Cheltenham and its resources : mineral waters, climate, etc., considered chiefly in a sanative point of view / by Edwin Lee.

Contributors

Lee, Edwin, -1870.

Publication/Creation

London : Whittaker, 1851.

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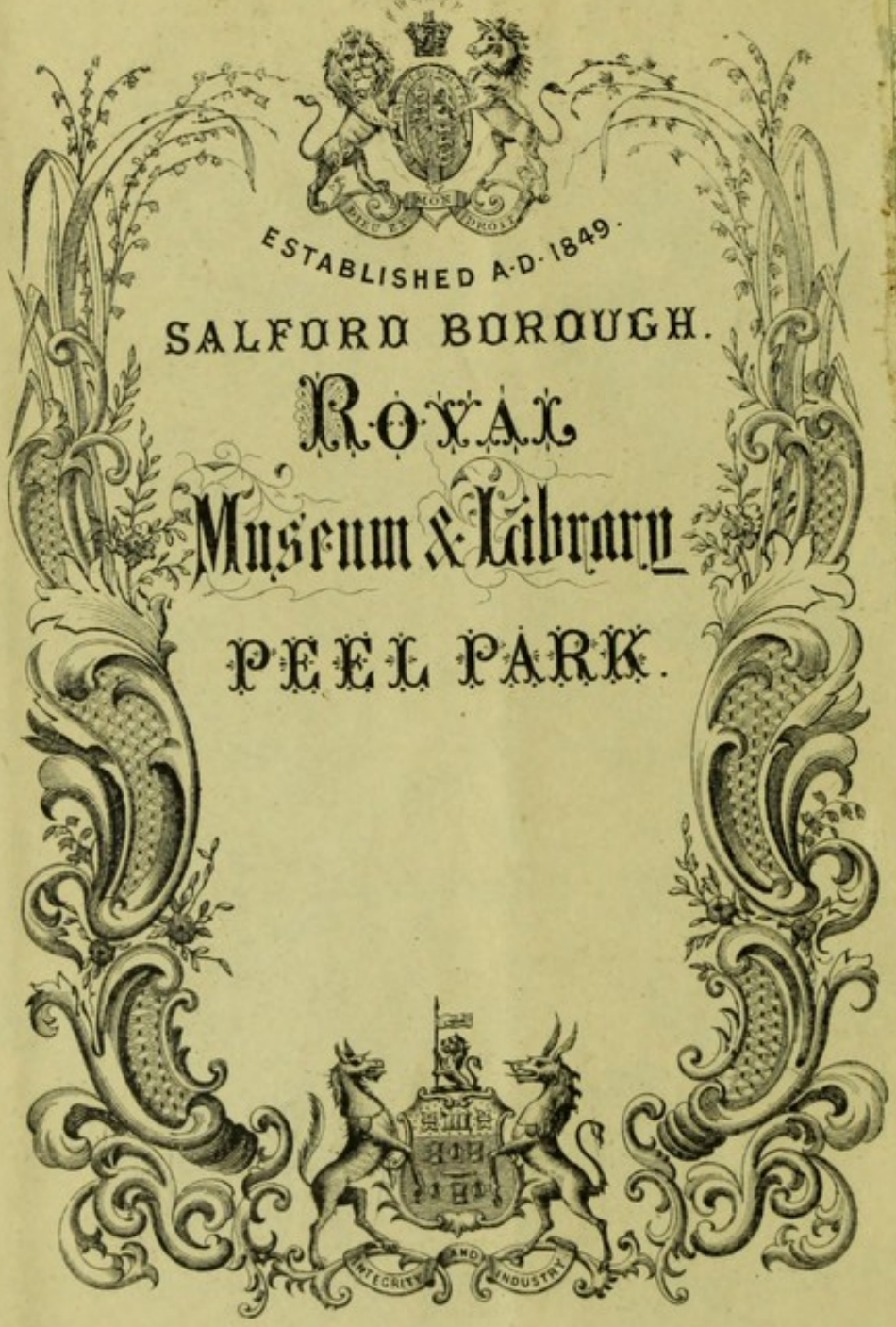

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CHELTENHAM

AND ITS

RESOURCES:

MINERAL WATERS, CLIMATE, ETC.

CONSIDERED CHIEFLY IN A SANATIVE POINT OF VIEW.

By EDWIN LEE,

AUTHOR OF "THE WATERING PLACES OF ENGLAND," "THE BATHS OF GERMANY," &C.

BEING

THE ESSAY FOR WHICH THE PRIZE OFFERED BY THE TOWN COMMITTEE WAS AWARDED.

ADJUDICATORS:
SIR C. HASTINGS, M.D.; H. E. STRICKLAND, ESQ., M.A., F.G.S.;
The REV. T. F. HENNEY, Pembroke College, Oxford.

"The great and chief use of Mineral Waters is certainly the preservation and health of man."—*Sturm's Reflections.*

LONDON:

WHITTAKER AND CO., AVE MARIA LANE.

1851.

Entered at Stationers' Hall.

TO THE

RT. HON. THE EARL FITZHARDINGE,

LORD-LIEUTENANT OF THE COUNTY OF GLOUCESTER,

THE

CONSTANT AND GENEROUS FRIEND AND PATRON

OF

CHELTENHAM,

This Work

IS,

WITH HIS LORDSHIP'S PERMISSION,

RESPECTFULLY INSCRIBED.

INTRODUCTORY NOTICE.

. . . . . "Quid terras alio calentes
Sole mutamus?"

HORACE.

IN the spring of 1849, a number of gentlemen, interested in the prosperity of Cheltenham, and desirous to maintain its reputation as the Queen of English Spas, formed themselves into a Committee, with a view to promote its attractions to visitors, and entered into subscriptions to defray the expenses which might be incurred in carrying out their design. They were countenanced and assisted by the advice and support of the resident medical practitioners, and some handsome contributions to their funds were made by the Earl Fitzhardinge, the Lords Northwick, De Saumarez, and Dunalley, and many gentlemen of the town and neighbourhood.

It being notorious that, of late years, the tendency of fashion, aided by the facility of travelling, has been to divert the flow of temporary visitors to watering places, whether for health or recreation, from England to the Continent, it seemed to the Committee extremely desirable, if possible, to recal the public to the claims of Cheltenham to vie with, if not to excel, more distant resorts, in the efficacy of its mineral springs, in the beauty of its situation and vicinity, the salubrity of its climate, and the means it affords of social enjoyment and domestic comfort.* They considered that, not-

* Among these, the cheapness and excellence of its markets, and the unrivalled cleanliness of its streets and promenades, ought not to be overlooked; nor the prevalent completeness of all the minor

withstanding many excellent local guide books, there was wanting some recent authoritative exposition of its superior advantages in all these respects; and the Committee deemed it would be a useful expenditure of a small portion of the Funds at their command, to offer a premium for such an Essay. The result of this offer was the production of several excellent papers, from which the Committee selected, as the best, the *brochure* contained in the following pages, and they were gratified to find it to have been written by a gentleman eminently qualified to discuss its subject with intelligence and impartiality.

It must also be mentioned that the Committee, feeling that some testimonial, however slight, was due from them, of the zeal and efficient services throughout all their proceedings, of their Honorary Secretary, Mr. J. D. Tagart, presented the copyright of the Essay to him, with a request that he would add to the obligations the Committee, and through them the town in general, lay under to him, by bringing it before the public.

Mr. Tagart has felt much gratification in accepting this acknowledgment, and has felt bound to produce the Essay at his own risk, which he now presents to his fellow-townsmen in a shape which he hopes will approve itself to them, and promote the object which they and he have in view.

January, 1851.

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household arrangements, which are indispensable to *comfort*, especially to invalids, and the absence of which in all Continental Towns, even in houses of a superior class, has proverbially explained the deficiency in foreign vocabularies of an equivalent to that essentially English word.

PREFACE.

I HAVE undertaken to treat the subject of the Essay, for which a Prize has been offered by a Committee of influential residents interested in the prosperity of Cheltenham, from a belief that the object aimed at is to bring the advantages of the place in a fair and impartial manner before the public. One inducement which operates with me in competing, is the small value of the Prize, inasmuch as there is less probability of a misconstruction of motives than if the amount were larger. The chief reason, however, is, that on several occasions

of my visiting Cheltenham, I have perceived with regret that its Waters have not of late enjoyed so high a degree of vogue as formerly, and the opportunity seems favourable for offering a few suggestions, which may possibly be of some slight service to the town, as well as to some of the large class of persons, whom a more or less prolonged sojourn in it is calculated to benefit. Being already tolerably well acquainted with the locality, and having moreover directed much of my attention to the subject of Mineral Waters, and to the respective capabilities of places of resort for health, the composition of an Essay upon the proposed topic is not attended with much inconvenience to me at the present time. I, therefore, propose endeavouring to impart condensed information of a practical kind, without entering into Guide Book descriptions or minute details, and shall avail myself of the recorded opinions of competent local authorities,

upon some points respecting which I could not otherwise speak with sufficient accuracy.

EDWIN LEE.

Cheltenham, April 1850.

P.S.—As a proof that my opinion of Cheltenham has not been influenced by circumstances connected with the Prize, or by any interested considerations, I beg to quote a portion of what I had previously expressed respecting it in the last edition of my "Watering Places of England," published two years ago.

"Cheltenham possesses, perhaps more than any other provincial town, resources for occupation and amusement in the pleasing country by

which it is surrounded; its cheerful society; its Assembly Rooms and well-supplied Public Libraries; its Literary and Philosophical Institution; and its Religious and Charitable Establishments: so that altogether this town may be regarded as one of the most eligible for a permanent residence or a few months' sojourn."

London, October 1850.

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CHELTENHAM.

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OF

CHELTENHAM.

Owing its prosperity mainly to the high reputation which its mineral waters have acquired, Cheltenham as a watering place is of comparatively recent origin. It appears, however, from the historical accounts, to have been a place of high antiquity, being mentioned in Doomsday-book as a Royal Manor, before the Conquest, belonging to Edward the Confessor; and that in the year 803 a Priory was founded, near the site which still retains the name.

It is foreign to my purpose to record the different grants of the manor to successive Proprietors; suffice it therefore to say, that Edward the Fourth reposed here before meeting Queen Margaret at the battle of

Tewkesbury; that in 1628, the Prince of Wales (afterwards Charles the First) sold the Manor and Hundred of Cheltenham to the Dutton family (for £1,200), in which it till lately remained, and whose representative was raised to the Peerage in 1784, by the title of Lord Sherborne.

Sir R. Atkins described Cheltenham, in 1712, as a market-town, having a considerable trade in malt, with a population of 1,500 souls. The existence of the waters was, at this time, not generally known, no mention being made of them in Allen's work on the "Chalybeate and Purging Waters of England," published in 1699. It would appear that the water first attracted the attention of Mr. Mason, who, having purchased a field at the foot of Bays Hill, observed, in 1715, that pigeons flocked to the head of a stream which flowed through it, to peck calcareous particles there deposited, in order to promote the digestion of their food. This account is given by Rulty, in his "Methodical Synopsis of Mineral Waters," published in 1757; and it is not unlikely to be the true one, several efficacious mineral springs having been discovered by diseased animals being seen to resort to them, and to regain their health. "It is a known fact," says a French author, "that at Vichy, in the month of April, when the snow melts upon the mountains, when the wind has passed over the springs in the direction of the *Puy de Dome,* and has carried the vapour to a

considerable distance, the ruminating animals on the left bank of the Allier swim across, to come and drink with avidity, at the salutary springs of the establishment: the waters are then fit for use. The country people say, 'the beasts have come across the river!' "—*Patifier*, "Manuel des Eaux Minerales."

Another account states that the water was observed by the peasantry never to freeze: and this led to its closer examination. Be this, however, as it may, the water had so far attracted attention in 1721, as to be analysed by Dr. Greville, of Gloucester, and Dr. Baird, of Worcester, who recognised in it superior medicinal properties, and its employment became more general. In 1738 a room was built for visitors by Captain Skillikorne (Mr. Mason's son-in-law), and the well was enclosed. In 1743, the elm avenue was planted. In 1740, Dr. Short thus spoke of the Cheltenham waters ("History of Mineral Waters"):—"While the salts dissolved in the waters purge, the mineral spirit, charged with iron, warms and invigorates the whole frame." An advertisement, in a paper prior to the last-mentioned date, holds out as an inducement to visit Cheltenham, that "Visitors meet with kind reception and good usage;" adding, in a note:—"'Tis a pleasant town, situate on a fine sand and fine air, and many persons of quality and distinction have been there, and have received great benefit. The chief virtues are in Rheumatism, Sciatica, Scurvy, Stone, Gravel, &c. The season holds

all the summer. There is a good bowling-green and billiards for the gentlemen's diversion."

In Martin's "Natural History of England," published in 1757, Cheltenham is described as "A market-town, having a good trade in malt, and remarkable for its medicinal purging waters." He adds, "There is a pleasant walk leading to the spring, and a great number of commodious lodgings."

The medical writers who, since Dr. Short, and towards the close of the last century, have adverted to the Cheltenham waters, are Rulty, already mentioned; "Smith's Observations on the Nature and Use of the Cheltenham Waters," 1786; Dr. Fothergill, of Bath; "An Experimental Enquiry into the Nature of the Cheltenham Waters," 1788; and Saunders, "A Treatise on Mineral Waters," 1800. Dr. Fothergill observed, "Their medical virtues began to be noticed about 1715, since which they have been more and more frequented during the summer months, and Cheltenham is now become, next to Bath, one of the most genteel and fashionable places of resort in the kingdom." In 1780 the town had its Ball Room, and Master of the Ceremonies: the first Guide-book was published in 1786.

The circumstance, however, which brought Cheltenham at once more prominently into favour was the visit of King George III., in 1788. His Majesty occupied Fauconberg House; but the town and neighbouring

villages could scarcely afford sufficient accommodation for the guests. Buildings rapidly arose near the Church and the Well; St. George's Place, the Crescent, the Colonnade, &c., were soon completed. Nevertheless, in 1801, the town still consisted mainly of one long street, with four inns and as many boarding-houses. The population amounted to about 3,000 souls. The subsequently distinguished Dr. Jenner (the discoverer of vaccination) resided at Cheltenham, and examined the springs in the neighbourhood. Other physicians came from Bath to practise in the season. Dr. Jenner was succeeded by Dr. Jameson, who published his work in 1803. In 1804 the Sherborne Spa was opened; in 1807 the Cambray Chalybeate was discovered. On Mr. Thompson's purchasing the De la Bere property in 1808, more wells were sunk, and the small Pump Room was inadequate to accommodate the visitors. In 1817 the Rotunda Pump Room was constructed. In 1818 the Imperial was opened; and the Pittville in 1830.

The following notice is given by the author of the "Picturesque and Topographical Account of Cheltenham" (the Rev. Mr. Fosbroke):—"When the author first visited Cheltenham, in 1798, the only conspicuous objects as to character, were Fauconberg House, and a double range of buildings in the High Street, above the Plough, which were considered the only habitations fit for the reception of high wealth and title. The High

Street was of a motley character, being of all heights, forms, and descriptions; a low thatched house, with a gable end, and antique bay windows of horn-coloured glass, and leaden reticulations, adjoined a flat dwelling which poked out two shop-windows, and looked like a woman with milk-pails, and near this was a new London three or four storied house, with railed area. The foot-way of the street was partially paved; but towards the Gloucester end there was only a gravelled causeway, intersected at short intervals by open yawning drains. Here and there, in the fields near the town, new-built houses were seen standing alone, looking like persons whistling in solitude, and waiting for friends to join them: the roads to them had the aspect of canals, where the water is let off;—indeed, all the roads about the town were execrable."

As contrasting with this primitive state, I will now endeavour to sketch the actual condition of the town.

CHELTENHAM

IN ITS

PRESENT STATE.

CHELTENHAM* is situate about the centre of Gloucestershire, in the beautiful and fertile valley of the Severn, nearly at the base of the Cotswold Hills, which constitute the north-eastern boundary. It stands upon a higher level than the city of Gloucester, from which it is distant about a quarter of an hour by rail. Three hours will suffice to reach London; two hours either Bristol or Birmingham, the station being midway between these important cities. Malvern is twenty-two miles, and Leamington and Oxford about forty miles,

* Derived from chelt (the river), or, according to others, chylt (clay), and ham, a town or village.

distant. The resident population amounts to 40,000 souls.

The oldest part of the town is built on a level plain, whence there is a gradual ascent southward, to the Lansdown and Park districts; the Pittville quarter being in the opposite direction. The houses are substantially constructed of brick, stuccoed, and in many parts (including Lansdown) of sandstone, which hardens on exposure to the air. The streets are mostly wide, clean, and airy, being planted in several of the new quarters with avenues of trees, sufficiently distant from the houses as to afford shade in summer, without impeding free ventilation. The squares are spacious, their area being filled with trees and evergreens, and the promenades in the neighbourhood of the wells are laid out with great taste. In and around the town are several nursery-grounds, open to visitors: through it flows the languid stream of the Chelt. The approach through the well-wooded country on the London road, and the bustle of the High Street in coaching-days, rarely failed to produce a highly favourable impression upon the stranger; and at the present time, though there is less animation in its leading thoroughfare, yet the general aspect of the town, its white, clean-looking houses, numerous detached villas, gardens, and pleasure-grounds, present an aspect of lightness and cheerfulness seldom met with in provincial towns. Passing Oxford Parade, Berkeley Place, the Priory, the

Belle Vue Hotel, on the right, Keynsham Bank, and many residences separated from the road by lawns on the left, the High Street is entered; the houses at this part being of irregular height, and the shops of a somewhat inferior kind. The principal part of the street between Cambray and St. George's Place is lined with handsome shops, and includes some of the chief points of re-union—the Assembly Rooms, the Plough, the George, the Royal and Fleece Hotels, Williams's and Henriques's Libraries and Reading Rooms, the Town Hall, Market Place, &c. Behind the Town Hall stands the Parish Church, of which the tapering spire is the most conspicuous object in a distant view. Below St. George's Place the street is continued for nearly half a mile, several of the houses having an antiquated appearance, with low shelving roofs, serving to convey an idea of what Cheltenham was in former days. At the extremity of the street is the new Church of St. Peter, built in the ancient Norman style, the interior of which is greatly admired.

