal up; it removes congestion of the lungs, and diminishes greatly the tendency to pulmonic hœmorrhage; and it causes the re-absorption of the tubercular matter which has been deposited in the air vesicles and tubules of the lungs. The process of absorption is as follows. There is at first no respiratory sound heard in the portion of lung, the only breathing sound being bronchial. After this a slight râle is perceived, somewhat similar to that produced during the process of resolution to health of a dense pneumonic lung. The râle is however coarser, and gives the sensation of a thicker fluid than in the case referred to. This râle continues slightly to increase for a few days, when it gradually diminishes, and at length entirely disappears, to be replaced by the fine, soft, respiratory murmur of health. This power of the compressed-air bath to cause absorption of tubercular matter deposited in the lungs is a very important fact, and fully warrants us in anticipating still greater results than those we have already gained from its use.

The pharmaceutical remedies which I find to be of the

greatest service in phthisis are—the milder preparations of iron, the hypophosphate of lime, the phosphate of iron and quinine, very minute doses of the acetate of morphia, and now and then a little Plummer's pill. The first medicines mentioned are extremely useful in stimulating the nutritive power to action; the second increases nerve force, and invigorates more than it stimulates the vital force; while small doses of the acetate of morphia healthfully soothe any awakened irritation, and the Plummer's pill, from the mildnes sand searching nature of its action, is very useful now and then as an alterative.

For several years past cod-liver oil has been advanced as a specific in phthisis. From the manner in which many of the leading members of the profession have written about it, I had hoped that they had found for it its rightful position, when they asserted it to be our great sheet anchor in the treatment of tubercular disease. I regret to state that I have been compelled, from careful observation, gradually to withdraw my faith in cod-liver oil as a first class remedy in phthisis. It is certainly a very great help in the cure of that disease, but its curative powers have been very much over-rated. No one, indeed, who has watched its effects, can for a moment doubt its curative power; but what I object to is, the very high place allotted to it, above all other remedies, by the majority of the medical profession. This is a position, which I feel confident, it will not be able to maintain; and it will in consequence, I fear, after awhile be thrown into unmerited neglect—an occurrence which too often happens with remedies really good, but whose powers have at first been too highly rated.

Chronic Bronchitis.—This disease, when severe and of long standing, is one the most stubborn the physician has to treat: indeed, it is usually understood and acknowledged that the patient must carry it with him to his grave. Now, however, with the compressed-air bath, and the regulated use of water, this disease is comparatively easily cured. Indeed, I feel that I can with full confidence assert that *all* cases of chronic bronchitis are curable provided they do not occur in very aged persons. The local application of water to the chest produces very powerful results, while at the same time it greatly invigorates the frame and lessens the tendency to taking cold. Nothing so much astonishes patients labouring under chronic bronchitis, when under treatment here, as the ease and freedom from danger with which they can lessen their amount of clothing, and expose themselves to the invigorating upland breezes of the mountain, midway up whose height Ben Rhydding stands.

I know of nothing which shows so well the power of the compressed-air bath in toning relaxed mucous membranes, and in lessening increased secretions from their surface, as chronic bronchitis. I have seen it, within fourteen days, diminish to one half the amount a profuse muco-purulent secretion, which had lasted for twenty years, and within the three months cause the entire morbid secretion to disappear. These salutary results are produced without any injurious consequences. The great danger of removing a chronic expectoration has become a proverb amongst us. But when the stoppage of expectoration is produced by the combined use of water and compressed-air, no such danger can follow.

The therapeutic use of water invigorates the frame, and increases the free circulation of blood through the skin, and so removes or prevents congestion of any of the internal organs. The compressed-air bath, while it overcomes the increased muco-purulent secretion, lessens the relaxed and softened state of the mucous membrane, enabling it to absorb the oxygen of the atmosphere more freely than it had previously been able to do. It also removes pulmonic congestion; and, moreover, as the same bulk of compressed air contains at least one-third more oxygen than it does when not compressed, the functions of the lungs are enabled to go on with proportionably greater freedom.

The following two cases very strikingly illustrate the curative power of the *compressed-bath* in *chronic bronchitis*.

CHRONIC BRONCHITIS IN A SUBJECT PREDISPOSED TO PHTHISIS.

G. H., a female child, aged 22 months, whose mother died of phthisis, was placed under my care, November 27th, 1856.

Her father stated that she had a severe attack of bronchitis when six months old; ever since which, she had been liable to similar attacks. Was pretty well during last summer, but has been suffering during the autumn and winter. At present, she has a frequent cough, coming on especially on waking from sleep; her breathing is accompanied by a wheezing noise, which can be heard at some distance. Her nights are disturbed. Pulse very rapid; bowels regular; appetite moderate; spirits cheerful.

On applying the ear to the chest, loud mucous sounds

are heard over nearly its whole extent, mingled here and there with sibilant râles. Indeed, the natural vesicular murmer is completely masked, except in about the lower third of the anterior regions. There is slight dulness, on percussion, in the apex of the right lung, where mucous râles are smaller than elsewhere.

She had the first sitting in the air-bath on the 28th, for an hour—the pressure raised to four pounds. While in the bath, the wheezing, which before was distinctly audible at some distance could not be heard, except on placing the ear close to the chest; and the pulse fell from 136 to 129. Slept afterwards, and awoke without coughing.

Next morning (29th) she awoke without coughing, after a quieter night than usual. Mucous sounds not so loud. Bath as before.

Dec. 1*st.*—No bath yesterday. Did not sleep so well last night, there is rather more cough, but looser. Had the bath, at 5lbs. for an hour. After it, the mucous sounds were found diminished, and vesicular murmurs could be distinguished in several places.

Dec. 2*d.*—Another restless night. Cough continues; bath at 6lbs. for an hour and a quarter. Appetite rather impaired for the last day or two. Had been taking, till yesterday, a small quantity of syr. scillæ and vin. ipecac. occasionally. This is now omitted. In the evening, viscid mucous and slight sibilant râles heard pretty generally over the chest, mingled on the right side, behind, with vesicular murmur. Has been rather restless after sleeping.

Dec. 3*d.*—Bath at 6lbs. for upwards of an hour and a

half. In the evening, the mucous râles were almost gone, but a deficiency of respiration in the lower parts of the lungs.

Dec. 4th.—Viscid râles heard as before both morning and evening.

Dec. 5th.—No bath to-day. Has not had much cough. In the morning, the râles were perceptible as before, but in the evening they were heard only here and there. Sleeps well.

Dec. 6th.—Air-bath for two hours on and after this date. Cough less frequent and less hard; pulse diminished in frequency. In the evening râles are heard in both lungs, such as to indicate a diminution and a more viscid state of the mucus; but in the right, especially, there is a large mixture of vesicular murmur.

Dec. 7th.—A severe fit of coughing this morning. The nurse gave her a few drops of vin. ipecac. after which she brought up a quantity of white mucus. Râles heard all over the chest.

Dec. 8th.—Again a good deal of cough this morning, but the natural respiration is heard more distinctly in the right lung. In the evening, the râles sounded drier.

Dec. 11th.—Vesicular murmur is more perceptible, not only in the right lung, but also, at intervals, in the left. Appetite much improved.

Dec. 19th.—Since last report, the patient has gradually improved in all respects. The vesicular murmur is heard behind over the whole right lung, though mingled with mucous râles; the amount of mucous, however, being evidently less. A little vesicular murmur in front, in the infra-clavicular region; but mucous râles only are heard

in the rest of the lung. In the left lung, the natural murmur is more perceptible at the base posteriorly.

Dec. 20th.—No mucous sounds to be heard in the right lung, except at the summit, and slightly at one or two points in front. Those in the left, also, are much diminished, especially behind. Cough very trifling; appetite much improved.

Dec. 23d.—There has been rather more wheezing in the breathing since last report; but, on examination this evening, though sibilous râles are heard here and there, yet healthy vesicular murmur continues to extend in both lungs.

After the 23d of December the lungs continued gradually and steadily to improve. On the 4th of March, 1857, the respiratory murmur was heard over the entire chest. The cough had disappeared, and the child was healthy and cheerful.

April 4th, 1858.—I have heard to-day from the child's father, that she continues quite well. Besides the compressed-air bath, this child had small doses of cod-liver oil, the chest rubbed with the hand with cold water for ten minutes twice a day, and a wash down every night and morning, and she wore, constantly, a wet compress over the chest.

This was one of the worst cases of chronic bronchitis I had ever seen. When I first examined the lungs, I gave it as my opinion, that the child could not recover. After reflecting over the case, and seeing otherwise no chance of any improvement in the state of the lungs, I recommended the use of the compressed-air bath. The immediate effect of this bath upon the breathing, the

pulse, and upon the system generally, was very great. The breathing, while under the increased atmospheric pressure became quieter and slower, the wheezing, which before was distinctly audible at some distance from the child, could not be heard except by placing the ear close to the chest. The pulse fell from 136 beats to 120. The infant slept better and calmer after the bath than she had done for months, and awoke without coughing, a thing she had not done for a lengthened period before. This was a very inveterate case, yet, before a week's trial of the bath had ended, the disease was got pretty nearly under control, for although there were now and then slight exacerbations of the complaint, yet they were never very severe, nor did they last any time. The cure of such a severe case of chronic bronchitis as this, of such long standing, and in so young a child, whose mother besides had died of consumption only a few months after the child was born, should no doubt be considered a strong proof of the curative efficacy of the compressed-air bath in chronic bronchitis.

M. B., aged 56 years, has laboured under severe chronic bronchitis for the last 25 years. He is very subject to colds, and the slightest draught will bring on a bronchitic attack. So very liable is he to take cold, that the windows and doors of his library and bed-room are covered with list, and he also has a screen placed betwixt his chair and the door. He never goes out in wet or cold weather, and whenever he does venture out he wears a respirator, and has himself well wrapped up besides. Mucous and sibilant râles extend over the whole of both lungs, and they are so strong that I am unable to hear

the respiratory murmur in any part of the chest. About two inches below the right clavicle the mucous râle is so very large, that I suspect dilatation of one of the bronchial tubes. The expectoration is of a whitish brown colour, and has an offensive odour, which is also perceptible in the patient's breath. The amount of matter expectorated during the twenty-four hours is nearly seven ounces. The following is a sketch of the treatment the patient underwent :—

The chest was rubbed with the hand and cold water for twelve minutes three times a day. Rapid wash down, with temperature of water 70°, and the compressed air bath each day for two hours at an increased pressure of seven and a half pounds. After a fortnight's treatment the patient was able to do without his respirator, and he could ascend the heights with moderate ease, the mucous râles in the chest had very decidedly diminished, and the respiratory murmur could now be heard in different parts of the lungs. The amount of expectoration had greatly diminished, and the offensive odour was very much less, both from the sputa and the breath. Treatment, somewhat analagous to that mentioned above, was continued for fully three months, when the patient left Ben Rhydding with his lungs fully restored to health, and in answer to my enquiries with respect to the state of his lungs at the present time, he states :

"I still continue well, and my lungs are as good as when I left you." It is impossible to describe this case in too strong terms, for I believe no reader can realize to himself its severity. I do not believe the compressed-air bath alone could effect such powerful results as those

stated above, unless associated with the water cure. The effect of rubbing the chest with the hand and cold water, of spouting the chest, and of wearing the compress over it is very great. They invigorate the system; they strengthen the lungs; they diminish susceptibility to take cold, and they soothe very much internal irritation. The compressed-air bath, and the skilful use of water, are powerful means when employed separately, but when they are associated in treatment their power is very great.

ASTHMA.

As regards treatment, I classify Asthma under three heads :—

1. Asthma arising from morbid matter generated in the system.

2. Asthma dependent simply upon over dilatation of the air vesicles, and relaxation of the mucous membrane lining the minuter air-tubes.

3. Asthma of the second class, combined with nervous action in the lungs.

Asthma arising from suppressed cutaneous eruption is a good example of the first class. I shall give you a case in illustration :

Mr D., aged 36, was attacked with measles when about six years old. The eruption was never fully formed on the skin; and the little that did come out went in suddenly again. "Since that time," he said to me, when he came under treatment in 1854, "I have been a martyr to asthma." This gentleman underwent a course of water treatment. After he had been two months under my care, a severe eruption came out over the entire body.

This eruption, which had a very offensive odour, began gradually to fade away, within a week after its appearance. Two similar, but less severe, attacks made their appearance during the following month. After the disappearance of each eruption, the asthmatic attacks were less frequent and less severe. Within four months from the time when he came under treatment, the patient returned home restored to health, and free from every symptom of asthma. I feel certain that physicians do not pay sufficient attention to the effect which the "dregs," as they are popularly termed, of acute diseases, arising from morbid matter contained in the blood, have upon the persistence of many chronic affections.

Asthma occasioned by over dilatation of the air vesicles and relaxation of the mucous membrane lining the lesser air tubes, is, if not too far advanced, the most easily cured of all kinds of asthma by the compressed-air bath; and the disease is sometimes curable even where it is so far advanced as entirely to have obliterated the respiratory murmur. During the last year, I have had under treatment two cases of this very advanced stage of the disease, where no respiratory murmur could be heard, not because the sibilous and mucous sounds masked it, but in consequence of the total paralysis, from over dilatation, of the air vosicles. These cases were very severe, and neither of the patients had ever one complete night's rest, in the one case, during the last sixteen years, and in the other during the last thirteen years. No improvement seemed to take place in either case for the first eight weeks of treatment. The asthmatic attacks were just as severe, the breathing just as difficult, and on ascending the

slightest aclivity as laboured as it was before the commencement of the treatment. After this date, however, the respiratory murmur began to be heard over small portions of different parts of the chest, and it was extremely interesting to watch from week to week the gradual extension of this murmur. The night attacks had now almost entirely passed away, and the patients were able to sleep comfortably the whole night. My notion as to how these salutary results were effected, is as follows:—The increased pressure of the air on both sides of the air tubes, and air vesicles, ($7\frac{1}{2}$ lbs increased pressure on the superficial inch,) gradually stimulated the contractile fibres covering the tubules and air vesicles to contract, and at the same time it made firmer the relaxed semi-mucous membrane lining these parts. Which salutary results were still further helped by the increased quantity of oxygen contained from increased pressure in the same bulk of air. Be this explanation the correct one or not, one thing is certain and it is the most important,—*the air vesicles regained their former elasticity.* When the disease has not advanced as far as it had done in the cases just referred to, a cure is almost universally effected. At least, I have found it to be so up to this time. I shall now give two cases in which such cures were effected, premising at the same time that they are but samples of many similar cases which might be presented.

E. F., aged 25, height 6ft. $\frac{3}{8}$in., of delicate appearance, came to the Hospital at Ilkley, November 16th, 1856. He had been subject for thirteen months to attacks of asthma, generally occurring at changes of weather, and

lasting two or three days. They sometimes, also, were excited by working among hay, the smell of which always caused him to sneeze. He believes there is a hereditary tendency to asthma on his mother's side. Chest highly resonant throughout. Respiratory murmur during tranquil breathing, heard with difficulty in the summits of the lungs, and on quick breathing there is a slight harshness in the respiratory sounds in the upper part of the right lung. During the intervals of his attacks he feels quite well. Vital capacity 200 cubic inches. Weight 10 stone $7\frac{1}{2}$ lbs. *Nov.* 25*th.*—Has had six sittings in the air-bath since last report. Changes of weather have affected his breathing, but the attacks have been much less severe. He is pursuing the hydro-therapeutic treatment also. Dripping sheet in the morning, and spouting of back and chest twice a day. Weight 10 stone $9\frac{1}{2}$ lbs. Vital capacity 215 cubic inches.

Dec. 2*d.*—Had a slight attack of asthma on the morning of the 30th, but of very short duration, as he was quite well again on getting up. Respiration is heard more distinctly in the summit of the lungs. Weight 10 stone 12 lbs. Vital capacity 225 cubic inches.

Dec. 9*th.*—No attack since last report. Respiratory sounds everywhere more distinct. Weight 10 stone $13\frac{3}{4}$ lbs. Vital capacity as before 225.

Dec. 12*th.*—Left Ben Rhydding to-day, nearly quite well, and he has continued well ever since. On the 2d of January 1857, this patient writes, "I am glad to say that since my return home my breathing has continued much the same as at Ben Rhydding. Although I have had a severe cold for a fortnight, which has affected me

other ways, yet my *breathing* has not been affected, at which I am rather surprised."

Dec. 18*th*, 1857.—"I have never had one asthmatic attack since I left Ben Bhydding, and my chest is now quite strong."

J. A., aged 18 years, has been subject to asthma, since an infant. The attacks are very severe, occurring especially in wet weather, and during the night; they usually last from three to four days. The chest is rounded in front. Percussion elicits a clear sound over the chest; indeed, now the resonance is decidedly increased in most parts of the chest. Only a very slight trace of the respiratory murmur is to be heard in the upper third of both lungs, the breathing being generally bronchial. In the remaining parts of the chest in front cooing sounds are heard, whilst behind sub-mucous rattles exist over the entire region of the lungs. The sounds of the heart are tumultuous during an attack, and this increased action usually continues more or less severely for several days after the attack has passed away. There is scarcely any appetite, and the patient is very weak. The asthmatic attacks were very severe in this case. During an attack, the features became pale and livid, the eyes strongly congested with venous blood, their pupils dilated, and they appeared to start from their sockets. The head was thrown back, the mouth open, and the tongue hung down over the lips, which were of a dark purple. The poor fellow held on by the bed with both his hands, making it a fulcrum of resistance, so as to admit more readily the full action of the muscles of the neck, shoulders, and chest. It was a bitter sight to see a poor young fellow of tender form, but

with true English pluck, seated before you—three-fourths strangulated, and yet you could not relieve him while the horrid attack was on. This patient commenced the air-bath after one of these attacks had passed off. During the first sitting the pulse fell 20 beats, and while the increased pressure was on, ($7\frac{1}{2}$lbs) the breathing was comfortable and free. After seven baths the breathing is easier, and the sleep better. He has had only one asthmatic attack during the last week, and it was not at all so severe as formerly. After twenty-four baths the breathing was very decidedly better, the mucous rattles were much less, and the respiratory murmur was more natural and more general on the front of the chest. The patient has had only one asthmatic attack during the last three weeks, and it was comparatively slight.

When this young man had been under treatment about six months all the symptoms had disappeared, the dyspnœa was removed, no sibilous or mucous rattles could be heard in any part of the chest. The respiratory murmur was everywhere very distinct, the front of the chest was less convex, the shoulders were thrown back, and the anxious, pallid, careworn features of the asthmatic were replaced by the cheerful expression of health. The patient had not had one asthmatic attack during the last month he was at Ben Rhydding, and the last time I heard from him, he stated that he was in excellent health, and quite free from his former asthmatic attacks. Besides the employment of the compressed-air bath, I used in this case also a mild bracing course of the water treatment, and a well-regulated series of gymnastic movements. For without these two powerful adjuncts,

especially the former, I do not believe I could have effected such a thorough cure. Indeed, I have only to repeat what I have already more than once stated, that I could not produce with the compressed-air alone one half of the benefit obtainable by it when combined with a judicious use of water, and the bracing effect of this fine atmosphere.

March 10*th*, 1858. This youth continues free from asthma, and he is in the enjoyment of good health.

I have now very carefully watched the effect of the compressed-air bath in nearly forty cases of asthma, and in all of them the benefit derived from its use has been very great.

In conclusion, as I have stated before, I regard the compressed-air bath, associated with mild tonic treatment, and residence in a bracing district, as the best, the most powerful, and the safest means which we possess for the cure or relief of phthisis, chronic bronchitis, and asthma. I look upon it also as the best treatment for nervous palpitation of the heart, chronic head-aches from over study, and chronic jaundice; and I think we have no means at our disposal which can so certainly reproduce, when partially or entirely suppressed, the retarded periodical secretions.

I am, dear Sir,

Truly yours,

W. Macleod.

April 13, 1858.