Diverging from the High Street, at its upper part, on the left, are Cambray Place, leading to the Bath Road, Rodney Terrace, and other ranges of houses, terminating at a corner of Imperial Square, which encloses an extensive area disposed in nursery grounds; one side being occupied by the Queen's Hotel, and the buildings therewith connected, of comparatively recent erection, on the site of the Imperial Spa: standing on

elevated ground, a fine view is presented from its upper windows, of the whole extent of the Promenade, its broad roads and pavement shaded by an arching avenue of trees; its private residences, of various size and style of architecture, being continuous ranges on the left; detached smaller class houses (several with shops) on the right, with a portion of the town beyond, and the back ground of distant hills, constituting altogether, when enlivened by numerous carriages and pedestrians, a *coup d'œil* rarely equalled. Midway towards High Street is the former façade of the Imperial Spa. From this corner, a road leads past the entrance of the Old Well Walk to the Royal Well Terrace, a range of new houses on the Bays Hill Estate. Lower down, on the Promenade, is the Imperial Hotel and Boarding House; on the opposite side the classical portico of the Literary and Philosophical Institution is the most prominent object, and near it Shipton's Library and Reading Room. Behind the Promenade, and continuous with the Old Well Walk, is the Royal Crescent, built in Cheltenham's more primitive days.

Re-ascending the Promenade, we have, beyond the Queen's, on the right of the road, an Arcade and the Montpellier Avenue, the trees on one side having been replaced of late years by shops for the sale of articles of taste. At the end of the Avenue is the Rotunda Pump Room, where the waters of this spa are dispensed. Public Balls and other entertainments take place in

the summer season. Across the road are the gardens belonging to this establishment, where an excellent band is in attendance, at stated hours. Higher up, on the right, is the Lansdown quarter, consisting of private houses (several being let to visitors), many with verandahs and conservatories, separated from the road by lawns planted with evergreens. Lansdown Place is a long range of first-class houses, on the Gloucester Road, terminated by a hotel of the same name, and having a southern aspect. The houses on the terrace are adapted to the reception of moderate-sized families, and look towards the west. Beyond, and separated from the terrace by a few acres of building land, is Christ Church, an elegant structure, forming a prominent feature in a distant view of the town. Behind, and isolated on a slight elevation, is Fauconberg House, where George III. resided. The Crescent houses are smaller than those on the Terrace, and have more of northerly aspect. The Parade houses are on a still smaller scale. On Suffolk Lawn are several good-sized villas, occupied by residents; and opposite, a handsome range of a peculiar style is now in progress of construction—Lypiatt Terrace, several of the houses being already tenanted. Other handsome residences have sprung up within the last few years in this locality, the Douro Villas, the Royal Parade, the Queen's Parade, leading down to the Royal Well Terrace, &c. Mental recreation is afforded to the inhabitants of this district by Davies'

Library: the reading-room on the first-floor is commodiously fitted up, and has a cheerful aspect. On ascending from the Montpellier, to the left, is Suffolk Square, a range of houses looking south on one side, those on the other sides being detached with intervening grounds. St. James's Church forms one angle of this square, whence houses and villas are continued nearly up to the Park Estate, where are many good houses tenanted by residents.

Taking an opposite direction from High Street, along Winchcomb, or Pittville and Portland Streets, which contain many desirable houses, though on a small scale, we arrive at the Pittville quarter, of which the best portions are Segrave Place, and the villas in its immediate neighbourhood, extending along the grounds halfway up to the Pump Room, which stands on a commanding eminence at their extremity. St. Margaret's Terrace, Pittville and Blenheim Parades, Clarence and Wellington Squares, are also favourite localities, being for the most part occupied by permanent residents. The chief public buildings in this quarter are Trinity Church, the Masonic Hall, and Female Orphan Asylum.

The above imperfect sketch may serve to convey to the stranger an idea of the general disposition of the town, which is seen to great advantage on a clear day, from any of the elevated points in the neighbourhood: a near view will perhaps be best obtained from the

dome of the Pittville Pump Room or from Battledown Hill. For a more extensive view, including great portion of the varied and rich surrounding country, the road on Leckhampton Hill is one of the best spots, whence the prospect is bounded on the west by the Malvern Hills, the village and adjacent houses being distinctly perceptible. About two miles further on, near Birdlip, a still more extensive panorama is displayed, which is thus graphically described by Mr. Gilpin, Registrar to the Royal Society, in his northern tour:—"I know not that I was ever more struck with the singularity and grandeur of any landscape. The vale of Severn was spread before us. Perhaps nowhere in England, a distance so rich and at the same time so extensive can be found. We had a view of it almost from one end to the other, winding through the space of many leagues in a direction nearly from west to north. The eye was lost in the profusion of objects which were thrown at once before it, and ran wild, as it were, over the expanse with rapture and astonishment, before it could compose itself to make any coherent observations. To the north we looked up the vale along the course of the Severn; the town of Cheltenham lay below at the distance of two or three miles. The vale appeared afterwards confined between the limits of Bredon Hill on the right and Malvern on the left; right between these lies Tewkesbury, bosomed in woods in the middle of the vale, the great church even at this distance appearing;

a little to the right, but in distance very remote, we may see the towers of Worcester, if the day be clear, especially if some accidental gleam of light relieve them from the hills of Shropshire, which close the scene. Between Robin's Wood and Churchdown the great object of the vale is Gloucester, which appears rising over rich woody scenes; beyond Gloucester the eye still pursues the vale into remote distance, till it unites with a range of mountains."

Cleeve Hill at the opposite end of the Cotswolds, is another point whence an extensive prospect may be enjoyed. On this hill is the race course, and at its base lies Southam, Lord Ellenborough's residence, and nearer Cheltenham the neat village of Prestbury, one of the most favourite places of resort on holidays.

For a detailed account of the public edifices and the many benevolent institutions with which Cheltenham abounds, reference may be made to the local guides; it will be sufficient in this place to enumerate the principal ones. The Parish Church, St. Mary's, in the early Gothic style, is very ancient, the supposed date of its construction being 1011; Trinity; St. John's, Berkeley Street; St. James's, Suffolk Square; St. Philip's, near the Park district; Christ Church, Lansdown; St. Paul's, near Clarence Square; and St. Peter's, in the suburb on the Tewkesbury Road,—belong to the Established Church: there are besides many Chapels for the various dissenting sects. All are fully attended during service,

for perhaps nowhere is the Sabbath more strictly observed than at Cheltenham, the quiet pervading its chief thoroughfares strongly contrasting with their animated appearance on week days: the clergy are zealous in promoting good works, and it is scarcely necessary to observe that several of them enjoy a high reputation as preachers. Among the charitable Institutions may be mentioned the General Hospital for the Sick; the Orphan Asylum, a neat building in Winchcomb Street; the National Schools; Pate's Almhouses (with the date 1567); a Free Grammar School; a Loan Fund; a District Visiting and Clothing Society; a Coburg Society for affording Relief to Poor Married Women during the period of their Confinement; a Protestant Union School for Boys, and another for Girls; a Dispensary; a Lying-In Institution; an Institute for the Deaf and Dumb; a Female Refuge Society. There are besides Bible and Missionary Societies; Horticultural and Floral Societies, giving prizes and having exhibitions at stated times. An extensive and handsome edifice is just completed—the Training College for sending out Masters and Mistresses to educate in accordance with the principles of the Established Church: it will afford accommodation for a hundred persons at the same time.

The Literary and Philosophical Institution on the Promenade contains a spacious Theatre, where lectures are delivered on various subjects of Science and Art by

lecturers of repute, and occasionally by amateurs; a Museum of Natural History and objects of Antiquity found in the neighbourhood; a Library of Reference, and a Reading Room well supplied with the leading Papers and Periodicals, to which visitors are admitted on the introduction of a member.

Thirlestane House, the residence of Lord Northwick, on the Bath Road, is a principal object of attraction, containing with one or two exceptions perhaps the best private collection of Pictures in England, which his Lordship liberally throws open to the inspection of strangers: the whole of the ground-floor is occupied with the collection, which is especially rich in productions of the Italian school. The pictures are admirably placed, the light coming in most of the rooms (purposely constructed) from above. In order justly to appreciate their value, repeated visits would be required: the following are a few of those which will more prominently attract observation.

First Room: A large Lion Hunt, by Rubens; Cupid, by Guido; another, by Giorgione; Views of Egypt and of Naples, by Müller: Landscapes with Shipping, by Vernet; Portraits of Doge Venieri and Michael Angelo, by Titian; Cattle, by Cuyp. Second Room: Baiæ, and another fine Landscape, by Claude Lorraine; Landscapes, by G. Poussin; a Holy Family and a Portrait, by Rubens; Madonna and Infant, by Perugino; two fine Pictures, by N. Poussin; the Market

Cart, by Gainsborough; Boys at Play, by Morton. Third Room: Picture, by Guido; a Rocky Landscape, by Ruysdael; a fine Titian; the Saviour and the Woman of Samaria, by Teniers. Fourth Room: Paul I., by Titian, also a Venus; Portraits of a Man and Woman, by Rembrandt; St. Sebastian, by Domenichino; a Sunset, by Claude; a Classical Landscape, by N. Poussin; the Earl of Surrey, by Titian; a small Picture, by Wouvermans. Fifth Room: Agar in the Desert, by Claude; a Landscape (on screen), by Cuyp; another fine Landscape with Rising Sun, by Danby; Tarquin and Lucretia; a full length Portrait of Philip II. (on screen), and a recumbent Venus (a small counterpart of the celebrated picture in the Tribune at Florence), by Titian; a Landscape, by Ruysdael; another by P. Brill; a Ruin by Moonlight, by Pethers; a Landscape, by Gainsborough; the Birth of Jupiter, by Guilio Romano; Six small subjects (on a screen), by Mieris, Teniers, G. Dow, Ostade, Metsu, and V. Stein. Sixth Room: a Female Portrait, by Rubens; Henry VIII., by Holbein; Landscape with Bridge and Ruin, by Claude; another Landscape, by Ruysdael; a Portrait, by Rembrandt.

Gallery: Lucretia, by Guido; the Saviour and Woman of Samaria, by Guercino; a large Picture, by Cuyp; the Martyrdom of Stephen Garafolo; Landscape with Figures, by Salvator Rosa; Murillo (large picture); Laban laying the Rods before the Sheep;

also the Marriage of the Virgin by the same Master; the Alchymist, by Teniers; the Woman taken in Adultery, by Giorgione; Equestrian Portrait, by Velasquez; a Holy Family, by Raphael.*

The Proprietary College adjacent to Thirlestane House is a large and handsome edifice, of recent erection, with central tower, standing prominently out among the conspicuous objects of the town. This institution was founded a few years ago, its object being "to provide for the sons of noblemen and gentlemen, a sound, classical, and general education on moderate terms, and in unison with the principles of the Established Church." There are two departments—the Classical and the Military, and the Civil department. The Board of Directors comprises several of the influential residents; the management of the courses of study is superintended by a Principal (a Clergyman). The Masters are for the most part clergymen from Oxford or Cambridge. There are likewise Masters of Oriental languages, German, French, Drawing, Plan Drawing, &c. Monthly examinations of the pupils are made. There is a general annual examination when prizes are given, and scholarships for competition (held for three years). The pupils reside in boarding-houses

* A Catalogue was published a few years ago by Davies, but many alterations in the position of the pictures have since taken place, and many additions are constantly being made, so that it can scarcely be considered a correct one at the present time.

kept by the Masters, the building itself consisting of a spacious class hall on either side of a tower, with smaller rooms for different classes; the Drawing, Plan Drawing, &c., being upon the first floor.

According to the programme of the plan of studies, the pupils are divided into eleven classes: the eleventh or lowest admits boys from seven to eight or nine years of age, who are taught rudimentary Latin, English, Reading and Spelling, Geography, Natural History, Writing, Arithmetic, History of England, Bible History, &c. As they advance in age the pupils are raised to the higher classes: the first class, being composed of those between seventeen and eighteen, study the more difficult Latin and Greek Authors, Mathematics, &c. The number of pupils is between three and four hundred, several of those who have left having distinguished themselves in obtaining honours and prizes at the Universities and Military Colleges.

Great alterations have been effected, and more are contemplated in the system of education most prevalent among the upper and middle classes as pursued in the Public Schools and Universities, where, till lately, purely Classical or Mathematical studies were almost exclusively attended to. The increased facilities of intercourse between different countries, and the universal diffusion of information of a general and practical nature among all ranks of society, have indeed rendered these changes imperative. The great error of this system

was soon perceived by an illustrious personage, who could not fail to remark the contrast with respect to the degree of information possessed by the young men of his native and those of his adopted country, and who, not long after his arrival in England, gave a very strong hint to this effect, by establishing at Eton an annual prize for proficiency in modern languages, which has since to a certain extent been acted upon. The consequences of this restricted plan were and are still most prejudicial; for it may well be supposed that a large proportion of young men with ample means at command, and having in great measure the disposal of their time, would not attend of their own accord to other matters than those included in the prescribed course, in which but few took any interest; hence on mixing with the world the deficiency of information upon ordinary topics was often painfully felt, and the absence of a knowledge of foreign languages and literature rendered many disinclined to general society, from an inability to take part in the conversation, especially when abroad, associating with well-informed men of their own age, of France or Germany: and the imputation of *hauteur* laid upon the travelling English by foreigners, has not unfrequently been unmerited: their comparative taciturnity with strangers might with greater reason be ascribed to another cause, namely, unfamiliarity with the continental languages. This absence of mental resources has also led many young men to have recourse

to various sources of excitement, as a means of relief from the *ennui* which the natural activity of the English disposition is so little able to support without detriment to the health; but this temporary excitation is succeeded by corresponding depression, and, when the period of youth has passed away, not unfrequently by the gloominess which has been considered, though wrongly, as an effect of the climate. The climate of Holland and many parts of Germany are however much worse than ours, and yet these effects are but rarely perceived, because the education and mode of life are different in those countries; neither are they with us in those classes of the population who have fixed and regular occupation for their time. A popular author* repeats the opinion very generally entertained, that there is a greater degree of discontent among "the rich classes in England than those of any other nation, which he considers to depend upon the circumstance of eager minds being placed in a dull and insipid circle, whence arises the desultory love of travel for which the English have long been remarkable;" and there can be no doubt that this cause has driven, of late years, to the Continent, for relief, or restoration to health, many who from bitter experience had learnt how commonly it is—

"The constant revolution, stale
And tasteless, of the same repeated joys

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* Bulwer Lytton, "England and the English."

That palls, and satiates, and makes languid life
A pedlar's pack that bows the bearer down.
Health suffers, and the spirits ebb: the heart
Recoils from its own choice; at the full feast
Is famished,—finds no music in the song,
No smartness in the jest, and wonders why." *

I have thought these few remarks would not be misplaced when adverting to an educational institution as indicating a cause, not generally suspected, of some national peculiarities, and of much of the ill health prevalent among a large section of the population, the remedy for which is to be sought for more in mental activity of a cheerful kind, recreation and association, as frequently offered at watering-places, than in purely medicinal means.

At the outskirts of the town, beyond the College, is the new Hospital, containing about fifty beds, though having space for a hundred. The interior arrangement is good, the wards clean, airy, and containing about twelve beds each. Acute inflammations and fevers are not of frequent occurrence; Rheumatic and Catarrhal affections being the most prevalent diseases. Calculous disorders are rarely seen, and surgical operations of importance are seldom performed; most of the cases for operation from the surrounding country being sent to the county Hospital at Gloucester.

Many out-patients are relieved at the Institution.

* Cowper.

The Assembly Rooms may rank among the best in the kingdom. The spacious Ball Room and adjoining Card Room on the ground-floor are well ventilated, and altogether adapted for the purpose. The Public Balls once a-week in the winter season are well attended, under the superintendence of the courteous and popular M. C. who has held the office for some years. Private Balls are likewise not unfrequently given in the Rooms, as also Concerts and other occasional entertainments. The first-floor of the building is appropriated to the Club, which includes a large proportion of the leading gentry of the town and environs; visitors being admitted on introduction for a month.

Public amusements, especially Balls, are objected to by many well-meaning persons, on the score of their deteriorating influence. In this opinion I cannot concur, considering them not only as an efficient means of association, which it should be the object of watering-places to promote; but also, when not prolonged to a late hour, as a natural and not unbecoming recreation. Continued dissipation, such as the attendance night after night at crowded parties for a lengthened period, is doubtless to be deprecated. It is, however, not the proper use, but the abuse, of amusements, as of other things, that does harm, and it may fairly be questioned whether the frequenting of Balls, &c., be not, in the main, beneficial, even in a religious and moral point of view; for let it be granted that they indispose to serious

thought, yet as there is a time for all things, and reaction follows upon action, so tastes and inclinations change, and in the majority of instances there is a greater disposition to attend to matters of moment, when the relish for amusement has somewhat subsided, having no longer the attraction of novelty, than where there has been enforced restraint, which very often leaves the desire for what is prohibited, stronger than it would otherwise have been. How frequently, therefore, is it seen, that the children of strictly religious parents, who are bebarred from amusements congenial to their age, launch out into dissipation, even if they do not become positively irreligious, when emancipated from control. The son of the Philanthropist Howard is said to have been a dissipated character; and perhaps at no period of English history was there greater licentiousness than after the reign of the Puritans had terminated, on the restoration of Charles II. This must ever be the case; the bow too tightly bent will tend the more strongly to recoil; and perhaps even some of those who decry amusements may, at a former period of their lives, have seen the question in a different light. If public amusements were suppressed altogether, the probability is that there would be a greater amount of immorality than before; and if this were done at any place of resort for health, the consequence would be the ruin of that place, from the diminished influx of visitors. Not but that there is great room for improve-

ment in the tone of general society in England, which is attributable in great measure to the cause already adverted to, viz., the imperfect system of education entailing insipidity upon certain assemblages unenlivened by taste, cordiality, or conversational power; and an additional reason why the continent has been preferred as a residence by many English families, is the comparative absence of *gêne* formality, and exclusiveness, the prevalence of a more unrestrained tone of conversation, and the disposition more generally manifested to please and to be pleased. The object, therefore, of those who would improve society should be, not to decry amusements, which must always fail, but to inculcate the necessity of acquiring mental resources, by which their tone would be raised, an undue appreciation of them prevented, and a morbid craving for excitement would be allayed.