SINCE the foregoing letter was written in October last, the whole of Winter and the most severe months of Spring have passed. I have, therefore, had further experience respecting the suitability of Ben Rhydding as a residence, during those seasons of the year, for patients labouring under chest affections. The result of this increased experience, is such as to enable me to reiterate, and if possible, in stronger terms, the opinion which I expressed two years ago: "That a residence at Ben Rhydding, along with the treatment pursued there, during the Winter and Spring months is very decidedly beneficial for patients labouring under phthisis, chronic bronchitis, and asthma, the result almost invariably being increased general vigour, the disappearance of all febrile symptoms, the removal of indigestion, diminished expectoration and cough, increase of weight, entire removal of the night sweats, arrest of the further developement of tubercular matter in the lungs, the entire stoppage or else the diminished secretion of muco-purulent matter in the air tubes, increase of appetite, greater expansibility of the walls of the chest, the more or less complete removal of asthmatic exacerbations during the night, and a sense of greater ease and freedom in ascending the hills." Not one of the patients labouring under phthisis, chronic bronchitis, or asthma, who have been under my care this Winter and Spring, has fallen back; on the contrary, they have all continued steadily to improve.

The following case proves analytically and cogently the efficacy of the compressed-air bath in asthma. A lady, twenty-four years of age, had suffered severely from asthma since early childhood. The attacks were very severe almost nightly, and often lasting for two days continuously. The lips were always more or less of a livid hue, the eyes slightly

congested with venous blood, and the general appearance of the sufferer gave the impression that the blood was not sufficiently oxygenated. This lady placed herself under my care for two months about five years ago, but little or no benefit was derived from the treatment pursued, and she returned home as severely asthmatic as when she came. Hearing of the efficacy of the compressed-air bath in asthma, this lady placed herself again under my care during the Winter just past. Her appearance and the asthmatic attacks were much the same as when here five years ago, with this exception, that she was obliged to burn in her bed-room, two, three, or four times during the night, paper that had been steeped in a strong solution of saltpetre, in order to keep off the attacks as much as possible, and to allow of sleep. After three compressed-air baths, each of which lasted two hours, and was seven and a half lbs additional atmospheric pressure, this lady was enabled to sleep the whole night without waking, and during the whole period that she was under treatment, she did not once require to use the saltpetred paper; she slept the whole night through without the slightest discomfort, and she has not once suffered from even a slight asthmatic attack, although she had a cold in the head, which formerly always brought on a very severe one. This case, I repeat, illustrates well the power of the compressed-air bath in asthma, for the patient had been previously here, but had derived no apparent benefit from the medical treatment pursued, from residing in that fine air, from a regulated diet, nor from all these means combined. But no sooner does the patient commence taking the compressed-air bath, than she is relieved, the asthmatic attacks disappear, her appearance is changed for the better, the lividity of the lips, the venous congestion of the eyes, and the general torpidity of the frame pass away.

Although the additions to my letter greatly exceed what I had at first intended, I cannot yet refrain from making one more. The following letter is from a Student of Medicine, who was a martyr to Nervous Asthma in its worst form. It was so severe as totally to unfit him for prosecuting his medical studies, and he had accordingly almost made up his mind to abandon altogether his professional intentions. He has now however resumed these studies afresh, and the subjoined letter will show clearly enough to what he himself ascribed his restoration to health and vigour. It is now four months since he quitted Ben Rhydding.

"May 15, 1858.

"My Dear Sir,

"When leaving Ben Rhydding you kindly asked me to let you know how I should get on. I am happy to be able to tell you that I am wonderfully free from asthma, and have been so ever since my stay with you. Indeed, I have not been so well for some years as I am at present, and hardly ever expected to be so. Whenever I do get a cold now (which is seldom the case) I have very little asthma with it, and am generally over it in a day, which I need hardly say was not the case before I tried the Air-Bath. I almost look on it as the *panacea* for all chest complaints.

"I take a cold bath every morning, which I also think most useful in my case.

"I am happy thus to testify the power of compressed-air after my experience of its efficacy, in the hope that others may be encouraged by it, who are perhaps as desponding as I once was.

"Yours, my dear Sir,

"With many thanks."

CHAPTER VI.

Ben Rhydding—A Suitable Resort for the Delicate and Consumptive.

A Bracing Climate better for Consumptive Persons than a relaxing one—Statistics of Consumption with reference to Climate—Causes of Consumption—Possibility of its Prevention or Cure—That Climate most suitable which best admits of the Full and Successful Carrying-out of the Necessary Remedial Treatment—Leading Features of that Treatment—*Air*—Pure Air in and out of doors Absolutely Essential—Medical Testimonies thereto—*Exercise*—Should be in the Open Air—Riding—Walking—Influence of Beautiful Scenery—Gymnastics—*Diet* Should be very Nutritious and Digestible—Points to be Attended to—Conclusion—Entire Suitability of Ben Rhydding for the Treatment, Therapentic and Hygienic, of Consumption.

It is manifestly a question of the very greatest importance—What kind of climate is most suited to the successful treatment of consumption? Should the consumptive patient be sent to a warm relaxing climate, or to a bracing one? The reader does not require to be told that the great majority of the medical profession have pronounced in favour of the former. When a consumptive patient can afford it, he is almost invariably sent to some tepid climate—to Madeira, Pau, Nice, or Rome; or to some of the warmest and most relaxing spots in our own island. This is the practice of the majority of physicians; but, there are not wanting medical men of high standing who affirm that it is an error. Judging these places by

the best of all tests—their success in restoring the consumptive to health—it must be acknowledged that they have failed to a signal extent. The inscriptions in the grave-yards of these haunts of the consumptive tell only too strikingly, that very many of those who come hither, come to die. We are not so bold as to assert that these lives might have been saved, by careful treatment, in a bracing climate, for, it is a mournful truth, that a vast number of cases of consumption could not be cured in any climate: but we do assert, that where consumption can be treated with any hope of recovery, the proper climate is not a tepid and relaxing one. "One of the first things," says Dr. McCormack, in his able little work on Pulmonary Consumption,* "which non-medical people who have the means think of, is to send their consumptive relatives to some tepid climate, where, perchance, they languish and decay with yet greater rapidity than they would have done had they remained at home. I have been myself in warm climates, and in some of the ordinary haunts of the consumptive, and am of opinion, that the langour and listlessness which they so frequently engender, are anything but calculated to infuse vital energy into phthisical constitutions." We hope to be able to shew in this chapter, that a pure bracing air is that which is most suitable for invalids and consumptives. The atmosphere of Ben Rhydding is of this description; and, if we can prove our point, it will follow, that that establishment is admirably fitted, at once from its means

* "On the Nature, Treatment, and Prevention of Pulmonary Consumption, &c. By Henry McCormack, M.D." *London* 1855.

of treatment and its position, for the successful treatment of consumption. That this is no fanciful thesis, taken up to serve a purpose, might be shewn by quotations from writers, whose "orthodoxy," and eminence are beyond dispute. It will be enough, however, in this place to give a single sentence from the eminent Physician already quoted: "As regards mere change of air, the shores, almost any of them, of our own islands, *the mountain slopes and summits of our higher lands, the airy downs, the heaths, and moors, are severally preferable to any Nice, or Rome, or Pau.*" A more distinct and authoritative statement of the superiority of such a climate as that of Ben Rhydding could not be desired.*

Mr. Keith Johnston, in a paper on the "Geographical Distribution of Disease throughout the Globe,"† has the following interesting remarks: "Tubercular consumption cannot be said to be a disease peculiar to any one portion of the globe, or to be dependent on climate in any appreciable degree, unless it can be shown, that it does not prevail in the excessive climates of the North. It originates in all latitudes, from the equator, where the mean temperature is 80°, with slight variations, to the higher portion of the temperate zone, where the mean temperature is 40°, with sudden and violent changes. The opinion long entertained, that it is peculiar to cold and humid climates, is founded in error. Far from this being the case, the tables of mortality of the army and navy of

* It may not be out of place to mention here, that Plutarch states in positive terms that all the Asclepia, or Temples of Health, in Greece, were erected in high situations.

† Journal of Public Health, for July 1856.

this and other countries, as well as those of the civil population, warrant the conclusion, that consumption is more prevalent in tropical than in temperate countries. Consumption is rare in the Arctic Regions, in Siberia, Iceland, the Faroe Islands, the Orkneys, Shetlands, and Hebrides. And in confirmation of the opinion that it decreases with the decrease of temperature, Fuchs shows, from extensive data, that in Northern Europe it is most prevalent at the level of the sea, and that it decreases with increase of elevation to a certain point. At Marseilles, on the seaboard, the mortality from this cause is 25 per cent.; at Oldenburg, 80 feet above the sea, it is 30 per cent.; at Hamburg, 48 feet above the sea, it is 23 per cent.; while at Eschwege, 496 above the sea, it is only 12 per cent.; and at Brotterode, 1800 feet above the sea, 0·9 per cent. It is calculated, that in the temperate zone, within which nearly all the civilized inhabitants of the globe are located, at least one-tenth of the population die of this malady. It is uniformly more fatal in cities than in the country: in England, the excess in cities is equal to 25 per cent."

The facts here brought forward, so far as they go, afford a presumption that a warm and relaxing climate is not what should be recommended to the consumptive. For, is it likely that regions which in a pre-eminent degree produce consumption should be the best fitted to accomplish its cure?

But we shall not insist upon this point, for we believe that consumption is to be traced to other causes rather than climate. These causes, operating in low and warm climates, are much more productive of this disease than

they are in higher and colder localities; and to this we may probably trace the greater mortality from consumption in places which are high in temperature, and low in position. We do not require to enter on any account of the causes of consumption. One kind is hereditary; while another is produced by many causes, the chief of which is acknowledged to be the breathing of impure air. We need not speak of the effects of noxious air, insufficient exercise, in-door, sedentary occupations, and other causes of consumption. It is these things, and not the breathing of cold air that produces consumption.

There can be no doubt, that by a careful avoidance of the pre-disposing causes we have mentioned, a vast number of cases of consumption would never occur, or might be recovered even after they had begun to show themselves. Dr. McCormack goes much farther than this: "The cause and radical cure, in short the prevention of consumption and scrofula, with all their concomitant ravages, are placed, as absolutely as small-pox itself has been placed, within human control."

What, then, is the proper treatment for the prevention or cure of consumption? We are not, in answering this question, going to enter upon an account of the more strictly therapeutic means—the use of the water system, and of the compressed-air bath. These have already, in other chapters of this work, received ample notice; and we would only call particular attention, in passing, to the letter with which Dr. Macleod has favoured us, descriptive of the new and highly successful agency of compressed-air, which seems destined to introduce a new era in the treatment of consumption. We are now, however, to glance

at what may be called the *hygenic* treatment of this disease: and one of the most important points in connexion with that subject is involved in the answer to the question with which we started—What description of climate is most favourable for the successful treatment of consumption.

Now, we think we cannot be accused of taking too much for granted, when we answer the question by saying, that that climate is manifestly most suitable for the consumptive, and consequently also for other delicate persons, which best admits of the full and effective carrying out of those remedial measures which science and experience alike shew to be necessary, whether for their complete restoration, or, where that is not to be looked for, for the alleviation of their sufferings.

What, then, is that treatment?

It has long been practically acknowledged by the profession, that it is not to medicines mainly that we are to look for the cure of this disease. Hardly any one, indeed, will deny that they have a certain value in its treatment; but their place is decidedly an inferior one—so inferior, that some physicians of eminence of the present day have ignored them altogether. The great object which the physician has in view, when called upon to deal with this disease, is to check the local and general decay, and to repair, so far as may be possible, the damage which has been sustained. And how is this to be done? Simply by supplying to the system those elements which are required to build it up into a state of health. In this, in a more marked manner than in most other diseases, we must look to nature to recover herself, and everything

that can assist her to do so must be carefully attended to. What, then, is needed to draw out and develope the latent vital force? We reply—*good air, nourishment, and exercise.* These in conjunction with the therapeutic treatment which may be deemed necessary (and we have already described the treatment employed at Ben Rhydding,) will restore the vital energy of the system, if it is capable of restoration, and repair the destructive waste which the frame has undergone, or prevent that waste, if only beginning to show itself. Good air—that is, air perfectly free from all impurity—is the food of the lungs, and is absolutely necessary for the preservation, or restoration, of a healthy state of the blood. Nourishing food is equally necessary for building up the frame, and repairing the waste which takes place naturally, or through disease. And exercise strengthens the muscles, (and consequently the whole frame,) promotes the free circulation of the blood, assists respiration, and helps digestion.

The climate which is the best suited for the successful use of these means, is the most suitable for the residence of the consumptive and the delicate. We are of opinion, that an examination of the whole subject will make it evident, that a pure bracing atmosphere is the most beneficial one for the treatment of consumption. We are even of opinion, that winter, in a sheltered yet bracing locality like Ben Rhydding, when out-door exercise is properly regulated, may be more suitable than summer for many cases of consumption.* If we compare the effects, on the

* We must take leave to say here, that this remark regarding the suitability of winter in a bracing climate for the successful treatment of

healthy body, of a warm and of a temperately cold climate, we shall be constrained to give the preference to the latter. A warm climate—the heat even of our own

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consumption is not a mere speculation. The experiment has heen tried at Ben Rhydding, and it has heen successful. We heg to draw special attention to Dr. Macleod's own statement on the subject, as given in the preface to a pamphlet on the Air-Bath, pnhlished last year.

"Several patients had come to me, so very seriously ill, that their physicians expressed it as their opinion, that they could not live above a month or two, and I was myself inclined to the same opinion; hut, nevertheless, they *would* come. These patients gradually improved; and they hecame so satisfied of the efficacy of the treatment, that, when I proposed to them to go south during the winter and spring months, they requested permission to remain at Ben Rhydding, helieving themselves safer here than anywhere else. They did remain, but were not permitted to go out in the mornings hefore 10 o'clock, nor after 4 P.M. These patients, instead of falling hack, as I had feared, on the contrary, continued to improve; and, indeed, they henefited more during the cold winter months than they had done in the previous summer ones. Finding such to he the case, I had all my passage windows nailed up, and the entire house ventilated from the roof by Watson's unequalled ventilators, hy which means all draughts were prevented; and, at the same time, I had the passages heated hy means of steam pipes. The result of these improvements was, that Ben Rhydding hecame as warm and as comfortable in winter as in summer. I now receive, without any hesitation, phthisical patients during the severest weather, and what will perhaps appear strange, they nearly all do well. They go out during the day, in almost all sorts of weather; and even during the late severe frost, with snow upon the ground, and the temperature ten degrees helow the freezing point, patients with only half a lung to hreathe hy, took exercise in the open air, and with decided advantage. I allow no respirators; for I consider them to he not only of no benefit, hut, on the contrary, decidedly prejudicial. The patients are warmly clad, avoiding such a weight of clothing as would he oppressive; the feet are always kept dry and warm; and the clothes are ordered instantly to he changed whenever they happen to become in the least degree damp. They are not permitted to go out before hreakfast, or after three or four o'clock afternoon."

summer, and that too in places of considerable elevation —begets langour and listlessness. The healthy are indisposed for exertion—how much more so the delicate and consumptive! The patient is willing enough to spend much time in the open air in such a climate, and to let himself be driven easily in his carriage (if he can afford one) from place to place, but personal exertion of the slightest kind is fatiguing, and the exercise which is absolutely necessary to give the body any chance of restoration to its former vigour, would be intolerable. The warm, balmy breezes of such climates, pleasant though they may be, have little health-restoring virtue in them; and they will seldom give colour to the pale cheeks which they fan so gently.

A bracing atmosphere on the other hand, is fraught with invigorating power. There is not, in such an atmosphere, the oppressive listlessness and indisposition to exertion which are, to a greater or less extent, produced by a warm climate. The wind which blows keenly on the cheek, by promoting the circulation of the blood, may help to bring back the ruddy hue of health. In such a climate the healthy are disposed for exercise; while the invalid is easily induced to make the effort, and soon finds pleasure as well as benefit in bodily activity. A bracing air, moreover, has a marked effect in improving the appetite—a result of the utmost value in consumption; as it is the object of the physician to raise the body of his patient by diet of the most nourishing kind. Other advantages of a bracing climate might be adduced here; but enough, we think, has been said to indicate, in a general way, the superiority of a bracing atmosphere over a warm

and relaxing one. That superiority will appear more fully when we have noticed the general features of what we have called the hygienic treatment of consumption. It will be seen, from the nature and details of that treatment, that it can be carried out best in a bracing climate. We shall arrange our further remarks under three general heads :—*Air, Exercise, Diet.*

1. *Air.*—We have already avowed our conviction, that a bracing air is the most beneficial for phthisical patients. Pure fresh air is the first necessary of life. Without it the recovery of a consumptive patient is absolutely hopeless. In-doors, he should breathe an atmosphere as pure as that without. We quote the following remarks on this point from an able paper by Dr. Benjamin Richardson :* "No cozy room, with a temperature at 70°, with every crevice closed, and with an atmosphere in a dead calm and laden with impurities, should be permitted. But the temperature should be from 55° to 65° Fahr.; the fire, if there is one, should be in an open grate; and by perforated panes in the windows, and a free chimney vent secured by an Arnott valve, the freest possible current of air should be kept circulating through the room. If the patient is cold, let him approach the fire, but let him not labour under the popular and fatal error, that the way to obtain animal warmth is to shut out the air and roast the body. The heat of the body is made in the body itself, by virtue mainly of the oxygen supplied in the air; and, as the body absorbs external heat with great difficulty, it

* "On the Hygienic Treatment of Pulmonary Consumption," in the *Journal of Public Health*, October 1856.

would be as wise to attempt to give warmth by fires, hot bottles, and hot air to a man who is not inhaling a due amount of oxygen, as to attempt the same process on a marble statue. In a word—external heat is useful only in preventing the too rapid radiation of animal heat from the surface of the animal body. Alone, it cannot supply heat; but when a wholesome air is inspired, it can secure the retention of the heat that is manufactured in the animal furnace."

So much for the in-door life of the consumptive patient. The utmost care must be taken to provide him with a full and constant supply of fresh and pure air. But, it is not to in-door treatment, however careful and judicious, that we are to look for the restoration of the patient to health. Whenever he is able, *he should be in the open air.*

It may be objected here, that exposure to a bracing air such as we contend for, is likely to have an injurious effect on the consumptive patient. The cold air, it is said, may strike a chill into his lungs, and the exposure, instead of benefiting him, may aggravate the disease. This is one of those bugbears, the dread of which has occasioned the sacrifice of many a life, which otherwise might have been preserved. No doubt sudden transitions from heat to cold are injurious, and may be productive of the worst consequences. No doubt it would be highly injudicious to take a patient out of a close room, the temperature of which resembles that of an oven, and suddenly expose him to the open air. But, if the patient's room has been freely and constantly supplied with air from the outer atmosphere, and if he be made to depend for heat upon warm clothing rather than upon fires, he will be

able without danger, and without the need of any such doubtful protections as respirators, to expose himself freely to the open air, even though its temperature may be very considerably under that of the apartment which he has just left. "It is not breathing cold air, or admitting it into our dwellings merely," says Dr. McCormack, "It is the insufficient protection of our persons, not by warm foul air, but by warm pure air, and warm coverings, that occasions taking cold." The same writer remarks: "The phthisical sufferer should spend as much of his time in the open air as his strength and the weather will permit. This, his clothing being suitably adjusted, he should do in all seasons. A light yet warm covering in cold weather for invalids, is a silk or fine cloth pelisse or overcoat wadded with cotton or down, and lined with silk. It should be made very loose. It need not weigh more than a few ounces, and keeps out the cold most effectually. Thus, and otherwise guarded and protected, the open air will prove not only harmless but most grateful to the consumptive sick, whether they be on horseback, in carriage, or on foot."

We regard this as a point of so much importance, that we cannot omit the following distinct and emphatic declaration on the subject by Dr. Jackson, an eminent American Physician:* "In the day-time, the patient should not be kept within doors by clouded skies, nor by east winds, nor by slight falls of rain, or of snow. Even

* Letters to a Young Physician just entering upon Practice. By James Jackson, M.D., LL.D., Professor Emeritus of the Theory and Practice of Physic in the University of Cambridge, U. S. *Fourth Edition.* 1856.

in tempestuous weather the more hardy ones may drive out somewhat. It is well for the patient to feel that *the risk is in staying in the house,* and not in going out of it. In all this, I have had reference to tubercular subjects in the earlier periods of disease. But, a patient with the right spirit, may go abroad somewhat to the last week, and even to the last day of life. If any one object to dragging out a patient when greatly reduced in strength and flesh, I agree with him; I would not drag him out. But some persons find the open air so necessary to their comfort, that they are anxious to go abroad, though they know that death is near at hand. I think it right that such should do so; they may suffer somewhat in doing it, but they suffer in the opposite course. Contrast with such a case a patient, who passes the last two or three months of life in bed, sitting up, at most, an hour or two in the day. In such a one, the misery of muscular weakness, added to the necessary evils of the disease, is extremely great. One great evil from confinement in bed consists in the bed sores, which for weeks before death, do not permit the patient to find any position in which he can rest, without great pain. It is true, that inevitable circumstances may prevent the patient from the exercise, by which these evils may be averted. But, for the most part, we may guard against them by keeping in mind one physiological principle. In a wasting disease, like phthisis, the muscular strength, once lost, can seldom be regained, and never in the later stage of disease; while the muscles, if kept in daily use, will retain their power, though not unimpaired, almost to the last moment of life."