There is a small Hydropathic establishment in the town, containing but few patients, though there are several out-patients. As Cheltenham is on the road from the metropolis to Malvern, the head-quarters of this practice in England, and as, from the short distance, there is considerable intercourse between these two places, it may be as well to make an observation or two with reference to hydropathy, which is not now so much in vogue, especially in France and Germany, except at Graefenberg, and two or three other establishments. This mode of treatment has been doubtless more sup-

ported in England, in consequence of the prejudicial effects experienced by many from the too energetic plan of medication usually adopted in chronic diseases; and that it has been of service in some respects, by circumscribing this practice, may readily be admitted.

There are several disordered states of health in which a restoration may be effected by adherence for a time to a plain regulated diet, early rising, breathing a pure air, and renewing the mass of blood by perspiratory excretion, and by supplying the waste thus occasioned by drinking freely of cold water, and the avoidance of all stimulants. Among these complaints may be enumerated some forms of indigestion, especially that induced by repletion and indulgence in high-seasoned dishes, some nervous disorders, attended with relaxation of the system, which so frequently arise from unhealthy or anxious avocations, the wear and tear consequent upon overstraining the mental faculties, chronic rheumatic affections, and a tendency to catarrhal disorders, as also some chronic cutaneous complaints. The cases, however, which a cold-water treatment is calculated to relieve must be impartially discriminated; and many patients, who would be more quickly cured by other means, might also get well after pursuing the cold-water cure, for which, in general, a long time is required. The *post hoc*, especially in medicine, is very often mistaken for the *propter hoc*; and it is not because a person gets well, while under any particular course of treat-

ment, that his recovery is necessarily a consequence of that treatment, for many recoveries occur in spite of improper modes of practice. As there may be several roads leading to one place, so, in medicine, the same disease may often be cured by or subside while under different methods of treatment, and it behoves both the practitioner and the patient to select the one which requires the least time, and which is attended with the smallest amount of positive inconvenience. Now, the operations of the cold-water cure are not only unpleasant processes, but a long course is usually insisted upon by its advocates, and a patient would not have great reason to congratulate himself upon being cured of an ailment, after a three, four or six months' residence at a water-cure establishment, if by medical treatment, or a properly directed course of mineral waters, the same result could be produced in a much more agreeable manner, and in less than half the time; and I shall endeavour to show, further on, that mineral waters, from the nature of their composition bearing an analogy to that of the fluids of the human body, are the most natural remedies for the cure of the majority of chronic diseases. In many patients, likewise, who, while under the novelty and stimulus of the water-cure, have found themselves much better, and were loud in their praises of it, the amelioration has not been of a lasting character, after they returned home to their ordinary mode of life. I by no means wish it to be inferred that the cold-water cure is either useless or un-

necessary; on the contrary, I consider it well calculated to be advantageous in certain cases, and it will sometimes succeed, when other means have failed; but what I am desirous of advocating is, its limitation to proper cases, as discriminated by unprejudiced practitioners.

The Old Wells are south of the town, and are approached by a fine avenue of elms; the ground is agreeably laid out, a band of music plays at the hours of drinking the waters, and promenade concerts are given at stated times. The new and handsome Pump Room (the largest public room in Cheltenham) is just completed; a stage being raised at one end for concerts, theatrical and other entertainments. Pyrotechnic, floral, or other out-door exhibitions, are of frequent occurrence, in the summer season, in one or other of the grounds adjacent to the Wells; and, in the winter, musical promenades take place within the room. The Old Well is sunk close to the building, the others at a short distance, the water being conveyed through pipes to the pumps. The Wells most used are No. 1 (Old Well), No. 2 (sulphuretted saline), and No. 4 (strong saline). This latter well is on a gentle elevation, and is about seventy feet deep. The water is not disagreeably saline to the taste; a few gas-bubbles escape when it is held in the glass. The other waters have a less perceptibly saline taste: the sulphurous impregnation of this and the other sulphuretted waters is very slight, and the odour evanescent. The recent analysis of the waters

will be given in the Appendix. The establishment is this season under a new management, as are also the Montpellier, and the Pittville.

The Montpellier Pump Room, with its dome (already mentioned), standing on elevated ground, forms a conspicuous object in a view from the south. It is of circular form, spacious, and tastily fitted up. The waters are dispensed, fresh drawn from the various wells, according as the respective numbers are asked for: No. 4A still maintains its reputation, and is the most in request. Its taste is saline, and slightly bitter, but not unpleasant. With the exception of a more or less marked saline taste, the waters of the different wells do not materially vary in their physical properties. At this establishment there are evening promenades; concerts, and other amusements, are also frequent. An oblong Promenade Room adjoins the Pump Room, and a colonnade extending its whole length, enables drinkers to take walking exercise in wet weather.

The Cambray Pump Room is a small, neat, octagonal building, at one corner of Imperial Square: here are dispensed saline water not dissimilar from those at the other wells—and efficient chalybeate, which is most in request. The properties and mode of action of these different kinds of water will be treated of at some length further on: the mere enumeration of them will, therefore, suffice in this place.

A new Spa has recently been opened at the entrance of the Park, a small Classic Pump Room having been erected by Mr. Billings, the proprietor. The saline water is very analogous to that of the other wells, but appears somewhat stronger, as may be seen by the analysis appended to this work, with those of the other Spas.

The right of using the walks and drives of the Park, nearly two miles in extent, forming a delightful shade during the heat of summer, is the privilege of subscribers.

The Pittville Pump Room is a splendid edifice, a short distance north of High Street, on Marle Hill, and overlooking its extensive grounds, the town, and environs. From the summit of the building, a fine view of a considerable extent of country, and of the Cotswold and Malvern ranges, may be enjoyed. The façade is 130 feet long, the length of the Pump Room being 90 feet—its width 80. It is frequently used for exhibitions, &c. The strong saline water is obtained from five wells, under the building, and connected by pipes with the shaft, or pump-well. A good deal of the water is bottled, and sent both into the town and to other parts. The pleasure-grounds comprise a considerable area, are disposed with great taste, and contain a great variety of trees and shrubs, several of which are indigenous to warm latitudes; a piece of water, crossed by bridges, and ornamented by swans, at one end of the grounds, add much to the general effect.

The only manufactory of which Cheltenham can boast is that of its salts; and that this is pretty active, may be inferred from the frequent appearance of smoke issuing from the tall chimney in the Bath Road; the water is derived from the numerous wells of the Montpellier, and is pumped up with large boilers, being subjected three times to evaporation. The mother-water is then left to stand in vats, pieces of wood being laid across, on which, and on the sides of the vats, the salt crystallizes: after being dried it is placed in bottles for exportation to various parts: the surplus water is used to supply the baths of the establishment, when a saline water is preferred. There are about sixteen bathing-cabinets neatly fitted up; and also a large, tepid plunge-bath (80 feet long), with an adjacent cold-bath of fresh water, a good deal used in summer. There is another establishment for baths in High Street.

With respect to its general advantages and accommodations, whether for a permanent residence, or a temporary sojourn, Cheltenham is not inferior to any, and on some accounts is superior to most, watering-places of the first class. House-rent is moderate, being much lower than it was a few years ago; and even in the season, furnished houses and apartments may be obtained at a reasonable rental, varying according to situation. Provisions and fuel are good, abundant, and comparatively cheap. Butchers' meat of the best

quality, poultry, and vegetables of all kinds, are plentifully supplied from the adjacent country and villages: the Cotswold mutton is celebrated. Fish is readily obtained, both from the coast and rivers. The flavour of the Severn salmon is highly estimated, and the Chelt supplies trout. Game is plentiful. First-rate hotels are, as elsewhere, somewhat expensive. Some of the hotels are also boarding-houses, as the Belle Vue and Lansdown. On the Promenade are the Imperial Hotel, exclusively for gentlemen, and also two excellently-conducted Boarding Houses, the Promenade, and the Belgrave. The town is well lighted and drained, notwithstanding the statement (made after a hurried visit) from the Health of Towns' Inspector, which contains many errors, exposed in the reply of the Town Commissioners. This report may, however, be of service in inducing a closer attention to matters connected with the general salubrity of the town. Invalids unable or disinclined to walking exercise, find every facility for locomotion in the flys or wheel-chairs stationed at different parts. Omnibuses meet every train at both the railroad stations. The common water is more or less impregnated with saline particles, and is not well adapted to household purposes; there is, however, an abundant supply of pure water from the neighbouring limestone hills. The environs, as may be inferred, on the view from any of the heights, abound in pleasant walks and drives. Of the places to which excursions

are most frequently made, besides Cleeve Hill, Prestbury, and Southam (the interior of which contains some interesting objects), may be mentioned, Winchcomb, with the ruins of Sudeley Castle in its immediate neighbourhood; the Glenfall; the village of Charlton; the Seven Springs (the source of the Thames), on the Cirencester Road; the picturesque villages of Leckhampton and Birdlip; Witcombe, celebrated for its Roman antiquities and tessellated pavements, Cranham Wood, &c. The Geologist, Botanist, and Antiquarian, will find scope for the indulgence of their tastes: a Geology of Cheltenham, a Botanical Guide to the environs, and a pamphlet descriptive of old Churches, Coins, Implements, and other relics of former ages, have been published.* Four newspapers, besides a weekly record of fashionable amusements, arrivals, &c., are published in the town. From the size of Cheltenham, presenting several of the advantages of a city, most residents and visitors would be able to meet with associations suited to their respective tastes, whether they prefer to live secluded, occupied with literary or scientific pursuits, or whether they choose to engage in the avocations and amusements of society, which are on a more agreeable footing, and more accessible, than at some other places which pretend to a greater degree of exclusiveness, and the dull-

* "Notes on Cheltenham, Ancient and Mediæval," by W. H. Gomonde.

ness of which being notorious, tends to keep empty of visitors. Those who have lived in India, and have there acquired tastes in some measure proper to the country, find many with whom they can talk over familiar scenes and events. Cheltenham is found to agree remarkably well with this class of residents; the transitions of climate being less experienced than in most other parts of England. During the winter season, Cheltenham has a reputation for hospitality and gaiety, sociable dinners and evening parties being of daily occurrence in different parts of the town. At this season also Earl Fitzhardinge's hounds, the stag hounds and the packs of harriers, meet on stated days, to afford the gratification of their pastime to the numerous sportsmen who may be induced to make Cheltenham their temporary abode. There is at present no theatre; but the amateur Dramatic performances have, during the last two seasons, been got up and carried out with great spirit, at the Assembly Room, producing considerable sums, which were appropriated to increase the funds of the Hospital. Concerts, and other entertainments, lectures, &c., are necessarily, as at all first-class watering-places, of frequent occurrence—so that altogether there is no reason to complain of a lack of resources for recreation. As regards education, besides the College, there are several private establishments of repute, and masters for languages, accomplishments, &c., in sufficient abundance in the town. Neither, as

may be supposed of any place of resort for invalids, is there any lack of practitioners of medicine, both of Physicians and Surgeons, some enjoying high repute; and perhaps nowhere are there so many chemists in proportion to the size of the town, which arises from the circumstance that but few general practitioners dispense their own medicines,—a plan which it is to be wished were more generally adopted.

Malvern is at a convenient distance for invalids who have been using the Cheltenham waters, or for residents who may require change of air in the hot months: the village lies on the declivity of the range of hills, the highest point of which, 1,300 feet above the plain, commands an extensive prospect over the variegated and beautifully wooded scenery of Worcestershire, Gloucestershire, and a part of Wales; and immediately beneath lies the Vale of Evesham, with the winding Severn; and, at a few miles' distance, the City of Worcester. On account of the coolness of its position and the purity of its air, Malvern is greatly resorted to in the summer season; having, however, an eastern aspect, strong gales are at other seasons not unfrequently severely felt. The chief public edifice is the Abbey, which is of great antiquity. The houses are agreeably interspersed among gardens and plantations, most of them being adapted for the accommodation of visitors. There are hotels and boarding houses where tables d'hôte are established. The hydropathic prac-

tice pursued at Malvern has likewise induced many to visit it, and there is perhaps no situation in England better adapted for the purpose. Delightful walks are cut in different directions about the hills, and a good road connects the villages, Great and Little Malvern (about two miles separate); on the hill above the former is St. Ann's Well; the other spring, the Holy Well, rises near Little Malvern. The water is a good deal drank, and is celebrated for its purity. It has no mineral impregnation.

ON MINERAL WATERS.

"The great and chief use of Mineral Waters is certainly the preservation and health of man."—*Sturm's Reflections.*

I PURPOSE offering a few observations upon Mineral Waters in general, in order that the true mode of action of these agents may be more correctly estimated than is usually the case, before entering upon the special consideration of the peculiarities which those of Cheltenham present; these observations being more particularly restricted to waters which are of a low temperature, and which are almost exclusively employed as internal remedies. Great Britain possesses a variety of waters of this class, but is deficient in thermal or warm springs, which find their application for the most part in disorders of a different character. Bath

is the only place in England where the waters are naturally of a high temperature. The appellation of mineral is generally given to those waters which, on passing through the earth, become charged with heterogeneous matters, so that their sensible qualities remain perceptibly altered, as evidenced by their colour, odour, taste, and specific gravity.

Pliny formerly observed, "*Tales sunt aquæ, qualis terra per quam fluunt,*" which may be said of waters in general. Some highly efficient mineral ones, however, derive their principals from other sources as well as from the soil through which they percolate. The water of all springs must, however, be derived from one or more of the following sources: 1st. The waters of the atmosphere, which, after sinking to a great depth, re-appear upon the surface of the earth. 2nd. From the focus of volcanic activity. 3rd. From the great mass of the ocean or other large collections of salt water. 4th. From large subterranean reservoirs of this fluid.

"The formation of mineral waters," observes Dr. Gairdner, "consists in a simple process of solution and lixiviation. The ingredients which they contain in most abundance, constitute for the most part great masses in the solid strata of the earth's crust as far as it is open to our inspection. These ingredients exist in either exactly the same combinations as those in which they are formed in the bowels of the earth; or with

such variations in the disposition of their elements as are entirely accordant with the known laws of combination.

"It is a remarkable fact, that in a very large proportion of mineral waters, the ingredients are identically the same with those discharged from the interior of the earth by volcanic eruption, or found in fissures of the crater and lava masses in the form of sublimation. This includes the whole of the great division of thermal waters, as also the important and interesting divisions of acidulous and alkaline cold springs. Uniformity and constancy of impregnation are the most characteristic features of this great division, the different members of which are linked together by insensible gradations into one uninterrupted series.

"A second class derive their mineral ingredients from an entirely different source. They are more local products of certain strata holding a comparatively superficial place in the great geognostic series, and vary with the localities where they are produced. They are subject to changes dependent upon external influences, whether of temperature, dryness or moisture, secular variations, &c. Generally they are isolated, while the others are disposed in systems, groups, or chains. They are almost invariably cold." *

* "*On Mineral and Thermal Springs.*—Many have been known for a period of 2,000 years, and no material change has taken place in their constitution. What Pliny mentions

Cold springs derive their water principally, if not wholly, from the atmosphere. Flowing down the sides of mountains, rain or snow water forms for the most part streams and rivers; but a part passes into crevices of the earth, and penetrates to great depths. It is observed in mines that the quantity of water increases in proportion to the depth; so that machines are required for pumping out the water. Pure atmospheric air has been found by distinguished chemists in cold mineralized waters, obtained from a considerable depth, as in common snow and rain water. After a long period of drought also, the quantity of water yielded by certain springs is less than in rainy seasons, and the mineralizing principles are in a more concentrated state. This is more especially the case as regards the purging waters of Bohemia, Pullna, Sedlitz, and Saidschutz, which are taken from the wells for bottling at stated periods of fine weather: and this is the reason of the discrepancy to be found in analysis of the same water,

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with regard to the springs of Wiesbaden, still holds true in modern times. The effects ascribed 200 years ago to the Bohemian Baths, by Hillinger, do not materially differ from what are observed now: and Paracelsus, 800 years back, seems to have been equally aware of the virtues of many of the thermal waters of Germany and Switzerland. Berzelius, in 1821, found his analysis of the Carlsbad Sprudel to differ in no essential point from that of Becker, in 1770, or that of Rlaboth in 1789."

made at longer or shorter intervals. Dr. Gairdner adverts to the inconstancy of impregnation of the Cheltenham Waters, and observes that it is necessary, every few years, to sink fresh wells in order to obtain water of the requisite strength. Those Cheltenham Waters, however, which were most in request several years ago, still continue to be so; and although presenting some differences on analysis made at different times, have not materially varied in their sensible or remedial properties since they were first discovered, which doubtless depends upon the nature of the soil not admitting of the ready percolation of water. To this part of the subject I shall have to recur further on. In the Old Well, at Harrowgate, Dr. Garnett found, in 1794, the proportion to be 754 grains of salts to a gallon of water; whereas Dr. Scudamore found it increased in 1819 to 847 grains. Variations with respect to strength and the quantity of water yielded are not unfrequent in cold springs; some having even ceased to flow after a certain period.