So important is it for the consumptive patient, in whatever stage of the disease, to spend as much as possible of his time in the open air. We need add nothing to the testimonies we have adduced, to the necessity of an out-door existence for the successful treatment of consumption; nor need we, after such express and confident declarations as those which we have quoted, dwell further on the perfect safety with which, by taking the proper precautions, the patient may undergo the utmost open air exposure that may be desirable. But we must remark, before proceeding with the other points which have to be noticed, that it is manifestly very desirable that this out-door life of the consumptive patient should pass in a locality fitted by its beauty to inspire him with cheerfulness. The importance of this point can hardly be over-estimated. The mind of the consumptive requires to be invigorated as well as his body; and to this, fresh and beautiful scenery will contribute in no slight degree. Such scenery gives the patient an *object* for going, and staying out of doors, and helps to withdraw his mind for a while from brooding upon himself and his own infirmities. This leads us to speak on our second general head.

2. *Exercise.*—It is not enough that the patient should be in the open air as much of the day as possible: it is further requisite that he should take active exercise, of a kind, and to an extent, suited to his strength. This exercise should be taken in the open air, to as great an extent as possible. We could quote innumerable passages from medical writers in favour of exercise in the open air; but this is unnecessary, as we are not aware

that any physician of standing denies its desirableness. Open air exercise as a remedy for consumption is no new idea. Sydenham, the father of English medicine, after mentioning the medicinal treatment which he employed for the cure of phthisis, says, "If it hath failed at any time, I have not known that long and persisting riding in a good air (which refreshes both the lungs and the blood, detained with hectical heat) hath ever failed, and though riding hath done well in hyphocondrial and other distempers, yet it does better in a phthisis than in any other case, for, by such repeated successions of the lower belly (in which are seated most of the separatory glandular organs) those are put upon the performing their several functions, by having their natural heat excited, and the blood is by this means depurated, and (as it were) churned over anew."* The great importance of active exercise, of one kind or another, in the open air is affirmed in terms scarcely less strong by not a few writers of the present day. Any exercise is better than a life of langour and inactivity. But what kind of exercise is most suitable for the consumptive patient?

Dr. Sydenham, in the passage just quoted, advises riding on horseback. He is quite enthusiastic in his praises of this mode of exercise. Some further remarks which he has made on this point are well worth quoting. "I am sure," says he, "that if any physician had a remedy for the curing of a phthisis of equal force with this of riding, he might easily get what wealth he pleased: in a word, I have put very many upon this exercise, in order

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Works. Printed for the Sydenham Society. Vol. II. p. 331.

to the cure of consumptions, and I can truly say I have missed the cure of very few; insomuch that I think how fatal soever this disease be above all others, and how common soever (for almost two-thirds that die of chronical diseases die of a phthisis,) yet it is in this way more certainly cured than most diseases of less moment; provided always, that this travelling be long persisted in, according to the age of the patient and length of the disease. For, a man that is more ancient, and hath had the disease a great while, cannot expect to be cured so soon as he that is young, and hath had it a little while. And, provided also, that besides his persisting in riding he go into new places; for a change of air and diet do as considerably add to the cure as the exercise itself. And I doubt not, but those who travel into foreign parts to be cured of a phthisis, might save their labour and yet attain their end, if they would ride a great way, and through several places of their own country. Women, or very weak men, that cannot ride on horseback, may ride in a coach, and yet attain the same, as I have seen by often experience."

Riding on horseback has considerable advantages, and should not be neglected when practicable. As Dr. Jackson remarks, "it does not embarrass the organs of respiration which walking does in some instances; and it does bring muscles into play, which *driving*, or riding on wheels does not." It has, moreover, the advantage that it affords more rapid, and longer continued motion than walking. Everybody knows the inspiriting effect of a brisk trot or rapid gallop; and this effect is invaluable in consumption. Yet, riding on horseback (or in carriages,

which is of little value as positive *exercise*, only involving a gentle shaking of the frame, but very useful and desirable for making excursions to scenery of interest too distant to be otherwise reached) is by no means to be regarded as the chief mode of active exercise in the open air. Were it so, the cases of many thousands of consumptive persons, who have not the means of availing themselves of such exercise, would be very sad and hopeless. But riding on horseback, however beneficial it may be, is not absolutely essential for the consumptive patient. The most natural method of exercise, and undoubtedly in the main the most beneficial is *Walking*.

In walking there is much more muscular exercise than in riding. Though all the different sets of muscles are not called into action, the exertion promotes the free circulation of blood through the different parts of the body, and produces a more active nutrition. The patient will soon feel that it is really for his advantage to persevere in this exercise. It should be engaged in systematically and confidently, and carried as far as his strength will permit. With perseverance, if he is capable of recovery at all, the patient will steadily increase in vigour. This exercise, we have said, should be in the open air. It should be, also, in the open country. In the green fields, by the river's brink, on the mountain slopes, and on the breezy upland moors, the phthisical or delicate patient will be surrounded by influences at once soothing and encouraging. Let him not confine himself within the necessary limited bounds of any gardens and pleasure grounds, however beautifully laid out: but let him

wander as inclination leads him, among the scenes of attraction that may be within reach. "To-morrow, to fresh woods and pastures new." Walking will become more a pleasure than a task, when, instead of always following the same beaten round, the patient varies his route by going in directions as yet unfamiliar. We shall not dwell longer on the importance of walking, as an exercise for phthisical persons, but shall merely remark, before leaving the subject, that all writers, who recommend this mode of exercise, agree that it should be steadily persevered in, and continued till a gentle feeling of fatigue is experienced through the whole musular system. The exercise may be repeatedly resumed during the day, after the slight feeling of fatigue, which may have interrupted it, has passed away.

Scarcely inferior in importance to walking in the open air are *Gymnastic exercises.* These, too, in so far as practicable, should always be done in the open air. In a previous chapter of this work we have entered at some length into the subject of gymnastics, and have given a brief, but, we think, comprehensive, sketch of a system of exercises. We do not, therefore, require to dwell upon the subject at any great length here. The object of gymnastics is to strengthen and develope the muscles of the various parts of the body. This is exceedingly necessary in consumption. In that disease all the muscles of the body suffer to a greater or less extent. It is by exercise that the muscles will most speedily regain their vigour. Indeed, we may say with safety, that, without exercise, their restoration to the normal condition of health and strength is almost impossible.

In the chapter on gymnastics, we have classified exercises, according as they put in motion the different parts of the body.—We have there confined ourselves to what are called free exercises, for we believe that these involve all the movements really necessary for the preservation or restoration of a healthy state of the muscular system. From these exercises the physician may cull out a *prescription* that may be of more essential service to the phthisical patient than the most cunning mixture of drugs that can be compounded. The movements of the arms and trunk (*see chapter IV.*) are of great utility to the consumptive. They serve to enlarge the cavity of the chest, and to keep the respiratory muscles in a state of active nutrition. The immense importance of exercising these muscles may be conceived, when we reflect on the evils attendant on their inactivity, and consequent decay, in consumption. These are well stated by Dr Richardson in the paper from which we have already quoted: "If to the loss of capaciousness in the lungs to receive air, there is added a daily increasing failure in the muscles by which the acts of inspiration and expiration are carried on, it is clear that a double evil is at work. Now, this double evil is most actively presented in consumption. As the respiratory muscles, together with the other muscles, lose their tone, so do the general symptoms of exhaustion increase in severity; sometimes without very marked change in the pathological condition of the lungs. As a sequence day by day, as the nutrition of these muscles decreases, and as they fail in tonic contractile power, they gain in excitability; so that the irregular spasmodic contractions, to which they are subjected in the act of coughing, are

produced by the merest excitement, and the cough is more frequent as it becomes more feeble."

These evils may be obviated—or, where recovery is hopeless, they may be very much lessened—by a regular and careful exercise of the muscles, by the gymnastic movements to which we have referred. We need not repeat here what we have already said, as to the manner in which these exercises should be performed. We shall merely say that they should be done thoroughly, regularly, and perseveringly. In all cases, where practicable, they should be done in the open air; and no articles of dress should be worn which interfere with their free performance.*

3. *Diet.*—All physicians are agreed as to the necessity of a nutritious diet for the consumptive patient. The exercise in the open air of which we have been speaking will make him capable of receiving and benefiting by such a diet.

> "May good digestion wait on appetite,
> And health on both,"

says Shakspere, and we do not know any way in which the saying may be more effectually fulfilled than by habitually taking abundance of exercise in the open air. But, what is the best description of diet, in the case before us?

Very great importance is given to cod-liver oil, as an

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* Admirable in their way, both for exercise and amusement, are such out-door games as howls, skittles, &c., &c., for engaging in which there is every facility at Ben Rhydding. Our space will not allow of more than this passing reference to them.

article of diet, by the majority of physicians of the present day. We entirely agree with the opinion expressed by Dr. Macleod in his letter, (*see Chapter V.*) that the value of this article has been greatly over-rated. We believe that there is no necessity for confining the patient to so great an extent to a diet of cod-liver oil. Let it be used by all means in its place. But why should the patient's sustenance be presented to him in the repulsive form of medicine? For it is difficult to look upon the oil in any other light. The patient's tastes should be consulted, and, so far as the physician thinks desirable, they should be gratified. The meal should be rendered as attractive as possible to the patient, and it should be at once of a highly nourishing and digestible description. We give Dr. McCormack's account of the fitting articles of diet for the consumptive patient, without, however, vouching for every item in his bill of fare: "Roast meats and boiled, fish, flesh, and fowl, indeed both wild and tame, oysters, milk, fresh curd, and farinaceous matters, good bread, vegetables and fruit, tea, chocolate, and coffee, sugar, good wine, porter, and brandy, all under judicious regulation and management, are the fitting aliments of the consumptive. To give these restoratives to the proper extent so far as the patient can obtain them, and to enable the stomach, by means of gentle tonics, to digest them, will be among the medical attendant's more obvious duties. The accomplished physician is perfectly aware of the different bitters—the cusparia, the calumbo, the orange peel, and the quinine; the various and excellent preparations, the citrate, lactate, and others, of iron; and the occasional medicines, without further comment, to

choose from, and judiciously to administer. The rich sufferer will often assuage his hectic pangs with great luxury and comfort, by means of champagne, and sparkling hock, and burgundy, while soda water, and the various pleasant preparations it subserves, commend themselves in moderation to every one."