The employment of mineral waters dates from the highest antiquity. In all countries they appear to have been had recourse to for the cure of disease, especially by the poorer classes residing in their neighbourhood. "The history of the enclosure of several German springs," says Dr. Vetter, "and the great interest which princes have always taken in them, teach us how highly they were estimated in a hygienic and remedial

point of view. The Emperor Charlemagne, at Aix-la-Chapelle and Pyrmont, Duke Eberard, at Wildbad, Adolph of Nassau, at Wiesbaden, the Archduke Frederick, at Gastein, the Emperor Charles IV., at Carlsbad, protected the springs, and promoted their use. In Spain, during the seven hundred years' domination of the Moors, mineral baths and springs were in higher repute than even in Germany. The soil of this degraded land is still strewn with remains of the magnificent structures which the Romans and the Moors created. Works were published treating of mineral waters, at the close of the 15th century; their number greatly increased in the following years, so that, in the course of the sixteenth century, descriptions of the best-known baths of Italy, France and Germany had appeared, though many erroneous ideas prevailed in them from the imperfect state of chemistry and the deficiency of good analyses, whence the effects of the waters were often ascribed by the people to a divine or supernatural agency."*

Another foreign writer, referring to the general employment of mineral waters, observes—"It is not only in Europe that they are in request; nations less advanced in civilization—the Persians, Chinese, Indians, Egyptians—have springs, to which they resort for health. How could the populations of so many countries, who entertain such various modes of thinking, retain but

* Heilquellenlehre: Berlin.

one opinion respecting the use of mineral waters, unless from the incontestible proofs of their therapeutic efficacy? If, notwithstanding these great advantages, mineral waters are not so highly estimated as they ought to be; if they have been even discredited by some physicians; it is because so many have allowed themselves to be drawn on by interested enthusiasm, which has led them to see in these agents a remedy for all human infirmities. Mineral waters, however, are not panacea."*

It is, indeed, to be regretted, that in general so little reliance is to be placed upon works written by resident practitioners upon the particular waters of their locality, and the relation of individual cases in books is almost useless as a criterion of their powers, inasmuch as the favourable instances are selected, while nothing is said of those who leave the place unrelieved or in a worse state than before, which is not unfrequently the case, and often depends upon a proper kind of water not having been recommended at the outset, owing to the too prevalent ignorance of the subject among metropolitan practitioners, or to the too partial advice of those whose ideas of the efficacy of mineral waters are restricted to their own locality. Dr. Von Ammon observes on this subject:—"Patients go to Teplitz who should have gone to Carlsbad; and invalids who can scarcely bear the mildest springs of Ems, are sent to

* Patifier, "Manuel des Eaux Minerales." Paris.

drink the Sprudel at Carlsbad. If all the bath-doctors who perceive these errors were but honest enough, on the arrival of such patients, to send them away, and dissuade them from the use of a water which may do them more harm than good! but honesty and policy do not always go together."*

Many valuable works have, however, emanated from watering-place practitioners of enlarged views, which are constantly cited as authorities; as, for instance, that of Dr. Jameson, on Cheltenham; Dr. Barlow, on Bath.

"Some of the many works," says Dr. Gairdner, "are the product of physicians, possessing extensive opportunity for experience, and animated with a zeal for the honour of their profession, as well as the health of the invalids committed to their charge. Another very numerous class of these works has unfortunately been made subservient to the purposes of sordid interest or impudent quackery. But in hardly any do we find an attempt at generalization. They are for the most part confined to the empirical details of the effects of each spring upon the individual organs of the body; the materials for an edifice rather than the superstructure itself. Very few medical men have thought of applying to them those general principles of therapeutical agency resorted to in explaining the effects of other remedies in disease."

The only way in which any definite results with re-

* Brunnen-Diatetik.

spect to the exact appreciation of particular waters could be obtained, would be from statistical data, furnished by impartially-collected reports of the aggregate number of cases treated within a given time. This is done in France, where the mineral springs are under the superintendence of government, which appoint to each locality a physician-inspector, and to several an assistant-inspector, by whom such reports are annually furnished: the properties of particular waters are frequently discussed in the scientific societies, and an immense mass of valuable information is thus collected. It is scarcely necessary to say that nothing of this kind occurs in England, where the use of mineral waters is in great measure superseded by pharmaceutical remedies; and several of the more valuable springs have in consequence fallen into undeserved neglect. At the close of the last century, Dr. Fothergill recommended this course to be pursued; and had his recommendation been acted upon, much suffering would doubtless have been spared. "The analysis of mineral springs," he observes, "should be made by *authority* as a matter of *public concern*; and the Royal College of Physicians should adopt such means as are necessary for carrying it into execution. Resident practitioners should preserve accurate journals, and candidly note down the *unsuccessful* as well as the successful events. The result of such inquiry would afford the public more satisfactory information on its mineral waters, than any they

have yet been favoured with, and would rescue our mineral springs from being frequented, as they now commonly are, on no better foundation than that of fashion and caprice. Each would thus, in time, find its own proper level in the scale of merit; their natural and chemical history would be completed; their comparative virtues ascertained, science enlightened, and the practice of medicine improved; our medical practitioners would then no longer be at a loss concerning the natural properties of the different mineral waters. Instead of hesitating in their choice concerning this or that spring, or recommending waters of opposite qualities indiscriminately, they would then, in the first instance, be competent to decide with propriety. In a word, instead of dispatching their patients, as at present, in the random pursuit of imaginary virtues, they would then be enabled at once to direct them to such as were real."*

When moreover the circumstance is considered, that there exists great analogy in several respects between the chemical constituents of the human body, and those of mineral waters, the value of these agents in the treatment of long-standing disease, could, one would think, scarcely fail to be duly estimated. Thus the basis, water, enters so largely into the composition of the body, that even of the more solid parts, as the bones, but a very small residuum remains after desicca-

* Op. Cit.

tion. Water constitutes the greater mass of the blood, and the whole of the secretions with the exception of a fractional portion.

Muriate of soda, or common salt, which forms a component part of most of the important medicinal springs, is found, on analysis, in all the fluids and soft parts of the body, of which it is a necessary ingredient. It is well known that many animals cannot long exist in a healthy state when fed upon food which does not contain salt. At some plantations in the West Indies it was observed that the negroes pined away, and that many soon died; whereas at other plantations where the same kind of food was eaten, they were in a thriving condition. This difference was found to depend upon the circumstance that salt was given in the latter instance.

Sulphur is found in the body, and also enters into the composition of several of the most efficient springs. The sulphates of soda, potash, and lime, are found to exist in the body, though in minute quantity. These salts (the former in large quantity) are also contained in many mineral waters.

Carbon constitutes an important element of the principal parts of the body, and though free carbonic acid does not exist in it, yet in combination with vegetable alkalies it is found in all parts. The alkaline carbonates exist in all the solids and fluids; and carbonate of soda, which forms the principal ingredient

in many of the most important waters, is found in the chyle and blood, of which it prevents the too rapid coagulation. The earthy carbonates, as lime and magnesia, are only in minute proportion in the body, as also in mineral waters.

Iron, the predominance of which in mineral springs constitutes an important class, is an essential component part of the animal economy, and is found in the chyle, lymph, and blood; in the muscles and bones, and in many of the secretions, including woman's milk. The proportion of iron in the blood bears an exact relation to that of its red globules. By the exhibition of preparations of this metal, the quantity of fibrin is increased, and the blood assumes a brighter red colour. It has been however demonstrated by experiments that iron can be absorbed into the blood only in a limited quantity, whatever be the amount given, the remainder passing off by the bowels. Hence we may perceive the great advantage which chalybeate waters possess over pharmaceutical preparations of this metal.

These instances may suffice to illustrate the position which I have advanced; but the action of saline substances upon the blood, from which the solids of the body are formed, as shown by the experiments of Hewson, and more recently of Prevost and Dumas in France, as also of Müller and Schultze in Germany, are highly interesting as affording positive evidence of the effects to be derived from mineral waters. These

chemists perceived that acids and solutions of salts affected the form and compositions of the blood-globules, which are not altogether fluid, as was formerly supposed, but are hollow vesicles into which air is absorbed in the process of respiration. If a solution of muriatic salts thinner than the serum be applied to the blood, its colour becomes darker; but if the solution be more concentrated, its colour is rendered lighter and the globules are flattened. By the continued use of alkalies, the blood is made more fluid, the coagulation of its fibrin is prevented, and its colour becomes brighter. The free use of alkalies is said to produce a too great thinness of the blood, and impaired digestion. This may be the case in some instances, but not generally, especially when they are required by disordered conditions, as for instance when an acid diathesis prevails, or the blood is in too plastic a state.

A German author observes upon this point, "The neutral salts soluble in water which are found in the body, cause the expansion to a considerable extent of certain organic substances, and on the other hand contract or draw others together. They have the property of dissolving some of them, of maintaining them fluid, and of modifying the combinations of others among themselves. The salts of the blood are the only active constituents which maintain the albumen (of itself insoluble in water) in a state of solution, and this two-fold combination is again the only medium

of dissolving fatty and other insoluble substances, and of carrying them along with it into the circulation.

"If we apply these facts to therapeutical and pharmaceutical principles, the conclusion is readily deducible, that the quantity and quality of saline combinations, especially as they occur in mineral waters, exert the most marked influence upon the qualities and fluidity of the blood, its physical and chemical nature, as well as upon its circulating, secreting, and excreting powers." *

The gases which most commonly come into contact with the blood in the living body, produce effects opposed to each other. Carbonic acid applied to the blood, renders its globules darker coloured, thicker, and makes them run closer together.

It is well known, that the blood of animals asphyxied in carbonic acid, is of a very dark colour. Oxygen produces opposite effects, the blood being rendered lighter, more florid, and the circulation more active. From this may be perceived how, in persons leading a sedentary life, or breathing the carbonized air of close apartments or of cities, the quality of the blood is altered, its circulation is retarded, and congestion of the liver or other organs takes place. Nothing removes this state better than active exercise in the open air, by which the respiration is rendered more perfect, and consequently more oxygen absorbed.

* Schwartze, "Allgemeine Heilquellenlehre."

An abnormal condition of the blood may depend upon various causes, as when transmitted from parents to debilitated subjects; from breathing a vitiated air; from deficiency, bad quality, or excess of food. A too exclusive nourishment with animal food, by increasing the relative quantity of the fibrin, renders the blood too rich, and thus disposes to gravel, gout, and inflammatory diseases; so long, however, as the vital energy of the economy is sufficient for the regular performance of the functions, noxious matters rarely accumulate in the blood to such an extent as to alter it; but if any influence occurs to depress this energy when the blood is already imperfectly formed, or when some of its elements are modified in their quality or quantity, disorders arise which terminate either in the elimination of noxious matters, or by a series of pathological actions and organic lesions.

The composition of the blood is materially and evidently altered in some diseases, and is more or less so in almost all chronic complaints. Dr. Carswell states that tubercle is never found when the blood is not in a diseased state: the same may be said of the gouty and calculous diathesis. In patients who have long laboured under gout, the blood is found to be loaded with earthy phosphates and azotised substance, and even crystals of the salts eliminated in gout have been detected in it. Acidity predominates in the blood and secretions of scrofulous patients.

The imperceptible manner in which the blood may become altered by improper living, was ably shown long ago by Dr. Becher in his work on the Carlsbad waters. "Where a man follows an indolent mode of living, and enjoys himself a good deal in eating and drinking, the food which in proper quantity and quality would produce a nutritive juice of a mild and homogeneous nature, which carried into the blood would restore the strength, is transformed into a slimy, tenacious and acrid fluid, which does not form an intimate mixture with healthy blood. It is not immediately, nor even in the first years, that the depraved state of the juices causes any particular inconvenience to the invalid, which might warn him of the approaching evil. He still feels himself tolerably well, though the blood becomes from time to time more vitiated, till at length the corruption of the juices arrives imperceptibly at such a degree that it induces morbid conditions in the solid parts; and now the effects will not fail to be experienced, as the acridity stimulates the sensitive and already weakened vessels to increased activity, and the tenacious blood is no longer able to penetrate the finer kind of vessels; whence arise obstructions, which take place chiefly in the abdominal viscera, and from neglect often rapidly increase. The glands become indurated, the obstructed bile hardens into gall-stone," &c.

The influence of the chemical action of substances introduced into the economy, though great, must not,

however, be over estimated, to which there is a tendency in the present day—that of the dynamic or vital powers in controlling this action not being always sufficiently considered; for operations do not take place in the living body as in the laboratory; but in proportion as the vital powers decline, chemical actions and affinities come more freely into play. Alterations in the quantity and quality of the blood and secretions frequently depend upon causes directly affecting the vital powers through the nervous system, as seen in the changes produced from mental impressions of an agreeable and painful nature; of which an increased flow of tears may serve as an instance. Organic changes are often produced by similar causes. Scirrhous tumours, for instance, are not unfrequently induced by depressing emotions, as grief, anxiety, &c., acting, in the first instance, upon the nervous system, and consecutively upon the capillary vessels and nerves of a part of the body, by which its fluids become altered or obstructed. So, in like manner, may be occasioned indurations of viscera, and other local, structural, or functional alterations.

The diagnosis and treatment of local diseases is often the more difficult, inasmuch as the seat of the evil is not necessarily in the part of which the function is most seriously disturbed. Its origin is, in many cases, not in the organ which suffers most, but in a distant part.

Instances enough will have been adduced to indicate

that, in chronic diseases more especially, the attention of the practitioner should not be too exclusively restricted to the most prominent symptoms, but that these should be traced to their origin, which is so frequently found in an abnormal condition of the blood, or of the nervous system, to remedy which our means of treatment should be chiefly directed.

Of these means, none are more efficient than mineral waters, which, by their penetrating operation, and the facility with which they are absorbed into the economy, combining, according to the laws of affinity, with the substances contained in the blood, and causing neutralizations and separations, or by producing a more complete vivification and nutrition, tend most effectually to the end proposed.

"Mineral waters," says Dr. Kreysig, "become mixed with the mass of humours, produce in them a specific action, and leave the body in a modified condition. They often produce effects independently of any increase of secretion; such are chalybeate waters: but, in general, increased activity in the intestinal canal, or in the cutaneous secretions, accompanies their operations.

"We should be, however, greatly in error, if these secretions were to be considered as critical in all cases, and as the sole, or even the principal, effect of the waters—for they are frequently of very subordinate importance: they constitute the most superficial, though the most apparent and quickest, effect. The Carlsbad

waters very frequently cure the most obstinate swellings of the glands and viscera, without any notable evacuations. The cure of these deep-seated visceral enlargements certainly does not depend upon the purgative action of the water, for these cures would not be effected by the prolonged use of purgative remedies. The cure is often preceded by a state of indisposition and *arrest* of the evacuations, which is a sign by which one recognizes the saturation of the mass of humours by the water."

Again, in another part of his work, this distinguished physician observes:—"Many faults are committed when the practitioner attempts to cure patients solely by purgatives, or when he makes these his chief means. Constipation is but a symptom; of itself it cannot constitute a disease, and it is only to be cured by removing or altering the conditions which cause it to exist. These conditions may be affections of a very different nature, having their seat in different organs of the abdomen, or even in more distant parts, as the brain."

"Mineral waters," observes another high authority on the subject, "can only produce their beneficial effects in a slow and gradual manner; a hurried perturbatory employment of them not only prevents the cure, but almost always causes an aggravation of the disease. They are drank in order to become mixed with the blood by means of the digestive powers; and

in this manner the curative changes of the body are effected.

"The beneficial effects of a course of mineral waters is not always evident at the time; but the after-operation (*Nachwirkung*) of mineral waters is not a fallacy, but a truth proved by repeated experience. Many diseases are too ancient and deeply-rooted for a cure to be effected by a month or six weeks' course; and *though an aggravation rather than an amelioration* of the complaint is occasionally experienced at the time, yet the patient frequently feels himself benefited by the after-operation." *

Several of the observations already made are specially applicable to the employment of the Cheltenham waters: let us see, however, what the old author, whose work on these waters I have already quoted (Dr. Fothergill), says on this point: "We must look for the medical virtues of the water more in the aggregate rather than in the constituent parts, though both ought carefully to be explored. The water may either be used as a powerful evacuant, or as a gentle alterative, according to the state of the constitution, and the intention of the physician. If with the former intention, a large quantity at short intervals; when employed as an alterative, in small quantities at longer intervals, to pass into the blood, and to accompany all the fluid secretions without sensibly increasing any of them."

* Von Ammon, "Brunnen Diatetik." 4th Edition.

And with reference to the indiscriminate use of the waters in their former capacity, he further observes :— "The habitual use of purgatives, even of the mildest sort, not only impoverishes the habit, but undermines the powers of life; and, finally, too often ushers in a long and dismal train of hypochondriacal and nervous symptoms."

Being desirous of adducing the opinions of standard authorities, rather than of merely giving my own, on this subject (which I expressed several years ago in this town, and which fully accord with them), I will further quote Dr. Helter, who says :—"Let us take a case in which irritation of the stomach and bowels had long existed. The vessels of all kinds are over-distended; the mucous membrane has almost ceased to act; there is obstruction and torpor of the bowels. The consequences of this state may be various; regular or irregular hemorrhoidal affections, dyscractic tendencies towards the skin evincing themselves, as hirpes, &c., or towards the fibrous textures, as in normal and abnormal gout, obstructions in the liver or spleen, with venous congestion in the lungs, brain, &c.

"We find that it is necessary constantly to direct a powerfully resolvent action upon the torpid and overfilled bowels; and, as practitioners, we have not so much to consider whether we have to do with gout, hirpes, with hepatic obstruction, dyspeptic, hypochondriasis, hemorrhoids, or congestions, &c.; whether

sleeplessness, or too great a tendency to sleep, is to be combated—for all these are but subordinate phenomena. The essential thing is, to restore the venous system to its proper contractility, without producing irritation, and to remedy the chronic repletion, which necessarily hinders the free circulation of blood. What is termed chronic abdominal affection, is not always to be looked for solely in the abdomen. As respects the remedy to be chosen, we desire those of energetic resolvent, but not debilitating properties, as alkalies, due attention being paid to the predominating irritation. We do not wish merely to evacuate, as by this means we should weaken without deriving advantage, and *only relieve the surface.**

"The general remedial power of mineral waters predominates so greatly over the special relations of their medicinal constituent parts, that in their employment we must always refer to general indications; and the special indication should fall more or less into the background."

Now, from the empirical mode of practice too prevalent in this country, which leads practitioners to look more to local and prominent symptoms, without sufficiently referring to the conditions upon which they may depend, English patients have become so accustomed to the speedy action of pharmaceutical preparations, that they are with difficulty induced to go through

* The Italics are mine.

a proper course of mineral waters, even when abroad, and still less in England, where these agents are mostly used in a pharmaceutical manner, viz., to produce active effects at the time. This, though it may be attended with temporary alleviation, is, in the end, prejudicial, and has tended to the comparative disrepute into which several efficacious waters have fallen, and perhaps none more so, from this cause, than those of Cheltenham.

Patients, therefore, on finding often no material improvement in their condition, after the lapse of a longer or shorter period, report that they used the waters of such or such a place without being a bit the better—when, it may be, the cause rests entirely with themselves—either from their taking the waters without being attended by a properly-qualified professional adviser to superintend their course, and to make such alterations as circumstances may require; or else from being so much under the influence of habit that they do not make the requisite change in their diet, and mode of living, but pursue the same method which, probably, tended to produce and keep up their disorder—looking to active medication to remove, for the moment, the unpleasant symptoms thereby induced. It is not, therefore, surprising, that disappointment should so frequently result from medicines or mineral waters thus employed; nor that so many should express themselves benefited by the hydropathic or homœopathic systems—such benefit arising, for the most part, from

the cessation from active medication, and from the strict plan of diet and regimen enforced.

Several chronic complaints, especially when not of long standing, would be better treated by medicines than by mineral waters, which I by no means wish to be considered as remedies of universal application, and which, in many instances, would be altogether inapplicable; but, on the other hand, there are many diseases of long duration, in which medicine has been but of little avail, and which a properly-directed course of mineral waters would remove when other means would fail. This resource is, however, too often delayed till the patient has gone through a whole range of pharmaceutical preparations, and the chance of advantage from these natural remedies much diminished. This, though more generally the case with English invalids, yet not unfrequently occurs in other countries, and is a constant source of disappointment, both to the practitioner and patient. M. Patissier observes, on this point:—"Patients who go to mineral springs have often exhausted all the resources of pharmacy; their stomachs are weakened by the drugs with which they have been oppressed, and the cessation from this medication is not, perhaps, the least of the advantages which they derive from a visit to the springs. How many persons there are, who have recovered their tone and energy from a journey to a watering-place, which they had vainly endeavoured to regain by other

means! It is chiefly in those states of languor and exhaustion, of wearying pains, which affect parts without constituting a distinct disease; it is in those obscure abnormal conditions, the fruits of a too-refined civilization, which are often only aggravated by medicines—that mineral waters are most advantageous, by exciting a favourable reaction in the organism." *

Some persons, however, ascribe the benefit derived from a visit to a mineral spring entirely to the journey, the mental relaxation, and freedom from the cares of avocation—the open air, exercise, &c. That many valetudinarians would be benefited by the mere change of air, scene, and mode of life, is unquestionable; and it is equally true, that without these important auxiliaries the good effects would not be produced, in many instances—yet there is no doubt that, in the majority of cases, the advantage is mainly to be attributed to the medicinal operation of the water (especially when strongly impregnated with mineralising principles), which, though slow, and often not productive of immediate and active effects, is, on that very account, more suited to the class of chronic complaints. It will not be out of place to adduce the observations of Dr. Jameson, with regard to this part of the subject:—"Treatises without number have been written upon the chemical properties of waters, which could have no other effect than to display the knowledge of their

* Manuel des Eaux Minerales.

authors; others have been written upon the virtues of particular springs, to prove that they cure all diseases by the supernatural powers of their ingredients; whereas the truth is, that the good effects arising from a resort to watering-places depend neither upon the chemical or medical properties of the springs alone, for a variety of other circumstances operate in conjunction with the waters in the cure of disease. All kinds of mineral waters drank upon the spot prove efficacious, although it is well known that some of them have no more impregnation than common pump-water. The great number of cures performed by drinking the Malvern, Buxton, or Bristol waters, which contain very little foreign matter, clearly demonstrate that their sanative effects depend on several circumstances acting in conjunction with the waters. Change of air, exercise, occasional relaxation of mind, is as necessary for the health of the body as it is for the happiness of the human species. Watering-places generally afford various kinds of amusements, which the inhabitants are solicitous to multiply in every way they can."

It must, however, be borne in mind, that in several of the worst cases sent to mineral springs for relief, these auxiliary circumstances can have no influence; and the benefit is clearly to be ascribed to the waters alone. Many persons are unable to take exercise—perhaps crippled or confined to their room, suffering from pain, without variety or resources for amusement.

Others, again, who may not be in this condition, care little about the beauties of scenery, take no interest in public amusements, soon become tired, experiencing discomfort at being separated from their homes, anxious, perhaps, about their affairs, and yet are induced to resort to a watering-place, and to prolong their stay from the evident improvement in their health during the course, though perhaps little or no alteration is made in their diet, and ordinary mode of life; and these are the cases by which the powers of mineral waters are most satisfactorily tested.

Experience in the ordinary practice of medicine shows that the properties of remedial agents are greatly enhanced by pharmaceutical combination, and the difficulty of mixing these substances as closely as they are to be found in a state of nature, is one reason of the superiority of mineral waters, the efficacy of which depends upon the intimate admixture of the saline, metallic and gaseous substances with the water, to which the heat in thermal springs essentially conduces. The reason why some strongly-impregnated waters (as Carlsbad), which act upon the alimentary canal, are so well borne, even when taken in large quantities, depends upon the more close amalgamation of the separate constituents into one whole, by the action of caloric.

"The only method," observes Dr. Gairdner, "of forming any rationale of the effects of mineral waters in health or disease, is to consider them acting as a single

compound: any single salt which one may be inclined to select as characterising a spring, from its predominance in quantity, or superior activity, will be found to be so modified by the presence of other subordinate compounds, that its peculiar qualities are entirely disguised, if not changed altogether."

Various classifications of mineral waters have been proposed. I have preferred ranking them according to their action, under the heads of sulphurous, chalybeate, saline-thermal, saline-aperient, alkaline, acidulous, salt or brine-springs, and the slightly-mineralized ones.

The principal action of several springs which come under these separate divisions is in the form of bath, to which I need only briefly advert in this place. Baths of mineral water have a two-fold action: First, from the prolonged and repeated contact of warm water, impregnated with saline and gaseous substances, with the skin, its texture is softened, the activity of its capillary circulations and secretions is increased, perspiration being not unfrequently produced, and, consequently, the blood is drawn in greater quantity from internal parts, thus relieving states of visceral congestion. When tepid, they have also a sedative action on the nervous system; the pulse becomes slower while the person is in the bath, and a tendency to sleep frequently supervenes. These effects, though in a less degree, are also produced by baths of common water; but a prolonged course of bathing would frequently

relax and debilitate, whereas, when baths of mineral waters agree, persons feel refreshed and strengthened by their use. The second and most important operation takes place by means of the absorption of a portion of the water, which becomes mixed with the blood, and thus has a material effect in altering the quality of this fluid, and of the secretions. The tonic effects from chalybeate baths are frequently manifested when persons are unable to drink the water. Cold waters require to be warmed up to the required temperature for bathing. Cheltenham and other analogous waters would have little or no medicinal effects in the form of baths. Water-douching, vapour, gas, and mineralized mud baths, are very generally employed on the continent, in conjunction with the internal use of various waters.

The class of saline-aperient springs is distinguished from others by containing, as a predominating ingredient, sulphate of soda, or sulphate of magnesia, which sometimes exists in large quantity, the other substances (muriate of soda sometimes excepted) being in comparatively small proportion. Some of these springs are very gaseous, and of a high temperature; others are cold, several of them containing but little gas. The hot springs are usually energetic in their action, and are exciting to the system generally; the cold ones are antiphlogistic, cooling—their sensible operation is purgative, aperient, diuretic, or alterative, according to

the quantity taken, the condition of the patient, &c. Carlsbad is the most efficient of the hot springs: Marienbad, Homburg, Cheltenham, and Leamington, are among the best cold ones. As this class is chiefly employed in the various forms of abdominal congestion and torpor, bathing, which would interfere with its internal operation, is not so frequently recommended.

Chalybeate springs are all cold. Those only belong to this division which, by their manifest tonic properties, clearly indicate the predominance of the iron over the other mineralizing ingredients. This depends not so much upon the quantity of the metal, which is generally very small, as upon the proportion of the saline and gaseous elements, their nature, and state of combination. These are the chief circumstances which modify the action of chalybeate waters, and enable persons to use them who would be unable to take the pharmaceutical preparations of iron. Taken internally, waters of this class have a directly fortifying action upon the nerves of the stomach, imparting tone to the whole digestive apparatus, and to the system generally; increasing the muscular power, and improving the quality of the blood and secretions. They are especially adapted to individuals of torpid and lymphatic temperament, of weakly and relaxed constitution, to cases of general debility and muscular atony, unattended by morbid alterations of organs, but frequently dependent

upon chagrins and other moral causes; upon diminution of the quantity, or deterioration in the quality, of the blood, induced by hemorrhage, long-continued discharges, or acute diseases. Chalybeates, also, are specially applicable to many cases of impaired energy of the assimulative functions consequent on excesses, or other causes; to some cases of hypochondriasis, and other disorders of the nervous system—passive hemorrhage, and some catarrhal affections. They are, likewise, not unfrequently used as an after-cure, subsequent to the employment of other mineral springs. It is well known, however, to medical practitioners, that in many cases of debility, though apparently arising from no local disease, the exhibition of tonic remedies, even of the lighter kind, is not well borne, in consequence of the extreme susceptibility of the nervous system to impressions of any kind. In other cases, the debility, though the most apparent symptom, is not the cause of impaired health, but is superadded to latent alterations in the state of particular organs, which require for their removal deobstruents or alteratives, prior to the use of chalybeates.

On the other hand, waters of this class are prejudicial in persons of full habit of body, of rigid fibre, with tendency to visceral congestions, active hemorrhage, or diseases of an inflammatory nature. When they agree, they are easily digested, produce a feeling of invigoration, improved appetite and strength, without inducing

abdominal inactivity, or symptoms of congestion towards the head or chest.

The other classes of mineral waters not having reference to Cheltenham, need not be more particularly adverted to.

A course of mineral waters, or cure, as it is termed, in Germany, generally lasts from four to six weeks; in many cases, however, a shorter, as from two to three weeks, is sufficient. In other instances, a much longer course is required, or even two courses during the season, two or three weeks intervening between them. From May to October, inclusive, is the best time for a mineral-water treatment. During the course, patients drink the water daily, the quantity being gradually increased according to circumstances, and towards its termination gradually decreased. It should always be taken early in the morning, at the spring when possible. As other medicines mostly interfere with the specific action of mineral waters, they should be abstained from, unless when imperatively called for. The details of the course are, however, regulated by a resident practitioner, without whose advice no one should undertake to use these agents.

Walking exercise is an essential adjuvant to the beneficial action of waters which are taken internally, their operation being thereby not only greatly facilitated, but the exertion further conduces to invigorate the mind and body, both on account of the more numerous

calls upon the attention out of doors, and from the activity imparted to the muscular, circulating, and respiratory systems.

The mind of an invalid, who seeks to derive advantage from a course of mineral waters, should be as free as possible from cares and anxieties. He should avail himself of the resources for amusement, and facilities of association, afforded at most watering-places, by which means the beneficial action of the waters will be materially promoted. With regard to diet, I do not think it so essential to draw a distinct line of demarcation between substances that may be taken and others that are to be avoided, as some writers on mineral waters have done. Certain articles of diet agree very well with some people, which would be prejudicial to others; hence a person's own experience must, in some measure, guide him in this respect. It is, however, of great importance that an invalid do not err with reference to the quantity of the ingesta; as, when the stomach is overloaded with food, the whole system is oppressed, and a state of excitement is induced, which tends greatly to counteract the beneficial action of the waters. Thus, when the appetite is satisfied, it is manifestly injurious to go on eating—as is frequently done, and especially at dessert—things which are in themselves indigestible, as hard fruits, confectionery, &c. As a general rule, the articles of diet which will be found best adapted to a person using mineral waters, will be

soft fish, plainly dressed, tender roast or boiled meat, poultry, or game, well-cooked vegetables, farinaceous puddings, and ripe, soft fruits, as strawberries; while, on the other hand, pickles, salted or dried meats, and high-seasoned dishes, raw vegetables, as salads, &c., should be avoided, both on account of their being in themselves prejudicial, and of the appetite being stimulated by them to take more than the stomach can readily digest. Attention to diet is more especially requisite during the employment of waters containing much salt and gas, which tend to increase the abdominal secretions. At Carlsbad, Kissingen, and some other German baths, the dinners are under the superintendence of the authorities; whatever would be likely to disagree is not allowed to be placed on the tables d'hôte—though, of course, a similar regulation could only be enforced at those baths which are exclusively resorted to by invalids. The best criterion of a dinner not having disagreed is, that the person feel himself light and comfortable afterwards, and not flushed, or excited, during the evening.

THE CHELTENHAM WATERS.

THE preceding observations have reference, more or less directly, to the waters of Cheltenham, which may be divided into the saline-aperient, comprising several varieties, and the chalybeate. The following account of their origin is given by competent local authorities :—"The soil of the valley," says a medical writer, "is a sandy loam, lying on a stiff, blue clay, which, in the town itself, is in many places covered with fine sand and gravel, the detritus of the neighbouring hills; and waters of somewhat analogous character to those of Cheltenham exist at Gloucester, Tewkesbury, Leamington, and throughout the whole of the lias formation, differing in the relative qualities of their constituents in various localities. In the town of Cheltenham itself, there are above a hundred wells, which supply the daily consumption of water by invalids, and the manufactory of

Cheltenham salts. The origin of the saline matter which these waters contain, is, no doubt, to be found in the great new red sandstone formation, which underlies the lias, and which is so well known in Worcestershire, Cheshire, and Lancashire, as a salifirous deposit. The waters thus originating, meet with beds of iron pyrites, and other mineral substances, in their passage upwards, through fissures in the lias; and thus local circumstances produce local differences in the constitution of each mineral water. The presence of iodine and bromine in these waters, a late discovery by Dr. Daubeny, is by him referred to the same source."*

Dr. Gairdner says, that the springs arise from a bed of sand in the blue clay of the lias limestone, oolite limestone constituting the Cotswold Hills.

More recent observation, however, would appear to confirm the accuracy of Dr. Jameson's investigation, in 1803, that "the salts impregnating the springs exist in the strata of the earth immediately surrounding the wells, which always take their origin in a blue marly clay, which contains a great number of saline matters combined with the clay, and lying near each other, particularly on the south side of the town. "The soil of the parish of Cheltenham," observes Dr. J., "in some places consists of a loose sand, in others of a

* "Medical Topography and Statistics of Cheltenham," by D. J. Nash, Esq., in the Provincial Medical Transactions, Vol. II.

brown or stiff blue clay. The soil of the town, in its immediate vicinity, consists of a surface-stratum of brown mould, three or four feet thick; next, a keen, hard sand, penetrating six or eight feet deep; then, a quicksand, or loose gravelly matter, whence the springs of pump-water issue. The gravel extends four or five feet deep, and rests upon the concavity of blue clay which forms the rising ground on each side of the town. But a peculiar circumstance of the valley, more particularly of the parish of Cheltenham, is, that the soil, in a great number of situations, is composed of immense beds of marly blue clay, which extend to a great depth under the surface, and become hard and lamellated, like soft slate, as they deepen. A great variety of fossil-shells and pyrites are found in this kind of blue clay, at different depths; and, in many places, white particles of calcareous powder, and crystals of selenitic salts, from which the aperient springs of Cheltenham and its neighbourhood derive their origin.

"To ascertain the proportion of saline matter that the clay contained, a solution was made of a hundred grains of dried clay, in an ounce and a quarter of dilute muriatic acid, and the liquor filtered from it; the dried residuum was boiled ten minutes, in six ounces of distilled water, and filtered again. The remaining insoluble portion, after drying, weighed only fifty-three grains, which showed that the clay had lost nearly half its weight. How immense, then, must the quantity of

saline matter be, in so many acres of blue soil on the south side of Cheltenham !"

The following is an outline of the local geology, and of the origin of the waters, by Sir Roderick Murchison. "The subsoil of this vicinity consists of three grand divisions:—1st, the inferior oolite; 2nd, the lias formation; 3rd, the marl, or new red sandstone. The oolite is altogether about fifteen feet thick, consisting of, 1st, a cream-coloured marlstone; 2nd, upper ragstone, and thin-bedded oolite: 3rd, freestone; and, 4th, lower ragstone, called by the peasantry *peagrit*. The organic remains of these oolite formations are extremely numerous, and some of them very rare. Immediately beneath the peagrit the lias begins, and is divided into three parts:—1st, upper lias, or alum shale; 2nd, marlstone; 3rd, lower lias shale; in each of which a great variety of peculiar fossils are to be found. The lowest strata consists of a red marlstone, in which no organic remains have ever been found." Sir R. considers that the mineral waters originate in these beds of marlstone.

Again, in a very recent work, the waters are said to rise through the sand of the lias (Gairdner). It is, therefore, desirable to state distinctly, that the lowest marl, and argillaceous beds of the blue lias formation, are really the strata through which these waters find their way to the surface. For a long time after their first discovery, it was the general belief that they had

only one source, but the enterprise of Mr. Thompson proved this to be erroneous. By numerous sinkings at depths of eighty to one hundred feet adjacent to, and at considerable distances from, the old springs, he established the fact, that many strata were saturated with water, holding in solution the muriate of soda, the sulphate of soda and magnesia, and other mineral substances.

These sinkings were followed by others, at a distance of nearly two miles from the most distant wells of Montpellier; and the discovery of waters of nearly the same composition led to the establishment of the New Spa at Pittville.

It is thus demonstrable, that the mineralization of the broad expanse of water must be due to causes co-extensive with the impregnated strata.

The great subterranean storehouse of the rock-salts and brine-springs of England is the new red sandstone, or red marl; a formation which is fully disclosed in Cheshire, and the east of Shropshire. It extends from thence to the south-west, through Worcestershire and Gloucestershire, whence its position, with respect to the overlying lias of Cheltenham, has been explained. Now, if sea-salt be the most abundant saline ingredient in the mineral waters of Cheltenham, it is present in still larger quantities in those wells which occur near the western edge of the formation, where the lias forms only a thin covering above the marls of the new red sandstone. When experimental borings were made by

Mr. Thompson, to the depth of 260 feet below the surface, the water of the lowest strata of marl, or clay, was found to be highly charged with common sea-salt, and to contain less of the sulphates than the existing wells, none of which have been sunk to a greater depth than 130 feet.

The salt water having to pass through various strata of marl and clay loaded with iron pyrites, (a sulphuret of iron,) it is to be presumed that, during this passage, certain chemical changes take place which give the waters their most valuable medical qualities. The sulphuric acid, thus generated by the decomposition of the sulphuret of iron, will necessarily re-act upon the different bases which it may meet with in the strata, and form those sulphates so prevalent in the higher bed of lias; the oxide of iron being, at the same time, more or less completely separated. In suggesting this explanation, one must not, however, overlook the fact, that fresh water is perpetually falling from the atmosphere upon the surface of the lias clay, more or less percolating its uppermost strata. Many of the saline springs must, therefore, be somewhat affected by this cause, and the existing condition of the various wells of Cheltenham may ultimately depend upon three causes. By this means, it is presumed that these mineral waters, which are principally brine-springs, at their greater depth acquire additional and valuable properties in their rise.