In a disease of so much gravity as consumption, it will evidently be the duty of the physician to give to his patient as articles of diet, whatever he is convinced will be really of benefit in building up his enfeebled frame, and, at the same time, in assisting the process of respiration. We believe it will be found, that a simple but nutritious diet, such as that commonly prescribed at Ben Rhydding and similar establishments, is well suited in general for the consumptive patient, being supplemented as necessary by wines and other luxuries not allowed to other patients. With respect to the quantity of each meal, Dr. Horner judiciously observes that it should al-always be short of that which would create a sense of oppression, either of the mind or body. This rule, laid down for hydropathic patients in general, is especially to be observed by the consumptive. Care must be taken not to overload the stomach with food, however nutritious. The meals, if more sparing, may be made more frequent than when in health, should the appetite of the patient require it.*

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* We shall give just a single example of the diet which Dr. Macleod prescribes to his consumptive patients at Ben Rhydding. Of course there can be no uniform diet applicable to all cases, for each patient's diet must be regulated by the circumstances of his own individual case. The patient whose dict we are going to quote returned home quite well.

It is almost superfluous to point out to the consumptive patient, that it is important to him still more than to others, to secure the perfect mastication of food. He should also allow himself some time to rest, both before and after meals. A state of heat or fatigue is unfavourable to disgestion. Equally unfavourable is a state of excitement or anxiety of mind. Every disturbing influence, whether physical or mental, should be carefully avoided; and only when that is done can the full benefit be expected from any system of diet, however carefully and judiciously regulated.

Thus, we have rapidly gone over the great leading features of what has been called the Hygienic Treatment of Consumption. There can be no dispute as to the fact, that the treatment which has been so briefly sketched is of the utmost value and importance, both for the alleviation and the cure of this distressing disease. Any establishment where that treatment can be fully and effectively carried out, will manifestly be a fitting residence for the consumptive.

He gained in weight two stones and eleven pounds during his stay at Ben Rhydding. Dr Macleod prescribed for him the following diet: A breakfast cupful of new milk, with a dessert spoonful of rum in it, at 7 a.m.; breakfast—mutton chop, or beaf steak, or cold beaf, or light-boiled egg, with a breakfast cupful of one-half cocoa, and one-half milk, and bread and butter; noon—a raw egg beat up with a tea cupful of new milk, and a dessert spoonful of sherry; dinner—animal food, bread, potatoes, and half a tumbler full of water; evening meal—cocoa, bread and butter. In addition to this the patient had a dessert spoonful of cod liver oil, with eight drops of the syrup of iodide of iron and quinine, in the fourth part of a tumbler of bitter beer, two hours after breakfast, and immediately after dinner.

BEN RHYDDING *is such a place.* Let the reader take a comprehensive view of all that has been advanced in this chapter, regarding the climate and the general treatment most suitable for the delicate and the consumptive, and compare it with the capabilities of Ben Rhydding in these respects; and we think he will be ready to acknowledge its great suitableness as a place of resort for such persons. The climate of Ben Rhydding, though by no means severe, is bracing. The site on which it is built was expressly chosen on account of its salubrity and the purencss and freshness of the air. We have given various reasons why, in very many—if not in all—cases of consumption, a bracing climate should be preferred to a relaxing one; and we have adduced medical testimony of a high order to shew, that warm and relaxing climates, so far from being necessary for the cure of consumption, have often only the effect of accelerating its fatal course.

We have shewn, that the question as to climate resolves itself into an enquiry as to the most effective and successful carrying out of the treatment of consumption suggested by sound reason and enlightened science. We have rapidly shown what that treatment is; and we think no man will venture to say, that it can be carried out in a relaxing climate as well as in a bracing one.

And, having settled that general point, we again affirm, and can have little difficulty in proving, that Ben Rhydding is a suitable resort for the consumptive. There, the hygienic treatment, which we have described, is most thoroughly and effectively carried out. Indoors, and out of doors, the patients breathe the purest air. From the

windows on all sides of the house they look out on scenes of the most varied beauty. They can walk as inclination leads them, in the inclosed pleasure grounds, by the banks of the crystal Wharfe, on the hill sides, or on the heights of Rombald's Moor. The country round is rich in scenes of romantic beauty; and the patient may have abundance of charming excursions. Particular attention is paid to active exercise. Not only is the patient required to walk as much as may be consistent with his strength; but, he is also directed to perform the therapeutic movements which are so essential to the strengthening and developing of the muscles. Diet, too, is carefully regulated; and the utmost attention paid to the requirements of each individual patient. We do not dwell on the numerous arrangements of the building, which all combine to make it a most attractive residence both for the healthy and the delicate. But, taking a view of these, as well as the points we have just touched upon,—and, taking in conjunction with them the water cure, and the chamber of compressed-air, the immense importance of which in the treatment of consumption has already been shewn, we feel ourselves fully warranted in emphatically pronouncing Ben Rhydding a safe and suitable resort for the delicate and the consumptive.

CHAPTER VII.

The Roman or Turkish Bath.

As a supplement to the other numerous and successful appliances for the prevention and cure of disease, Ben Rhydding has recently added the Roman or Turkish Bath. Architecturally it is second to none in the United Kingdom; and no expense has been spared in its internal arrangements and decorations. It is as agreeable to the eye and the cultivated taste of those who avail themselves of its use, as it is advantageous to their health.

The following is the Architect's description of the Bath at Ben Rhydding:—"Passing through the Porch, the Bather enters the 'Frigidarium,'—a hall of noble dimensions, being 36 *feet* in length, 32 *feet* 6 *inches* in breadth, and 30 *feet* in height. The light, admitted from the top by means of an opening, filled with stained glass of beautiful design, gives a soft and pleasing appearance to the apartment. The central portion of the floor is laid with patterns of encaustic tiles in colour, from a bason in the centre of which rises a fountain, formed of rock work and spar, with jets of ornamental water springing therefrom. Ranged round the room, and approached by a passage from behind, are a series of dress-

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ing chambers, fitted up with reclining couches, in which the bather prepares for the bath, and to which he afterwards returns to enjoy that delicious repose which only those who have experienced it can understand. Around the walls are carved corbels of exquisite workmanship, supporting cylinders with enriched capitals, from which spring ribs upholding the coned and vaulted ceiling, and from which depends a glass lustre of striking beauty."

Passing onwards, the bather is next introduced into the "Tepidarium," an octagonal room of smaller dimensions than the last, and in which, as a preparation for the bath, the temperature is raised to a height of 120°. Here also, ranged round the room, are a series of enclosed recesses, luxuriantly fitted up, which secure the desired privacy to each visitor—while a chastened and beautiful light is admitted, through a rose-coloured ring in the centre of the lofty vault.

The "Calidarium," (for which it is the purpose of the Tepidarium to acclimatize the visitor) is next entered, and is heated to a temperature of 140°. From handsome carved corbels of Caen stone, springs a ceiling of rich groined work, ornamented with bosses, supporting a lantern light of stained glass of beautiful pattern. The floor is laid with encaustic tiles; seats, shampooing tables and other requisite fittings occupy their appropriate places.

Immediately connected with this room are the *Wave Douche*, the *Rain*, and other hot and cold water baths—the whole forming a suite of apartments, superior by far, for the purpose of the Roman Bath, to anything of the kind yet erected in this country."

Bathing, in some form or other is as old as Creation. Man in a savage state, either instinctively or from experience, frequently bathes himself, with a view to the maintenance of his health and vigour. This fact is authenticated by Missionaries to the heathen. It is the practice of the South-Sea Islanders—a stalwart race—to throw their children into the sea very soon after their birth; and the entire population accustom themselves to frequent bathing. Physicians from the time of Hippocrates and Galen have advocated the use of the bath in health and disease. The most costly edifices belonging to some of the nations of antiquity were public baths. It is said that Alexander was astonished at the magnificence of the baths in Persia. In India, baths can be traced back to the remotest period in history. This fact is true also with respect to Russia; and it is affirmed, that many of the diseases prevalent in countries where the bath is neglected—in our country to wit—are unknown in Russia. At Rome, under the emperors, we are told, there were 870 of these edifices, finished models of artistic skill and excellence. In England, and in other countries, where the Romans exercised dominion, vestiges of baths are ever and anon discovered. "The most notable of conquerors, the Romans and Saracens, are associated in the relics they have left, with fortresses and baths." If the cities of this land were to become heaps of ruins, no such relics would be disentombed; and, in this respect *their* civilization would be demonstrated to be in advance of *ours*. Since however, it may please a gracious Providence to prolong our existence as a nation; with the advance of true knowledge and

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taste, the time will come, when the baths of the Romans and Saracens will be supplanted and superseded by those which our more extended science will enable us to supply. This time, in truth, has arrived. The bath at Ben Rhydding is an evidence of it.

The Turks inherited the bath from the Romans, and in course of time improved upon it. The Turkish Bath is described, as follows, by D. Urquhart, Esq., in his work entitled, "The Pillars of Hercules;" to whom this country is infinitely indebted as the pioneer of progress in this most important direction. "The operation," says he, "consists of various parts: first, *the seasoning of the body;* second, *the manipulation of the muscles;* third, *the peeling of the epidermis;* fourth, *the soaping*, and the patient is then conducted to *the bed of repose.* These are the five acts of the drama. There are three essential apartments in the building; a great hall or *mustaby*, open to the outer air; a middle chamber, where the heat is moderate; the inner hall, which is properly the *thermæ.* The first scene is acted in the middle chamber; the next three in the inner chamber, and the last in the outer hall."