1st. The supply of salt-water from the inferior new red sandstone, in the manner above described.

2nd. The chemical action produced during the filtration of the water through the variously constituted strata.

3rd. The supply of fresh water from the atmosphere.

According to the same authority, the circumstance of springs differing in their different chemical properties is mainly to be ascribed to the different depth of the wells whence the waters are, in the first instance, drawn.

Those which yield the pure saline, at Montpellier, do not exceed in depth fifty feet, whereas those that produce the saline waters at the other spas are from eighty to one hundred feet; and it is generally found, that in proportion as the wells are deepened, the waters acquire a more abundant impregnation of the muriate of soda, which communicates to them a stronger, briny taste, without, however, adding to their medicinal virtues.

The composition of the Cheltenham waters will be best seen from the subjoined analysis of the Old Wells (in which, however, the principal ingredients only are given), as stated in the guide-books. I have placed in juxtaposition the relative proportion of these ingredients in the sulphurated saline, and in the strong saline, as shown by the more recent analysis of Messrs.

Abel and Rowney, of the Royal College of Chemistry, in 1848, by which the great discrepancy between the results of analysis, made after a long interval, may be perceived. The tables will be given at length in the Appendix.

In a Pint of Water.

	OLD WELL.	SULPH. SALINE.		STRONG SALINE, No. 4.	
	former analysis.	former analysis.	recent analysis.	former analysis.	recent analysis.
Muriate of Soda	58·20	22·60	28·50	47·80	74·50
,, Lime	6·21	3·68	1·25	4·29	2·25
,, Magnesia	2·54	5·16	6·50	7·30	2·00
Sulphate of Soda	14·56	52·32	29·00	59·20	11·75
Grains	81·51	83·76	65·25	118·59	90·50

The recent analysis of Messrs. Abel and Rowney shows the amount of constituents in a gallon of water. In reducing the quantity of the principal ingredients as contained in a pint, to compare them with the former analysis, the fractional portions are not very accurately given, but sufficiently so for the purpose. The sulphurated saline contains two and a half grains of carbonate of lime, which would make the proportion of the salts of lime equal in both analyses. The greater discrepancy, however, it will be seen, exists in the aggregate amount of the strong saline, and especially in the relative proportion of the principal salts. As the effects of these waters are not found to vary mate-

rially from those produced in former days, the only conclusion which can be deduced, is, that the old analysis must have been very inaccurate. It admits, however, the presence of carbonate of iron, and carbonic acid gas, though the proportion is not given. The amount of carbonic acid in all the saline Cheltenham waters would appear to be no more than sufficient for maintaining the due admixture of the constituents with the water, which does not sparkle when held in the glass, a few gas-bubbles only being perceptible. In all, the predominating ingredients are the muriate and sulphate of soda, varying in their proportions, and in the amount of other ingredients, in the water from different wells. Thus, though the general character is the same, these differences render the waters available to meet various therapeutic indications.

The waters which in composition approach nearest to Cheltenham, are those of Scarborough and Leamington. In the latter, however, if the old analysis is to be depended upon, which I should very much doubt, the sulphate and muriate of soda would appear to be in about equal proportions, forty grains to the pint; the muriate of lime (which in the Cheltenham is in comparatively small proportion) amounting to twenty grains. The saline constituents of the Scarborough are in less proportion than in the Cheltenham waters. The south well contains most salts, and is, therefore, more aperient than the north well, the proportion of

iron being the same in both. There is not much analogy in composition between the Harrowgate and Cheltenham waters; the former consisting of a large proportion of the muriate of soda, the muriates of lime and magnesia, but none of the sulphate. The former salt exists in the proportion of one hundred grains to the pint, the two latter combined not amounting to a grain (of the Old Well); so that this may be considered as a brine-spring, acquiring a sulphurous impregnation by passing through animal and vegetable matters in a state of decomposition, in the bog land where the wells are sunk. The saline chalybeate (or what is called the Cheltenham water) at Harrowgate, contains the above-mentioned salts in smaller proportion than in the Old Well, but it possesses more than half a grain to the pint, and a stronger impregnation of carbonic acid.

The direct chalybeate-water of Harrowgate does not materially differ, in composition and action, from that of Cheltenham.

Neither can there be instituted any direct comparison as respects composition between the Cheltenham and the continental waters of the saline aperient class. Thus, the Carlsbad water is of a very high temperature, is very gaseous, and, though containing twenty grains of sulphate of soda to the pint, the proportion of the muriate is but small (eight grains), the carbonates of soda and of lime being about ten grains each;

while of iron there exists but a minute fractional portion. In point of temperature and general amount of saline constituents, the Marienbad and Frauzensbad springs do not differ very greatly from the Cheltenham: the former (Kreutzbrunnen) contains about thirty-six grains of sulphate of soda, thirteen of the muriate, with smaller proportion of the carbonate, and of the salts of lime. It is however very gaseous. The Franzguelle is also a gaseous water, containing sulphate of soda (seventeen grains), muriate and carbonate (nine grains each). The Homburg and the Kreutznach waters contain chiefly muriate of soda (the former eighty, the latter sixty grains), and the salts of lime (seventeen the former, and ten the latter), but no sulphate of soda. The Homburg water is very gaseous, and its action is purgative. The Kissingen water is likewise very gaseous, and contains chiefly muriate of soda (sixty-two grains), with but two grains of the sulphate. The Pullna, Saidschutz, and Sedlitz, are bitter purging waters, containing a large quantity of sulphate of magnesia and other salts, amounting in the first case to upwards of two hundred grains to the pint; in the latter to one hundred and eighty, with a very minute portion of iron and carbonic acid gas.

All the above-mentioned waters find their principal adaptation to disorders of the digestive apparatus and their sequelæ. The forms and complications, however, of these disorders (constituting the majority of chronic ailments)

are so varied by different circumstances in different individuals, that much judgment and discrimination are required on the part of the medical practitioner, in determining which of these waters would be best suited to any given case. Nor is this always to be ascertained till the trial has been made; to some cases a cold gaseous spring of this class, as Kissingen or Marienbad, would be best adapted; to others again, they would be less suited than those of Cheltenham or Leamington, though it is true that in some cases, when the former kind of water is indicated, a considerable amount of benefit might be obtained from the latter without the inconvenience of a long journey.* The sphere of application of the various waters of Cheltenham to disordered conditions of the system is however sufficiently extensive. Pure chalybeates may be met with in other places, to some of which nevertheless Cheltenham could present greater attractions for a prolonged sojourn. Tunbridge Wells, for instance, is a good deal resorted to in summer on account of its water; the air is light and bracing, and the environs agreeable; but it has little or no resource for recreation or association, and consequently many of

* When a course of baths at either of the continental springs is not particularly indicated, the manufactured waters at the German Spa, Brighton, are equally efficacious as the natural ones. For an account of these, see my work on "Brighton and its Sanative Resources." Churchill, Princes Street. 1850.

its visitors get tired after a few days, especially towards the end of summer, when the evenings lengthen. The water moreover contains little else than the chalybeate impregnation, and is not well borne by some stomachs; whereas the Cheltenham chalybeate, with a larger proportion of iron, contains the salts of soda, lime and magnesia, as may be seen on referring to the analysis. It would be desirable however, as so long a period has elapsed since the former one, that a fresh analysis were made, the results of which would doubtless be somewhat different. This water would be suitable to many cases where a direct tonic effect is required, and consequently where the saline waters would be inadmissible. Some forms of dyspepsia, amenorrhœa and chlorosis would come under this category. It is then to its saline and chalybeate waters that Cheltenham must owe the continuance of its reputation in this respect. Much however will depend upon the proper mode of their administration. If the saline waters be employed as they have heretofore too generally been, with a view of producing on all occasions active effects at the time, this reputation will decline. It is true that many patients by this means find themselves temporarily better, and are perhaps able to indulge more in the pleasures of the table, which under any circumstances when a course of mineral waters is concerned is directly prejudicial. In fact, this practice may be compared to dram drinking, in which the stimulus is more required

the more frequently it is repeated. However, *de toute chose il faut voir la fin*, and the result of a course of the Cheltenham waters, in the way they were formerly too generally used, has been, that in many instances patients have found themselves in a worse condition some time after its discontinuance, and that a greater necessity for the artificial stimulus of aperient medicines has been occasioned. I therefore altogether disapprove of any admixture being made to the water, with a view of increasing its activity, and more especially when this is done at the discretion of the pumper. If a person be in a fit state for the waters, let him take them in their natural state, and at their natural temperature. If he feels inconvenienced by so taking them, he should have recourse to other means, as, in my opinion, it is when taken in this way alone that *permanent* benefit is to be looked for. I am happy to find that this opinion, which I expressed several years ago, during a residence of some months at Cheltenham, is corroborated by some local authorities. A medical advocate of the Pittville waters in the "Cheltenham Guide," adverting to the admixture of those of Montpellier, observes, "We are persuaded that most of the beneficial operation of the Pittville waters is owing to the circumstance of their being taken without the aid of 'the solution,' a practice which wholly subverts the natural chemical arrangement of the ingredients, and has in many instances been the means of sending patients away

from Cheltenham in a state of greater weakness than on their arrival. Invalids may be assured that they are not drinking the pure Cheltenham water, when they allow the pumpers to add the solution to their usual morning dose; and if they must be well purged, it is much better to take a pill the previous night, or, at the very least, not to drink the solution more than once in a week, whereby they will not be so apt to condemn a remedy, which, had it not been for their own imprudence, would have been followed by the most favourable consequences."

Dr. Gibney likewise justly observes on this point, "There are some persons upon whom a large quantity does not act sufficiently; to obviate which, it has been thought necessary to add to each dose either a strong solution of the crystallized Cheltenham salts, or else what is denominated concentrated water, which consists in evaporating the natural water, until some of the earthy salts are deposited. In both instances this practice should be considered injudicious, as neither the solution nor the concentrated water has the genuine properties of the natural springs. Were the waters evaporated regularly and to a certain extent, and the solution given by a graduated measure, the quantity being regulated by the constitution of the patient, or the nature of the disease; were there in fact any definite rules to be observed in the exhibition of this solution,—some apology might be made for its use; but

when we consider it is always given at the discretion of the pumper, who is equally bountiful in diseases of the most opposite characters, too much cannot be said against this innovation. It must moreover be considered, that this addition is both forbidding to the taste, and unfriendly in its effects upon the tender coat of the stomach, causing oppressive heat, thirst, and an acid discharge; a circumstance to be expected from a fluid in such large quantities, and at the same time so nauseous."

From the observations already made when treating of mineral waters in general, it will have been perceived that these agents are to be used as alterative remedies, *par excellence,* and by their gradual operation are frequently productive of more benefit when no very sensible effects are experienced at the time, than when the reverse is the case. A remedy tending to occasion active increase of the secretions, as purgative or sweating, used during several successive weeks, would not fail ultimately to debilitate, and would be little calculated for the removal of chronic complaints. This alterative action when more desired than the aperitive, would be better obtained in the case of the Cheltenham water, as in others, by its being sipped slowly, instead of being tossed off like a dose of physic. By drinking the water slowly and at its natural temperature, each portion swallowed comes successively into contact with the mucous membrane of the stomach, acting as a

tonic, and alterative of its secretion. Much of the bracing quality of the water depends upon its low temperature, and is lost by warming, which must also have the effect in some measure of decomposing it.

The water being at a considerable depth in the wells requires to be pumped up, by which its properties are not at all impaired. Dr. Granville makes an objection to this process, observing that the "good honest Germans" would not be satisfied without seeing the water rising to the surface of the earth. He must however surely have been aware that at some of the wells (not springs) in Bohemia, as Pullna and Saidschutz, the water may be seen considerably below the surface, and is raised by the hand or by machinery. The allusion of Dr. G. to the report of the waters being medicated by the addition of a quantity of Epsom salts, scarcely needs any refutation at the present time, as it is well known that there is a superabundance of water for any number of drinkers; and besides that employed for the manufacture of the salts, any quantity could be obtained were it required for baths at this establishment. The sulphurous impregnation, and the iodine lately detected in some of the waters, is in too insignificant proportion to impart to them any of the specific properties of these substances; though they may in some slight degree tend to modify the general compound.

I will now briefly advert to those deranged conditions of the system which the Cheltenham waters are best calculated to remedy. In a few instances some preparatory treatment may be necessary, but, in general, pharmaceutical preparations should be abstained from as much as possible. The slighter forms of disordered health and impaired digestion would for the most part be speedily relieved by a short course of the Cheltenham waters. These ailments, which, if neglected, frequently give rise to serious disease, are often induced by a too sedentary mode of life, as in those engaged in counting-houses, literary or other avocations, where the activity of the brain is not sufficiently alternated with muscular exercise, especially when at the same time the vitiated air of confined apartments or of a densely crowded city be inhaled. In these cases, in addition to the white or yellowish furred tongue, torpor of the abdominal viscera, and other dyspeptic symptoms, there exists at times considerable depression of spirits, undue anxiety, or irritability of temper, which are often ascribed to extraneous causes; but which in fact depend upon a too highly carbonized state of the blood, and which nothing is more calculated to remove than the change to a cheerful watering place, out-door active or passive exercise in a pure air, and the employment of a saline aperient water of not too irritating a character; with which tepid bathing may be advantageously combined, according to circumstances. The same plan of

treatment pursued for a longer period may be recommended; the particular kind of water employed, to be determined by the peculiar circumstances of individual cases: in the more serious complications of disordered digestive apparatus of long standing; indicated by sallowness of the complexion, a want of general activity and tone, and a disinclination to exertion; heartburn, undue abdominal distension after meals, hepatic torpor or tangible engorgements from a congestive state of the venous system. A similar condition more or less aggravated or complicated with local inconvenience in particular organs, is frequently met with in those who have resided in tropical climates, and who have suffered from attacks of the fevers peculiar to these localities. Where on the other hand these exist with impaired digestion, a morbid susceptibility of the gastric or intestinal nerves, indicated by pain after eating, or on pressure, especially if this should co-exist with redness of the tip and edges of the tongue, indicating a degree of sub-inflammatory action, the Cheltenham waters would not be applicable; at all events, till this state was removed by appropriate medication.

Another class of cases in which the Cheltenham waters are calculated to be of great benefit, are nervous affections, especially of a depressive character, with general want of tone and lowness of spirits, resulting more from oppression of the vital powers than from

actual debility, often in consequence of moral impressions of a painful nature. Of this kind is hypochondriasis, which is usually closely allied with derangement of the digestive apparatus, being in some instances a consequence, but in others a cause, of such derangement; for, in fact, so close is the connection between the brain and the alimentary canal, that whatsoever affects the one soon re-acts upon the other. The effects of mental impressions upon the process of digestion, and of various secretions, producing in some instances an increased flow, in others an arrest, are too well known to require anything more than an allusion to them to be made. When these causes are of a more lasting nature, their prejudicial effects are necessarily the more fixed: on the other hand, abdominal irritation or disorder is a very common occasion of hypochondriacal symptoms, though these mostly pass away on the removal of the cause, when a pre-disposition to the complaint does not exist. In these slighter cases, much harm is often done in England, and the disordered condition is aggravated by the too free use of purgatives and mercurials, which, in consequence of the momentary relief, are usually had recourse to on a recurrence of the symptoms; the viscera being thus kept in a constant state of excitation. In these cases, more particularly, the medicinal action of mineral waters is greatly assisted by the effects upon the mind, produced by change of air and mode of living; the

amusements, &c., at watering places. In the purely nervous kind of hypochondriasis, where the disordered digestion or circulation appears to be a consequence of the morbid susceptibility of the nervous system, I should be inclined to recommend in preference to the Cheltenham waters, the more gaseous ones of Marienbad or Kissengen, combined with tepid bathing in a slightly mineralised or in sea water.

For the removal of gouty and rheumatic affections, I am disposed to place more reliance upon baths in a thermal spring, than upon the internal exhibition of mineral waters; nevertheless as these complaints (the former more particularly) mostly follow, or are complicated with, deranged digestion, the employment of a saline aperient water may often very advantageously precede a course of bathing. In gout occurring in persons of full habit, with confinement and other symptoms of torpid digestion, a water such as Cheltenham would be better adapted than baths, until the dyspeptic symptoms were removed, when bathing at Bath in the autumnal months would most likely be attended with permanent benefit. This used to be the practice in former days: many patients who took the Cheltenham waters in the summer underwent a course of baths at Bath later in the year, and there is no doubt that the revival of this plan would be advantageous in many cases, especially of gout, rheumatism, or cutaneous disorders, where a strongly mineralized thermal water, as Weisbaden or

Aix-la-Chapelle for instance, would prove too exciting.* In the more chronic forms of these complaints, unattended by excitability of the system, or with much digestive disorder, and especially where concretions, contractions, and other deformities, have been induced, the above-named or other continental springs should mostly be preferred to the English ones.

Calculous disorders are often closely connected with the gouty diathesis, and the means which are serviceable in correcting it would tend most to their removal. The deposition of gravel of the lithic acid variety, which so often depends upon a disordered state of the assimilative powers, would in most instances be removed by the Cheltenham waters. The same may be said of several cutaneous eruptions, especially those about the face, which usually arise from the same cause.

Cheltenham has long and justly been celebrated for its advantages in the more chronic forms of liver disease, whether entailed by a protracted sojourn in unhealthy climates, or arising from other causes. Patients of this class who have been accustomed to take large doses of mercury, will occasionally require this medicine, though its too frequent repetition is not to be recommended during the use of the waters. The same may be said of hemorrhoidal affections, and other not un-

* An able work has lately been published on the Bath Waters, by Dr. Tunstall, after seven years' experience of their effects in the Hospital.

frequent consequences of liver *engorgement*, or obstructed abdominal circulation.

Amenorrhœa and other disordered conditions of the female system, as well as many cases of chlorosis and scrofulous complaints, would be greatly benefitted by the saline waters, to be followed when necessary by the use of the chalybeates: even when these latter are positively indicated, their use may frequently be advantageously preceded by a short course of the former.

It would exceed the limits to which I am desirous of restricting this Essay, were I to enter more at length upon the consideration of the above-mentioned and other abnormal states of the system to which the Cheltenham waters might be applicable. Enough will have been said under the remarks on mineral waters, and within the last few pages, to serve for general indications, which are the only ones that can be safely given in any work which professes to treat the subject not in an empirical manner. I will therefore proceed to note the peculiarities of the climate of Cheltenham, availing myself of information furnished by residents, and derived from other sources, in addition to the results of my own observation.

THE CLIMATE

OF

CHELTENHAM.

The effects exerted by the atmospheric condition of different localities, not only upon the constitution and longevity of their inhabitants, but also upon various disordered states of the animal economy, though heretofore not sufficiently studied, have, of late years, attracted a greater degree of attention; and, with just reason, for there are few subjects, both in a hygenic and remedial point of view, more deserving the serious consideration of legislators and of the medical profession. Even the most superficial observer could scarcely fail to remark the differences apparent in various classes of the community, according to the quality of the air they breathe, and the corresponding nature of their

avocations. What, for instance, can be more marked than the contrast presented by the inhabitants of a marshy plain, with the dwellers upon the mountains by which that plain is bounded; or than that existing between agriculturists, sportsmen, and others, who take active exercise, and are constantly changing the air, and the pallid countenances and deficient muscular energy exhibited by those residents of a large city, who, during the greater part of the day, inhale the vitiated atmosphere of workshops, counting-houses, &c.? What a difference, also, do the diseases of these various classes of persons present! How differently, again, is the same person affected in health and feelings, according to the warmth or coldness, the humidity or dryness, or the electric state, of the air! Every one must have experienced in himself this variation, at different periods; and this is more especially apparent in certain disordered states of the system, as in many nervous complaints, in which atmospheric changes can often confidently be predicted from the sensations experienced. On the other hand, these changes are less felt in proportion as the body is in health, and the mind occupied.

It is not merely the breathing a warm or cold air, or a dry or moist one, which requires to be considered in a remedial point of view, but also, beyond this, the action of these states upon the surface of the body, and consequently upon internal organs. Every medical

man, and most non-medical persons in the upper ranks of society, are aware of the close sympathetic relations existing between the skin and internal parts, especially the mucous membranes of the thoracic and abdominal viscera, of which the bronchial pulmonic, or enteritic irritations and inflammations, induced by a chill, exposure to wet, &c., are familiar examples. As it is not, however, my intention, in this place, to enter upon the consideration of the general influence of climate, I will merely observe, that temperate climates, with alternations of weather, are, on the aggregate, much more favourable to health and happiness than those in which greater extremes of temperature prevail; or than those which are apparently favoured with more equability of weather. As regards longevity, it has been shown by statistical tables, that at Naples, for instance, the average annual mortality is about one in twenty-eight persons of the whole population; at Florence and Rome it is not much less: whereas in London it amounts only to one in forty, and, taking the account for the whole of England, to no more than one in sixty; so that the advantage of England, in this respect, is manifest: and, although there are many cases of disease which would be benefited by being sent, for a period, to different parts of the continent, yet the subject of its climate is now so much better understood, and there are so many places in England where invalids may derive advantage from climate, without the inconveniences attendant upon

a long journey from home, that the number of those sent to the continent on the score of health has been greatly circumscribed of late years, and is likely to be more so in future, from the risk of being involved in the disturbances which have agitated, and threaten to agitate, a great part of Europe.

With respect to some of the advantages attendant upon the variableness of our climate, Sir H. Davy observed:—"Of all the climates of Europe, England seems to me to be most fitted for activity of mind, and the least suited to repose. The alternations of a climate so various and rapid constantly awaken new sensations, and the changes of the sky from dryness to moisture, from the blue ethereal to cloudiness and fogs, seem to keep the nervous system in a constant state of excitement. In the changeful and tumultuous atmosphere of England, to be tranquil is a labour, and employment is necessary, in order to ward off the attacks of *ennui*. The English nation is pre-eminently active; and the natives of no other country follow their objects with so much force, fire, and constancy." *

Great Britain, as an island, comprises, as may well be supposed, a great variety of climates, the differences being more definitely marked as respects the coast, and inland localities. Among these latter, Cheltenham, from its position, and other circumstances, may be regarded as one of those most favourably placed. Though

* Consolations of Travel.

presenting some disadvantages, yet these are more than counterbalanced by its advantages, whether it be considered as a residence throughout the year, or merely as a place of sojourn for a few weeks, or months. The general healthiness of the town, for a permanent abode, is clearly proved by the advanced age attained by a large proportion of the inhabitants, and in its comparative exemption from fevers of a pernicious character, and from devastating epidemics. Notwithstanding the great mortality occasioned by the cholera, in the neighbouring towns of Gloucester and Tewkesbury, both on the recent and on the former occasion of the prevalence of this disease, no case, or only one (said to have been a man who arrived ill from Tewkesbury), occurred within the town or its suburbs. From 1830 to 1837, the average temperature of the year, according to the Cheltenham Guide, was 50·21 deg., the range of the thermometer 65 deg. mean maximum, 21·3 deg. mean minimum, which suffices to indicate the mildness of the climate. The general temperature is less subject to extremes in heat and cold than that which London undergoes. The average of winds, of the preceding seven years, was as follows :—east wind, twenty-eight days; west wind, forty-five days; north, thirty-five; south, fifty days; and while the north-west winds prevailed but thirty-three days, the south-west were equal to ninety-seven days, in each year. The average fall of rain was thirty-three inches. Spring

sets in at Cheltenham, and vegetation is in a state of great forwardness, early in the year. About the end of April, and during May and June, the nightingales may be heard in various parts of the environs. "These winged warblers tenant the woods and thickets in every direction round the town, and those who delight to listen to their 'wood-notes wild,' will seldom fail to be gratified any evening after sunset, should they stroll as far as Bennet's Wood, about a mile on the Gloucester road, where they usually congregate in great numbers; so great, indeed, as to have obtained for the spot the name of the 'Nightingale's Grove.' It may, likewise, be generally heard in the plantation which borders the Park Estate, occasionally in the Pittville grounds, and many other places in the immediate environs of the town." *

The Cotswold Hills, by which Cheltenham is sheltered on the north-east, east, and south-east, are 1,134 feet above the sea. The town itself is 195 feet above the sea, and 135 above the City of Gloucester: the valley of the Severn, in which Cheltenham lies, is exposed to the south and south-west, opening out to the Bristol Channel.

The following statement shows the mean temperature of the seasons; the thermometrical and barometrical range, in Cheltenham, as compared with that of London.

* Cheltenham Guide.

Mean temperature of seasons.

Spring	49·65	Summer	60·86
Autumn	58·28	Winter	40·92

That of Edmonton, near London, being nearly the same: in winter, three degrees lower.

Mean range of thermometer at Cheltenham and London.

	Annual range.	Monthly range.
Cheltenham	59·7	31·71
London	64·8	34·0

The absolute range being—

	Highest.	Lowest.	Greatest range.
Cheltenham (7 years.)	81·5	10·0	71·5
London (30 years.)	96·0	5·0	91·0

Absolute range of barometer.

	Highest.	Lowest.	Greatest.
Cheltenham	30·57	28·52	2·05
London	30·62	28·22	2·40

Mean range of barometer.

	Annual.	Monthly.
Cheltenham	1·50	1·01
London	1·95	1·07

Westerly winds are most frequent throughout England in proportion to easterly winds, as three to two. At Cheltenham, in some years, this has been in proportion of two to one, but Mr. Moss's tables show, that, in ten years, the proportion has been about eleven to seven.

"Cheltenham, like other places in the immediate vicinity of hills, possesses, in proportion to other localities, rather a moist climate, from being exposed to the action of southerly winds charged with aqueous vapours, which come sweeping up the vale of Gloucester. As the summits of the Cotswold are always colder than the valley by ten degrees, or more, the winds, saturated with moisture, deposit their contents in the shape of rain, immediately on reaching the colder strata of air blowing over the tops of these hills."

The following is the number of days on which rain has fallen, and southerly winds have prevailed, at Cheltenham, during seven years.

Annual mean rain 110 days. Southerly winds 196 days.

"From the results of these tables, we ascertain that the climate of Cheltenham is very nearly on a par with that of the neighbourhood of London, while, in winter, it is nearly three degrees warmer; but that it is superior to the latter in equability, having a smaller range of thermometer, both annual and monthly. The summer, in Cheltenham, is two degrees cooler than in London. Rain falls in greater quantity at Cheltenham, but much less frequently than at London; the average amount of the former being thirty-three inches, at the latter twenty-five: but in London, rain falls on 178 days in the year, whereas, at Cheltenham, only on 110."*

* Medical Topography of Cheltenham.

On comparing the climate of Cheltenham with that of Penzance and the Land's-end district, Mr. Nash further observes, "As regards equability of temperature, Land's-end is superior to any part of England, or indeed of Europe. Madeira is the only climate which Dr. Clark considers superior in regard to equability of temperature. The difference between the mean annual temperature of Cheltenham and of Land's-end is only 1·54; the spring of Cheltenham is very nearly the same as Penzance; the summer is about 0·6 warmer, and the winter is colder by 3·8. The difference of mean temperature of summer and winter is less at Penzance than at Cheltenham by 3·64; but in the equability of its climate, Cheltenham necessarily falls far behind the Land's-end district, though less so than most other inland localities of the southern counties of Britain. The difference between the mean annual range of the thermometer at both places amounts to 10·7, which is less by more than four degrees than the difference between the mean range of Penzance and that of London. With regard to humidity, it appears that the number of days on which rain falls at the Land's-end is greater than at Cheltenham, and also that a greater amount of rain falls annually at the Land's-end. The mean of eleven years gives 139 days of southerly winds per annum, which is less than at Cheltenham; but the proportion of northerly and easterly to southerly and westerly winds, is much the same at both places, viz., three to two."

With reference to the winds most prevalent at Cheltenham, Dr. Jameson observed, "The valley being open only to the west and south-west points, occasions the west wind to assume a peculiar cold character at Cheltenham, which in most other places is warm, and blows in gentle zephyrs. Deprived of its heat in passing over the tops of the Welch mountains, scarcely forty miles distant, it glides along the valley between the hills, producing a sensation of cold nearly equal to the east wind. This wind therefore is disagreeable in winter, more especially when veering north of west, but as westerly winds prevail most at the hottest season of the year, they are upon the whole pleasant and salutary breezes. At the same time this funnel shape of the valley, with a large river in its centre, elicits currents of air which ventilate the atmosphere, and contribute largely to the purity and salubrity of the climate. Winter coughs prevail but little, notwithstanding the number of aged people in the town; and epidemics, which rarely appear, do not prevail for any length of time."

Dr. Fosbroke, who appears to have bestowed considerable pains upon the subject, remarked in 1825 upon the observations of Dr. Jameson, "The deductions of Dr. Jameson in 1808, that the north wind blows about thirty days, the south wind about five weeks, the east prevails from March to the middle of July, about the most temperate season of the year, and that the north-

east prevails more frequently than the north-west, are almost literally correct. It appears that the west and south-west blow about five months: of the westerly winds, the most prevalent by half is the south-west; it blows least in March and April, when the north, north-east and south-west winds chiefly prevail; and most from June to February. The south-east prevails from February to October, and for the greatest number of days from February to June. The west and south-west winds appear to prevail most from October to February."

Dr. Jameson says, "The westerly wind, as being clear and dry, brings with it the finest balmy weather of Great Britain; and states that on account of the peculiar form of the valley, from the previous passage of the west and south-west winds over the Welch hills before they enter this great geographical funnel, these winds assume a peculiar cold character at Cheltenham; that this wind is therefore *disagreeable in winter*; but as westerly winds prevail most during the hottest season, they are upon the whole pleasant, salutary breezes." "This assertion," continues Dr. Fosbroke, "that they prevail most at the hottest season, is not borne out by his own tables: agreeably to these they blow pretty equally in summer and winter.

"If it did not happen that the prevalence of the west and south-west winds during the summer months was by no means the most usual event, even then the idea that they brought cold, which is deduced from

their passage over the South Cambrian mountains, would hardly bear investigation. In winter the hills of South Wales may wear, like Socrates' top, an evanescent crest of snow, but not so durably and often as to chill the west wind which blows over them from the Atlantic. I can readily imagine that the west and south-west winds, reverberating from the hills to the north and north-east of Cheltenham, would, from the peculiar shape of the valley, form currents, and, to a certain extent, produce more cold sensations than elsewhere; indeed it must be admitted that the greatest *diurnal* range of the thermometer often accompanies the west wind, though it fall lower at other points. Were the west wind rendered cold and dry from blowing over a range of mountains, it would have less humidity and more weight and density from the high degree of condensation of the combined vapour. Now dry cold air being a bad conductor of caloric, it would tend to produce cold to the human body only when in a state of rapid motion and by contact. That the west wind is subject to considerable motion, is evinced upon well-known principles, by the fickle ranges of the thermometer which accompany it. In this case, for the want of regular consent between the temperature, and hygrometrical saturation of the air, a great diversity in the density and elasticity of the atmosphere must needs ensue, and probably much diversity of effect upon the human frame."

According to Dr. Fosbroke's deductions, the north wind generally brings clouded and foggy weather. During the prevalence of the north-east, the weather is generally pretty fine and dry, but, like the east and north-west, it brings the greatest cold. The east, though at no time a frequent wind, blows most from March to June, and about the autumn. The south-east which prevails mostly from February to May, brings clouded, foggy, and very cold weather; the foggy south, puffing wind and rain, blows about five weeks, nearly the same number of days in every month, and rather most in autumn.

Dr. Jameson ascribes to the south-west both the rains, winds, and thunder-storms of this kingdom; likewise heat and moisture, which destroy the density and healthy elasticity of the atmosphere: but these effects are chiefly to be imputed to the fixed variability of our climate. From the predominance of this wind in every season, we have with it all varieties, but upon the whole more fine and temperate weather than cold and wet: it is favourable to health.

Sir James Clark mentions next to Malvern, Cheltenham as being the most eligible summer residence for many invalids; specifying next in order, Leamington, Tunbridge Wells, and Matlock. There is, moreover, to be considered the advantage to be obtained from its mineral waters at this season. Malvern, from its elevated position and eastern aspect, is cooler in

summer, and the air is lighter than at Cheltenham, which render it better adapted to some cases. It has however its disadvantages, such as the comparative deficiency of shade in the middle of the day; the sun sinking behind the hill at an early hour of the afternoon; and the deficiency of amusement. A visit to Malvern would suit many patients for a few weeks after the Cheltenham waters. According to Mr. Addison, the number of days on which rain or snow falls in the year is 131.*

The following shows the mean temperature of the seasons.

	Spring.	Summer.	Autumn.	Winter.	Whole Year.	
London	49	65·2	52·7	41·1	50·39	According to Sir James Clark.
Malvern	47	59·8	50·1	41·3	49	

It may be useful, in order to institute a comparison between the climate of Cheltenham and some other parts of the kingdom, to subjoin a few remarks from Sir James Clark's work on Climate.

"There is very little difference between the south coast and London as respects mean annual temperature. The mean temperature of the former, during the winter months (December, January, February), is from one to two degrees above that of London. In steadiness of climate, as deduced from the variations of temperature between successive days, the south coast has no remark-

* Medical Topography of Malvern.

able superiority over London. More rain falls on the south coast than at London, the ratio being as 30 to 25.*

"The south coast of Devon has a winter temperature nearly two degrees higher than that of the coast of Sussex and Hampshire, and from three to four degrees higher than that of London; in November, December, and January, amounting to near five degrees. In February, the difference falls to three degrees, and in March and April, the excess of the mean temperature over that of London does not amount to one degree—the range of daily temperature is about the same on the south and south-west coast.

"The temperature of the western group of climates in winter is rather lower than that of the south coast, but in the spring it rises a little higher. Bristol during November is about 3·64 deg. and in December 0·97 deg. warmer than London. The daily and monthly range of temperature is considerably more than the south and south-west coast. In steadiness of temperature from day to day it nearly corresponds with the south coast. In January, Bath is four degrees, in February and March about two degrees, warmer than in London. In March, Cheltenham is three and a half degrees warmer than in London. At Clifton, the fall of rain is much the same as on the south coast; less than in Devonshire. Ten years' observation at the Bristol Philoso-

* Consequently very little less than at Cheltenham.

phical Institution give an average of thirty-two inches of rain for the year."

I have extracted from Sir James Clark's tables the mean temperature and quantity of rain at a few of the places of resort for invalids, which will be found in the Appendix.

From the reports of the sanitary condition of Bristol (including Clifton) and Bath, by Sir H. De la Beche, it would appear that the mean annual temperature of the former city is 53 deg. F., a knowledge of which circumstance only, says Sir H., conveys but a faint idea of the variations of temperature of this place, where we find a range of mean temperature for January from 32 deg. in one year (1838) to 47 deg. in another (1834); the fall of rain is also very variable, even the mean annual quantity for the year differing from 29·54 inches (in 1832) to 37·91 inches (in 1838). The average mean may be taken at about 32·92 inches. From the tables at the Institution, it appears that the fall of rain is distributed over many days in the year, varying in the sixteen years from 141 to 184, the annual mean for that time being 161 days, or about four months of the year. Including fogs and mists, rainy weather prevails for more than half the year, and the climate, as might be expected from its geographical position, is often damp at other times, so that the climate of Bristol may in general terms be characterised as mild, but somewhat damp. The prevalent winds are

from the west and south-west. These sweep through Clifton and the higher parts of Bristol freely, as, indeed, from the position of these localities, do most other winds. The temperature recorded in the Park-street Institution would chiefly correspond with that of the lower portions of the town, and be higher than that experienced at Clifton, and in the more elevated localities.

With respect to Bath, Sir Henry observes that 51·2 deg. may approximate fairly to the annual mean temperature of a large part of the city. "The fall of rain from June 1841 to June 1843 was, in the first year, 42·36 inches, in the second year 39·63 inches, giving a mean of 40·99 inches. This would give a greater mean annual fall of rain than for Bristol, for which the mean of sixteen years is 32·92. Mr. Biggs considers that the fall of rain observed for the two years noticed, is above the average, which he estimates at about 32 inches per annum. It is probable that the climate of Bath does not materially differ from that of Bristol. Like the latter, it may, as a whole, be regarded as mild and moist." Mr. Field, surgeon, of Bath, observes, "It is certain the climate of Bath is damp; the south-westerly breezes, as they pass over the hills of the neighbourhood, deposit a considerable quantity of the water which they waft from the Atlantic." Dr. Tunstall, in his recent work, says, "The prevalent winds are westerly, so that those who come from a more

bracing air require out-of-door exercise, otherwise their health fails."