R. Beamish, F.R.S., &c., &c., in an able lecture on the improved Turkish bath, thus describes it: "It consists of *three* chambers. The first or Divan, (the apodyterium—conclave or spoliatorium of the Romans) is open to the atmospheric air, and furnished with couches and sofas, in figure similar to an extended W, admirably adapted to permit the weight of the body to be equally distributed. In this chamber the bather exchanges his clothes for a bathing dress, or large sheet, and a pair of wooden

slippers, and to this room he subsequently returns. The second, (the calidcrium of the Romans) is a room furnished with marble slabs and mattresses. The light being admitted from above, through coloured glass of various designs, tends to produce a tranquillizing dreamy state of mind so favourable to the equalization of the circulation. This room is heated to 100° or 110°, and the air being quite dry may be respired with perfect ease by the most delicate. The infant in arms and the grandmamma on crutches, may be seen enjoying the same bath. Here the bather remains until perspiration is fully induced; nor until that time arrives, should the third chamber be entered. The third, or inner chamber, corresponding to the sudatorium, or rather laconicum of the Romans, is heated from beneath by flues, and furnished also with marble slabs, upon which are placed light frames of wood, as protection against the extreme heat of the marble. The heat of this chamber is 140° to 150°, and being amply supplied with fresh air from below, and freely ventilated above, all exhalation is speedily removed from the body. The air here being also dry, no inconvenience is felt. In this lies the difference between the improved and the ordinary Turkish bath, in which a large amount of visible vapour is always present, and which renders it inapplicable, in many cases, as a Curative agent. Under increased temperature the skin is brought into full action, and therefore no material rise is observable in the pulse. . . . In this chamber the bather is usually subjected to the process of shampooing, a highly invigorating process unnecessary to describe, but which materially assists in removing impurities from the

pores of the skin, while it calls into activity sinews and muscles that in many remain inert during the greater portion of their existence, with obvious detriment to the capillaries, and a corresponding enfeeblement of the functions of life. It is during this passive perspiration that cold water may be drunk with advantage. Contiguous to the heated chamber are recesses (lavaricum tepidarium, or cella media of the Romans) containing fountains, which are supplied with hot and cold water, so arranged that the water may be mixed to the exact temperature most agreeable to the requirement of each individual. Here the cooling, refreshing, and cleansing process takes place, soap being occasionally used if considered necessary. The bather returns for a few minutes into the dry air of the heated chamber to ensure a perfect reaction, and is then conducted at once back to the divan and the atmospheric air, where, on couches already described, and partially enveloped in a sheet and blanket, he enjoys a luxuriousness and tranquillity never before experienced. Indeed, from this part of the process, which I would term the tonic stage, I have myself always received the highest amount of physical gratification; and when, after twenty or thirty minutes I have again resumed my clothes, it was with an elasticity of body and mind utterly transcending any power of description. This exhilaration, I believe to be due, not only to the relief which is given to the system from the cleansing of the pores of the skin, but from the rapid absorption of oxygen from the atmosphere; to which the whole body is so freely exposed, and for which it is so well prepared. In thus favouring a more rapid change of tissue, effete matter is more readily

eliminated from the system, and more healthful secretions are promoted than under any other conditions. The time usually occupied in the bath is from two to three hours, and a more social time I have seldom passed."

The foregoing is an able description of the improved Turkish bath. It describes that in use at Ben Rhydding with one important exception. The shampooing at Ben Rhydding, is practised on what is denominated "Ling's system of movements." In other words, the manipulations are made with reference to the structure and function of each organ, the age, strength, condition, normal or diseased, of each patient. These movements are found to be curative, apart from the bath, and therefore may be expected to be more so, incorporated with it. Manipulations resting upon a scientific basis, and adapted to the peculiarities of each case, must be far more effective than the unvarying and, in some instances, dangerous shampooing of the Turks. The general adoption, in this country, of Ling's system of active and passive exercises, would develope the human frame, and raise it to a higher degree of physical perfection than it ever attained by means of the gymnastics of Greece, or Rome, or any other nation.

From what has been said respecting the processes of the improved Turkish bath, it is obvious that its primary and immediate action is upon the skin, and therefore, a word or two touching the nature and functions of this important organ of the human frame, will not be deemed irrelevant or useless. Erasmus Wilson, F.R.S., a competent authority on this subject, says, "The skin is a membrane of inconsiderable thickness, constituting the surface

of the body, and composed of three layers—namely, scarf-skin, sensitive layer, and corium." This membrane, in a state of health, gives a finish and beauty to the human body, without which it would be an unsightly and a repulsive object. It also protects the body and is the medium of sensation. But its chief functions, considered in relation to health and disease, are absorption and exhalation. It performs duties analogous to those of the lungs. Through its pores it readily imbibes the oxygen of the atmosphere, which (oxygen) is absorbed by vessels called absorbents or lymphatics. This function cannot be checked with impunity. M. Fourcault has proved, by numberless experiments, that animals covered with varnish, die in suffocation, and confidently affirms that a partial coating of the skin, will produce scrofula and many other diseases. Moreover, it is a well known fact that, in virtue of this function of absorption, the human body can be nourished and strengthened by the application of oils and other nutritious substances to the surface of the skin: Cod-liver oil so administered, often proves beneficial. In like manner, deleterious matter in contact with the skin, is taken up, the blood is poisoned, and disease engendered. This membrane not only absorbs, but also exhales. Mr. Wilson, to whom I have already referred, says, "that the number of square inches of surface in a man of ordinary height and bulk is 2500; the number of perspiratory pores to the square inch, 2800; the entire number of pores, therefore, 7,000,000, and the number of inches of perspiratory tube, 1,750,000, that is, 145,833 feet, or 48,000 yards, or nearly 28 miles." It must be remembered that each one of these pores is a

drain to carry away effete and deleterious matter from the body—that health is (other things being equal) in proportion to waste, and that two-thirds of such waste is exhaled by the skin, and estimated at twenty ounces in twenty-four hours. Calculate, if you can, the evil consequences of an obstruction to this human drainage! There are numberless causes ever at work, impeding the legitimate functions of the skin, in this country, of which causes, the great majority of its inhabitants seem to be in utter ignorance. Mr Wilson says, "The scarf-skin is being constantly cast off our bodies in the form of minute powdery scales; but these instead of falling away from the skin, are retained against the surface, by the contact of clothing; moreover they become mingled with the unctious and saline products of the skin, and the whole together converted into a thin crust, which by its adhesiveness, attracts dust of all kinds, soot and dust from the atmosphere, and particles of foreign matter from our dress; so that in the course of a day, the whole body becomes coated by a pellicle of impurities, and thus foreign matters, such as poisonous gases, miasmata, and infectious vapours, find upon the skin a medium favourable for their suspension and subsequent transmission into the body." If this be so, and who dare deny it? then want of cleanliness alone must impede the proper action of the skin, and entail great evils upon mankind. May not scrofula, and the numerous and dire progeny of diseases which it engenders in this country, be traced, in a great degree, to this one cause, namely, neglect of frequent and thorough ablutions? In Cyprus, there is, we are told, a mixed Mahometan and Christian population; religion in every shape and form,

and baths in every shape and form. The Mahometans, whose religion requires of them the constant and frequent use of the bath, are almost exempt from the ravages of scrofula and consumption; while the Christians, who despise, and therefore, neglect the custom, suffer the heavy *penalty* of that neglect. There are other causes, whose name is legion, which interfere with the due action of the skin, besides simple want of cleanliness,—in our clothing, our eating and drinking, our ill-ventilated dwellings, our excessive brain excitement, and many other things characteristic of our age and civilization. But into these matters our space will not permit us to enter.

We have considered the various processes of the improved Roman or Turkish Bath, and that its direct immediate action is upon the skin, whose functions we have noted;—the question now arises, in what way does the bath tend to maintain health and remove disease, and what are some of the advantages to be derived from its proper use? It must be clear to all that this bath produces its beneficial results in the first instance, by cleansing the skin. The scarf-skin is extensively removed, and, with it, all obnoxious matter adhering to it, by the processes to which the patient is subjected. The circulation is equalized by the application of heat, and the manipulations adopted. By the same means the blood is determined towards the surface of the body, and conjested and oppressed organs thereby relieved. Perspiration is freely produced and the system drained of the poisonous matter it may contain. A higher tone is given to the nervous system, which ramifies extensively on the surface of the body, by the concluding processes of the bath and the re-

action which ensues. The Hydropathist has endeavoured to produce some of these effects by other means, such as the dry pack, the spirit lamp, the vapour bath, and the Russian or vapour chamber. But all these methods have proved inefficient, and, some of them, positively disagreeable. He has long felt the want of some method by which he might be able to produce a free perspiration without occasioning the least degree of weakness to the patient. This desideratum is supplied by the improved Turkish Bath. It is a false and mistaken notion, however, to suppose that this bath will supersede or render unnecessary the other appliances of the hydropathic treatment. It simply completes them. It is one of the stones of the noble and imperishable arch. In relation to time, it is the top-stone of the hydropathic edifice.

The envelope, the shallow and sitz baths, the dripping sheet, the douche, the condensed air-bath, bandages, fomentations, &c., are well-tried remedies which cannot be dispensed with or abandoned. Their specific action is known. Their remedial power has been determined in numberless instances. The improved Turkish bath gives to them additional power, itself receiving back from them even more than it gives. Bracing air, pure water, fine natural scenery, a properly regulated diet, and cheerful society, are amongst the minor auxiliaries in the hydropathic treatment of disease, and as such cannot be set aside. The improved Turkish bath, divorced from these helpmeets, will not be able to confer a modicum of the benefit which it confers in alliance with them.

The benefits which must accrue from a judicious use of the improved Turkish bath are incalculable. We have

not space to enumerate them, or set forth their importance. Where positive disease does not exist, the occasional and proper use of this bath must necessarily intensify health. As a restorative from fatigue and languor, it stands unrivalled, whether the fatigue is physical or mental, or both combined. The jaded porter in the East takes his bath, and instantly renews his herculean task, like a giant refreshed with new wine. Mental lassitude disappears, in like manner, under its magic influence. Moping melancholy takes its flight, and the animal spirits exult in joyous revelry. This bath counteracts the effects of excessive eating and drinking. In the degenerate days of Rome it was often employed for this purpose only. Through its frequent use, the gourmand could long indulge his vicious propensities with impunity. It has the effect of diminishing and removing the craving for artificial stimulants, and, on this account alone, we hope, will soon be accessible in this country to the humblest artizan, as it was in ancient Rome, and as it is now in Turkey. Mr. D. Urquhart says, "In Greece and Rome, in their worst times, there was neither *blue ruin* nor *double stout*." A fact which he attributes in a great degree to the use of the bath.

Its use has the effect also of rendering persons insensible to climatic changes and utter strangers to common cold, that often stealthy pioneer, in this country, of consumption. It has the effect, moreover, of giving increased symmetry and beauty to the human frame. This is attributable to the scientific manipulations employed, as well as to the action of the bath upon the skin, which becomes, both to the sense of sight and feeling, what the

Almighty Creator intended it to be, and what the perfumer's art can never make it. Employed in connection with other hydro-therapeutic remedies, this bath will prove of immense service in the removal of disease. If diseases are expelled, by the Irish sweating house, the Russian vapour bath, &c., (and it is an undeniable fact, attested by numberless cases, that they are so expelled), then what beneficial results must inevitably flow from the scientific use of the improved Turkish bath! If the effect of this bath is (as has been shown) to oxygenate and decarbonize the blood—increase the capillary circulation—remove morbific matter from every part of the human system—unload congested vessels—strengthen and develope weak organs—and all this, without making the least demand upon the strength of the patient, by processes which are highly pleasurable to him—it must be patent to every thoughtful mind, that no conditions could be more favourable for the vis medicatrix naturæ—the healing force within exerting itself to the utmost in throwing ing off disease, and in resisting the attacks of all the predisposing and exciting causes of the innumerable maladies to which the human frame is liable. Moreover, as mental and moral health is greatly affected by physical conditions, we may safely conclude that the noble powers and susceptibilities of the intellect and heart, will share in the benefit which is conferred upon the bodily frame. Britons have it in their power, by the use of the means now held out to them, of rivalling in strength, endurance, courage, and magnanimity, the Greeks and Romans in their best days; and it is the privilege of Britons to add the higher virtues of the Christian Religion, which will prove a safe-

guard against those vices which hastened the downfall of Nations, in many respects the greatest that ever existed on this terrestrial ball. When told of the effects of the improved Turkish bath, Savage Landor replied, "This is the grandest matter of modern times; because even the cleansing of the mind from error is inferior to the purification of the body itself; for unless the body is well conditioned, the mind never can be so."

To the uninitiated the temperature of the bath, in some of its chambers, as before indicated, may seem unbearably high. It must be remembered, however, that it is AIR, which is thus heated and not water or steam. Hear Baron Alderson on this subject. In a letter to his son, he says, "I have been obliged at last to send for Sir Benjamin Brodie, to see me for my sciatica, and to-day, by his order I have been stewed alive in a bath. Dreadfully hot, I can tell you—140 degrees, while a hot bath is only 98 degrees. Yet it was not unpleasant, after all; for hot air does not burn like hot water, as it communicates itself gradually to you, air being what they call a bad conductor of heat. So by the time the hot air makes you warm, a perspiration breaks out and cools you again. People have been known to bear 400 degrees of heat without much inconvenience. . . . Is not this curious? Life is able you see to bear heat which would roast a dead body."

Sir John Fife, M.D., says, "I have been restored to youth by being boiled, or rather roasted, alive in the bath of the Romans."

It is a mistaken notion to suppose that the use of this bath is debilitating. In the degenerate days of Rome it

was indulged in, as a luxury, by the same person, several times each day, without in the least degree diminishing his physical strength. Those who almost constantly live in the bath in Turkey—the shampooers,—are known to protract their existence to a good old age. Urquhart affirms, that the most skilful shampooer he tried was a man upwards of ninety years old, who had followed the calling during the greater portion of his life.

From what has been previously said, about the way in which the improved Turkish bath acts, and the effects it produces, thoughtful persons will see to what diseases it is most applicable. In fact, there is scarcely any disease to which it is not applicable. Asthma, bronchitis, incipient consumption, will, in a greater or less degree, prove amenable to its power. "Effete matter seeks for oxygen. If it cannot find it at the skin it flies to the lungs, and ultimately destroys the organ by which it seeks an exit from the body. Scrofulous deposits, either in the lungs or elsewhere, are drained off by the skin when stimulated to activity; and the carbonaceous portions of them are burnt at the lungs and at the skin, where the blood comes in close proximity with the air." Gout, rheumatism, sciatica, neuralgia, &c., are diseases to which this bath is specially adapted. In a word, whatever disease depends upon poison, debility, or irritability, must, in a greater or less degree, succumb to the use of this bath in conjunction with other hydro-therapeutic agents.

The effect of the Roman bath is very great in the treatment of Gout and Rheumatic Gout with or without enlargement of the joints. The bath frees the glands of the skin and stimulates them to action; it regulates the

circulation of the blood through the body, and when combined with the Envelope and other baths, it removes congestion of the liver and intestines, as also the most stubborn constipation.

Dr. Macleod has found the Roman bath of great service in the earlier stages of Bright's disease, and in simple congestive irritation of the kidneys. In several cases of these diseases the bath has permanently removed the albumen from the urine, and when associated with suitable medicinal remedies, that excretion, in several instances, has been brought back to its normal state.

Leaving out of view the diseases of Gout and Rheumatism, there are perhaps no diseases in which the Roman bath has been proved to be more efficacious, especially when assisted with the Compressed-air bath, than in derangements of the natural periodic secretions. When these secretions have ceased, or are retarded, or when they are accompanied by severe pain, the bath rarely fails doing great good.

The season most favourable to the full efficiency of the treatment is that which embraces the Winter months. It is then that it will prove eminently agreeable. It is then that it will most speedily remove disease, and fortify the system against future inroads and attacks. We feel persuaded, that Ben Rhydding, by the addition of the improved Turkish bath to its many other appliances for the prevention and cure of disease, will—under a benign Providence—be the means of conferring upon ever-increasing numbers of grateful recipients that greatest of all temproal blessings, "mens sana in corpore sano."

Observations on the Use of the Bath.

The Bath is an aggregate of many parts, all more or less essential in forming the whole. To single out, therefore, any particular chamber, or any special contrivance used therein, and to call it *The* Bath, is the same as singling out any room in a house and calling it *The* House.

The bath should not be taken until an hour after a meal.

The bathing dress is to be worn throughout the bath, and to ensure the necessary quiet and repose, all noisy and exciting conversation is prohibited.

The patient is to remain in the tepid chamber until a gentle moisture appears on the surface of the skin. He is then to proceed to the hot chamber. Should the patient at any time feel the heat of the rooms oppressive, or the head hot, or the vessels in the temples beating, or any palpitation of the heart, he is to wet his head with tepid water, and place his feet in cold water. If the patient feel these sensations in the hot chamber he should pass now and again into the tepid chamber until the system has become habituated to the heat.

Water is to be drunk freely during the sweating process, unless requested not to do so by the physician.

Shampooing is not necessary oftener than every third bath, unless advised more frequently by the physician.

The patient is to be soaped and well rubbed with a soft glove, after he has sweated for a sufficient time. Every patient ought to have his own glove.

After soaping, the patient is to take, according to the

prescription of the physician, a wave bath or a rain bath, or three pails of water over the head, back, and shoulders, or the douche bath. Immediately after this ablution, the patient returns for a few minutes into the hot chamber in order that the skin may regain its former degree of warmth.

The patient then proceeds to the cooling room, where he reclines in perfect quietude for about twenty minutes. The covering is to be gradually cast off. If the cooling stage be hurried over, a secondary perspiration may break out, which is apt to produce a cold.

The patient should dress deliberately, and then walk for a while slowly in the racket court.

The bath ought not to be taken oftener than once a week unless under the direction of the physician.

[WHILST this Chapter (First Edition) was passing through the Press, the Report of the *Newcastle-on-Tyne Royal Infirmary* was published. This report contains an important and instructive judgment of the merits of the improved Turkish Bath considered as a remedial agent. It is as follows :—

"The temperature of the bath," says the House Surgeon's report, "ranges from 130 to 160 degrees, according to the nature of the disease, state of the circulation, and condition of the patient submitted to it; though, as far as I have observed, the extreme heat exerts less influence on the heart and circulation than the ordinary warm bath; and, in order to bear out this assertion, I may state that

some cases in which the pulse and stethoscope give unmistakeable evidence of heart-disease, such patients have undergone the process without attendant mischief, and with almost unlooked-for benefit. In the dropsy resulting from liver and kidney disease, the profuse perspirations have almost invariably afforded more relief than could have been attained by medicine in the same period of time, and with less exhaustion to the system. Catarrh and influenza, in their first accession, have been arrested —the outset of the ague fit averted—whilst in acute rheumatism, and the various forms of skin disease, its use has proved invaluable. To the benefit derivable in the treatment of acute rheumatism, I can bear most emphatic testimony, since cases that would have been perhaps confined to bed for weeks under the ordinary treatment, have been enabled to sit up in a few days. That the Bath is destined to assist materially in the arresting and cure of disease, I think no one will dispute who has had an opportunity of observing its effects. In conclusion, I have pleasure in appending the following remarks from the pen of Sir John Fife, to whom we are indebted for its introduction :—'The ordinary hot bath has the disadvantages of confining the patient to one posture, which either induces or prevents relief from palpitation of the heart. It leaves the surface so relaxed as to pre-dispose to cold in a degree proverbial and extraordinary. On the other hand, the Turkish Bath admits of every variety of posture, and even exercise, besides positions of any description requisite, and leaves the patient less susceptible of cold than if no heat had been applied to the surface, the pores of which are contracted, and the nervous expansion

braced, by the cold douche.—All those advantages to be obtained by the ordinary hot baths are to be had in an increased degree by the Turkish Bath; and whether the inequality of circulation, and diseases arising from it, be attributed to organic change or to nervous derangement, a direct and immediate equality of circulation is brought about by the Turkish Bath. It will be observed, then, that cases of internal congestion, chronic and scrofulous inflammation, of congestion even of the vessels of the skin, must be immediately acted on by the Turkish Bath; whilst it secures a degree of cleanliness unattainable by any other expedient, cleaning the *inside* of the skin as effectually as any other ablution cleanses the *outside*. It leaves behind an elastic state of tendons, and a vigorous strength of muscle, thus contributing to the restoration, or the preservation, or the enjoyment of health.' "]

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