The preceding extracts from impartial sources will enable the reader to form a tolerably correct estimate of the relative peculiarities of the climate of some other localities, as well as of Cheltenham, which may be generally considered as agreeable in spring and autumn, hot, and occasionally oppressive, in July and August (at which time the streets are frequently dusty from defective watering, and many of the residents are absent), warm and somewhat moist in winter. It has also seemed to me to be comparatively free from high winds, which, at certain times of the year, are so unpleasant and prejudicial to invalids, at many places, especially on the coast. The roads in the environs remain wet for some time after rain; in the town, however, the streets are soon dry, rain being absorbed by the superstratum of gravel. "The climate of Cheltenham," says a resident practitioner, "is peculiarly adapted for health, there being neither great extremes of heat nor of cold; the town is so sheltered by hills from the north and east winds, that consumptions and winter coughs are less prevalent than at other places, and the hills are at such a distance as to attract a great portion of the moisture which would otherwise impair the salubrity of the town."

The class of persons, therefore, to whom the climate of Cheltenham would be suited in winter, or through-

out the year, are the majority of people who enjoy tolerable health, those in advanced life, and children; a large proportion of patients labouring under pulmonary complaints, to whom the air of Devonshire would be too relaxing; dyspeptic and other invalids, whose health has been impaired by residing in tropical climates. On the other hand, where a dry or bracing atmosphere is required, as in many rheumatic and gouty affections, scrofulous complaints in children of torpid habit and languid circulation, nervous hypochondriasis, &c., the winter climate of Cheltenham would not be so advisable as that of some other localities. Patients of this description might, however, often be benefited by a course of the waters in spring, summer, or early autumn.

As regards choice of situation, either for a yearly residence, or for the summer or winter season, each portion of the town has its respective advantages, according to different tastes and peculiarities of constitution. The Promenade, High Street, Imperial Square, and Pittville, are warmer in summer, but more sheltered in winter than the Lansdown district; the aspect of the various ranges of houses in this locality has already been stated. The largest houses on the Promenade have an eastern aspect, on which account they are less eligible in winter than the north and east sides of Imperial Square, which, consequently, have a southern and western aspect. Montpellier Spa Buildings, Oriel

Terrace, Rodney Terrace, and Cambray, may also be enumerated as sheltered winter localities; they are, however, less dry and bracing than the Lansdown. Suffolk Square and its immediate neighbourhood is a good position for a permanent residence, the soil being drier from the thick bed of gravel overlying the clay; the same may be said of the Pittville quarter, which is for the most part occupied by permanent residents. The Royal Well and Bays Hill Terrace houses are likewise favourite positions. The Park Villas on the higher grounds are not unsuitable residences for persons in health, and the same may be said of the many detached houses outskirting the town. The Old Crescent is sheltered, but moister than the higher localities; many invalids, however, find it not unsuited to them. The Priory and its neighbourhood are drier and the air lighter than in the last-mentioned localities; the higher portion of the Bath road, near the College, is a healthy and airy position.

CONCLUDING REMARKS.

THAT the deservedly high estimation in which the Cheltenham Waters have long been held for the removal and alleviation of many chronic diseases, should have somewhat lessened of late years, and that the number of its spring and summer visitors should have decreased, may be ascribed to various causes. One of these, viz., an improper mode of administering the waters in many cases, has been already adverted to; another, no less operative, is to be found in the new order of things which has sprung up, effecting great changes in the state of society, induced principally by the increased facilities of rapid communication, by which means distance has been rendered comparatively nominal. This has especially produced its effects upon watering-places; where formerly the choice was circumscribed almost within the limits of our own country, it is now extended over a considerable portion of Eu-

rope, possessing highly efficacious baths, easily accessible, and resources as respects modes of living, association, and recreation, which are such essential adjuvants to a mineral water-course, more varied than can be offered by the generality of places of resort in England, where, moreover, the expenses incurred are considerably greater. It cannot, therefore, be a matter of surprise that foreign watering-places should have abounded with English visitors in the summer season, and that at other times of the year, the more than ever active competition in the various walks of life,—the prevalence of a spirit of speculation, and the monetary crises which have occurred in consequence,—the political disturbances in different places, inducing an apprehension of further troubles,—the impoverished condition of Ireland, whose gentry constituted so large a proportion of temporary or permanent watering-place residents —that these circumstances should have had a depressing influence upon several localities where the season is not restricted to a few months of the year.

Some of these causes are not, however, it is to be hoped, of a permanent nature; and it will very much depend upon the parties themselves who are interested in the influx of visitors to English baths, whether others, which have operated to their prejudice, shall continue to do so to the same extent.

There prevails throughout the kingdom a much greater sense of the importance of mineral waters in the

treatment of disease, than at any former period, and an increasing objection to the practice of active medication in chronic affections, which has occasioned the persistence of irregular modes of treatment, and rendered our countrymen prone to have recourse to various empirical remedies. The unsettled state of the continent, moreover, very much lessened during the two preceding seasons the number of invalids at the baths of Germany and France; and as this is not unlikely to recur, the opportunity is favourable for endeavouring to restore, to somewhat of their ancient vogue, those of England which have most suffered from the competition. In order to do this, however, with a likelihood of success, the system which has heretofore prevailed must be changed to meet the altered condition of the times. If this were done, those places, the advantages and attractions of which are not of an ephemeral nature, would doubtless have their fair proportion of visitors. Independently of the attractions of travelling and change of scene, many invalids and others are driven to the continent by the isolation and comparative absence of social intercourse prevalent at the majority of English watering-places. Association being the object of a large proportion of the migratory population, can it be wondered at that those places which present the greatest facilities in this respect should be preferred to others where the single visitor, or the family, on arriving, find themselves alone, and, after a few days' sojourn, neces-

sarily become too *ennuyéed* to remain; where, instead of the well appointed *table d'hôte,* the public saloon for *réunion* in the evening or for resort in wet weather, the promenades, the music, the waters free of charge or at a trifling tax, the concerts and other entertainments at a comparatively low price of admission, the stranger finds in all probability that he must dine alone in a coffee-room, upon a chop, steak, or cutlet (the waiter's usual bill of fare); that his only resource in wet weather, or in the evening, is a newspaper or a novel; that at each of the promenades he may wish to enter, a tolerably high charge for admission is made, and the same for the waters; and that at the end of a week his bill amounts to about three times as much as it would have done at any first-rate continental watering-place. It is very possible that objections or complaints may not be made at the time (inasmuch as it is known to be the prevalent custom), yet visitors hasten their departure, are in no hurry to return, and others are deterred from visiting any watering-place that has the reputation of being expensive, without being able to offer corresponding advantages and *agremens.* Even in England, those places where a greater degree of sociability prevails by means of *tables d'hôte,* evening *réunions,* &c., are always the fullest; as, for instance, Harrowgate and Scarborough. It is true that at these baths the terms are tolerably high at the first-rate houses, but then it must be remembered that the season is very

short, scarcely exceeding two or, at most, three months, and that during the rest of the year they are almost deserted (some of the first houses at Harrowgate being shut up altogether). Small places, moreover, do not possess the resources of large towns, where the necessaries and luxuries of life are abundant, not requiring to be obtained from a distance. This is the case as regards Buxton, in the environs of which there is but little cultivation, where the season is short, the weather being ungenial in early summer and in autumn; where, nevertheless, there is excellent accommodation at a moderate cost.

If places which have but a short season, deriving their provisions, &c., from a distance, can offer accommodation to visitors at a moderate rate, the same may surely be done where provisions are abundant and reasonable, and where the seasons extend almost throughout the year. At most of the foreign baths the regulation of accommodations and amusements, public walks, &c., is superintended by a town-council or committee. The price is fixed, which the visitor having once paid, is not further molested during his sojourn. At several of the English baths, however, where different springs or walks belong to different proprietors, the visitor who does not restrict himself to one, has separate payments for waters, promenades, libraries, &c.; these, together with the heavy gratuities expected by servants at hotels, especially where a

family is concerned, and the high charge of admission to concerts or any other amusements, induce many to abstain from visiting otherwise attractive places. It is not any particular kinds of exhibition or amusement that will suffice to lead the better class of watering-place frequenters to sojourn in a town. These may attract for a day or two some of those who happen to be within a short distance, but it is the general tone, mode of living, and resources, which are principally considered by persons seeking a permanent or temporary place of abode.

In July and August, when the heat is at times oppressive, many Cheltenham residents and visitors might prefer a change to Malvern or elsewhere; but April, May, June, September, and October, are very available months, both as far as drinking the waters and the appearance of the country are concerned. There is, moreover, an advantage attendant upon waters of this class, that others have not, which, when employed in the form of bath, or internally, determine towards the skin, producing increased activity of its functions, viz., that they may be taken with great probability of benefit in proper cases, at any time of the year.

APPENDIX.

ANALYSES

OF THE

PRINCIPAL MINERAL WATERS OF CHELTENHAM.

PITTVILLE SPA.

Analysis of the Pittville Spa Waters, by F. A. Abel and T. H. Rowney, of the Royal College of Chemistry.

Depth of the Main Well, about 90 Feet; Temperature of the Water, 57° F.; Temperature of the Air at the Time of Observation, 67° F.; Reaction with Litmus Alkaline; Taste of the Water, agreeably Saline; Smell, slight of Sulphuretted Hydrogen; Specific Gravity, 1·00763 at 60° F.

	Imp. Gallon.—Grains.
Sulphate of Potassa	2·9512
Sulphate of Soda	112·8666
Chloride of Sodium	481·1933
Bromide of Sodium	3·2928
Iodide of Sodium	traces.
Carbonate of Soda	20·1481
Carbonate of Lime	7·7021
Carbonate of Magnesia	11·3897
Phosphate of Lime	traces.
Silicic Acid	2·7755
Organic Matter — Crenic Acid	0·3591
Organic Matter — Extractive Matter	3·4993
	646·1777
Amount of fixed Residue found by direct experiment	645·6053

Free Carbonic Acid in the Water at 50° F.—16·254 Cubic Inches in Imperial Gallon.—Sulphuretted Hydrogen present in inestimable quantities.

CAMBRAY SPA.

Analysis of the Cambray Spa Waters, by Michael Faraday, Esq., F.R.S., &c.

The Aperient Saline.

(Salts in a dry state.)

	Wine Imp. Pint.—Grains.
Muriate of Soda	51·06
Muriate of Lime	8·60
Muriate of Magnesia	a trace.
Sulphate of Soda	17·04
Carbonate of Lime	0·80
Carbonate of Iron	a mere trace.
	77·50

Specific Gravity . . . . 1·0067.

Analysis of the Cambray Spa Waters, by Frederick Accum, Esq., F.L.S., &c.

Carbonated Chalybeate.

	Wine Gallon.—Grains.
Carbonate of Iron	7·05
Muriates of Lime and Magnesia	15·50
Muriate and Sulphate of Soda	24·00
Sulphate of Lime	9·00
Carbonate of Magnesia and Lime	8·95
	64·50

Specific Gravity . . . 1·0011.

Carbonic Acid Gas, 24 cubic inches.

PARK SPA.

Analysis of the Park Spa Waters, by Messrs. Heathfield and Burgess.

	Imp. Gallon.—Grains.
Sulphate of Soda	77·00
Sulphate of Lime	86·00
Sulphate of Magnesia	66·00
Chloride of Sodium	602·00
*Carbonate of Lime	20·00
Carbonate of Magnesia	8·00
*Oxide of Iron	·30
Carbonate of Soda	a trace.
Organic matter, waste, &c.	·70
	860·00

* These Substances are held in solution by free Carbonic Acid.

ROYAL OLD WELLS.

Analysis of the Royal Old Wells Water, by F. A. Abel and T. A. Rowney, of the Royal College of Chemistry, London.

Temperature of the Water, 57·2° F.; Temperature of the Air at the time of observation, 71·6° F.; Reaction of the Water distinctly Alkaline; Acetate of Lead Paper blackened; Taste Saline; Smell of Sulphuretted Hydrogen; Specific Gravity, 1·0064 at 60° F.

Sulphuretted Saline Water.—No. 1.

	Imp. Gallon.—Grains
Sulphate of Soda	234·0562
Chloride of Sodium	229·7876
Chloride of Magnesium	52·6197
Chloride of Calcium	9·2575
Bromide of Calcium	2·0272
Iodide of Calcium	traces.
Carbonate of Magnesia	1·9719
Carbonate of Lime	22·0808
Carbonate of Iron	0·5999
Phosphate of Lime	traces.
Phosphate of Iron	0·1834
Silicic Acid	1·0129
Organic Matter { Crenic Acid	16·8245
Organic Matter { Extractive Matter	0·0231
	570·4447

Amount of Residue obtained by direct experiment, 572·2451.—Free Carbonic Acid in the Water at 57·2° F.; 32·705 Cubic Inches in an Imperial Gallon.—Sulphuretted Hydrogen not present in estimable quantities.

ROYAL OLD WELLS.

Temperature of the Water, 57·2° F.; Temperature of the Air at the time of Observation, 71·6° F.; Reaction of the Water slightly Alkaline; Taste Saline; Smell, slight of Sulphuretted Hydrogen; Specific Gravity, 1·00795, at 60° F.

Strong Saline.—No. 4.

	Imp. Gallon.—Grains.
Sulphate of Potassa	traces.
Sulphate of Soda	94·9410
Chloride of Sodium	590·3310
Chloride of Magnesium	8·0003
Bromide of Magnesium	3·0632
Iodide of Magnesium	0·4361
Carbonate of Magnesia	6·8026
Carbonate of Lime	17·0611
Phosphate of Lime	traces.
Silicic Acid	2·7468
Organic Matter { Crenic Acid	0·3332
Organic Matter { Extractive Matter	18·0530
	741·7683

Amount of Solid Matter found by direct experiment, 741·7774.—Free Carbonic Acid in the Water at 57·2° F., 25·294 Cubic Inches in an Imperial Gallon.—Sulphuretted Hydrogen—a trace.

MONTPELLIER SPA.

Analysis of the Montpellier Spa Waters, by T. Cooper, Esq.

Iodurettted and Sulphuretted Saline.—No. 2.

Gaseous Contents in a Pint :—	Cub. in.
Sulphuretted Hydrogen	1·6
Carbonic Acid	·4

Saline Contents :—	Grains.
Muriate of Soda	35·3
Sulphate of Soda	28·4
Sulphate of Magnesia	7·2
Sulphate of Lime	3·1
Oxide of Iron	·42
Hydriodate of Soda	·15
	74·57

Specific Gravity . . . 1·008.

MONTPELLIER SPA.

Pure Saline.—No. 4.

Gaseous Contents in a Pint:—	Cub. in.
Carbonic Acid	1·4
Saline Contents:—	**Grains.**
Muriate of Soda	52·4
Sulphate of Magnesia	14·2
Sulphate of Soda	17·2
Bi-Carbonate of Soda	1·2
Sulphate of Lime	2·7
Carbonate of Lime, and Carbonate of Magnesia	1·1
Hydriodate of Soda, and Hydrobromate of Soda	a trace.
	88·8

Specific Gravity . . . 1·009.

MONTPELLIER SPA.

Strong Iodurretted Saline.—No. 4, "A."

Gaseous Contents in a Pint :—	Cub. in.
Carbonic Acid	1·6
Sulphuretted Hydrogen	a trace.

Saline Contents :—	Grains.
Muriate of Soda	51·4
Muriate of Lime	8·3
Muriate of Magnesia	7·5
Sulphate of Soda	14·0
Sulphate of Magnesia	17·1
Sulphate of Lime	2·1
Bi-Carbonate of Soda	2·4
Carbonate of Lime, and Carbonate of Magnesia	3·2
Hydriodate of Soda	·25
	106·25

Specific Gravity . . . 1·0101

MONTPELLIER SPA.

Ioduretted Magnesian Saline.—No. 5.

Gaseous Contents in a Pint :—	Cub. in.
Carbonic Acid	1·2
Saline Contents :—	**Grains.**
Sulphate of Magnesia	47·0
Sulphate of Lime	3·1
Muriate of Magnesia	10·5
Muriate of Lime	13·1
Muriate of Soda	9·7
Bi-Carbonate of Soda	1·7
Oxide of Iron	·4
Hydriodate of Soda, with a very small quantity of Hydrobromate of Soda . . .	·35
	85·85

Specific Gravity . . . 1·009.

TABLE I.

Mean Temperature of the year and of each season, at various places of resort.

	Mean Ann.	Winter.	Spring.	Summer.	Autumn.
London . .	50·39	39·17	48·76	62·32	51·35
Torquay . .	52·12	44·05	50·08	61·26	53·11
Penzance .	51·80	44·03	49·63	60·20	53·36
Undercliff .	51·35	41·89	49·66	60·63	53·58
Clifton . .	51·26	39·81	49·79	63·87	51·49
Hastings .	50·40	39·06	47·46	61 77	52·22

TABLE II.

Comparative Mean Quantity of Rain in inches in Winter and Spring.

	Winter.	Spring.
London	5·86	4·80
Hastings	7·12	4·95
Undercliff	5·27	3·97
Torquay	6·82	5·61
Penzance	12·64	9·35
Cove (Ireland) . .	10·54	4·05

TABLE III.

Average number of Days in which Rain falls in the Year, and in each season.

	Annual.	Winter.	Spring.	Summer.	Autumn.
London . .	178	48	43	44	43
Torquay .	132	35	30	32	35
Cove . . .	131	37	29	30	35
Penzance .	178	50	40	39	48
Undercliff .	146	39	32	33	42
Clifton . .	169	45	36	41	45
Hastings .	153	39	31	33	49

TABLE IV.

Mean range of the Barometer for the Year, and for each season.

	Annual.	Winter.	Spring.	Summer.	Autumn.
London . .	1·99	1·36	1·15	0·72	1·06
Torquay . .	1·96	1·21	0·96	0·82	1·22
Penzance .	1·95	1·19	0·87	0·70	0·95
Undercliff .	1·68	1·21	1·02	0·79	1·12
Clifton . .	2·34	1·80	1·32	1·06	1·67
Hastings .	1·56	1·38	1·17	1·03	1·51

For details and statistical data respecting the climate of Cheltenham and a few other localities, the text may be referred to.