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THE PRINCIPAL
BATHS OF GERMANY,
FRANCE, AND SWITZERLAND,

CONSIDERED WITH REFERENCE TO
THEIR REMEDIAL EFFICACY IN CHRONIC DISEASE.

BY
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SOCIETIES OF BERLIN, PARIS, MUNICH, TURIN, FLORENCE,
NAPLES, MADRID, ETC.

Fourth Edition, with Alterations and Additions.

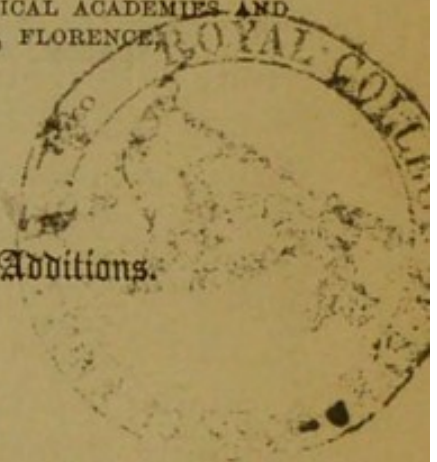
FIRST VOLUME.

BATHS OF GERMANY.

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P R E F A C E.

THIS work has been for some time out of print, and the portion relating to the German Baths can only be reproduced at present. In the meantime, I have published a separate notice of Vichy, the French bath most frequented by English visitors, and notices of the Pyrenean baths will be found in the "South of France."

The present edition contains much additional information, brought up to the present time, and deduced partly from my own observation—made in the course of renewed visits to the principal localities specified—and from publications of a recent date, emanating from local practitioners, or other native writers, whose opinions, when quoted, are generally given in their own words; and I have preferred restricting myself to giving a fuller account of the resources and peculiarities of the most frequented and efficient baths with which I am acquainted, than unnecessarily enlarging the work by mere compilation, by including descriptions of many others, which, from

their possessing no superior advantages, from their greater distance and comparative inaccessibility, or other reasons, are likely to be of little avail to British patients who may require a course of treatment by these means.

As regards the remedial adaptation of the various waters, I see no reason materially to alter the opinions expressed in the preceding editions, which have met with the concurrence of the most competent authorities on the subject, and I have purposely avoided entering into generalities respecting the comparative peculiarities and mode of action of the different classes of mineral springs, having treated of those subjects in a work of a more strictly professional character.*

LONDON, *May*, 1863.

3, CLARGES STREET (FOR THE SEASON).

* "Practical Observations on Mineral Waters, and their Curative Agency" (out of print). A New Edition is ready for publication.

P O S T S C R I P T .

THE writer of an article on "Book-making," in the *Dublin Medical Press*, remarks: "The greatest abuse of all, and perhaps the most frequent, is the disingenuous practice of compiling books out of other books, and obtaining for them a character for originality, by alteration of language, and substitution of mere names and terms for those previously in use."

An 8vo volume of near 500 pages, in large type, "The Spas of Europe," has recently been published by a German firm in London. The work contains nothing, that I have been able to perceive, of an original character, or any information that has not previously been given in my publications and those of others, with scarcely any reference to the sources whence it is derived, though a list of works on the subject is appended; while a great part of it is filled with matter of no interest to English readers, whole pages being taken up with analyses of springs not likely to be resorted to, unknown in this country, and possessing no special superior virtues; as, for instance, Aschelmannstein, in Bavaria; Hubertsbrunnen, in the Harz; Wittekind, near Halle; Durkheim, in the Palatinate; Castrocaro, in the Tuscan Maremma; Krankenheil; Zaizon, in Transylvania; Montecatini, in Tuscany; Lippspringe, in Switzerland; Ottilienquelle, on an island near Paderborn; Romerbad, in Styria, &c. The writer, a German physician, who has produced nothing

on the subject in his own language, says he "hoped to fill a hiatus that has hitherto existed in British medical literature," and reserves the right of translation, of which, however, he need be under no apprehension, there being in the French and German languages several compilations on mineral baths far superior to his own.

In another recent publication, "Medical Climatology," the writer excuses himself from mentioning the names of the authors from whom he has derived his information, on the plea that he wished to avoid encumbering his work with foot-notes. On the other hand, a French physician, who has compiled a book on the same subject (Dr. Gigot-Suard), states in his preface: "I shall not fail to indicate, with the most scrupulous exactness, the sources whence my information is derived." In "Medical Climatology" I recognise much of the matter, both respecting baths and climates, which I have communicated for several years past; and that the writer was perfectly cognizant of my works, is apparent from his mentioning the one on "Spain," for which there has been the least demand.

Similar works are, however, serviceable, by more generally diffusing information respecting the most efficient agencies in remedying a great number of chronic complaints, which are becoming every year more appreciated by the medical profession and the public.

BATHS OF GERMANY.

PART I.

RHENISH GERMANY.

FIRST DIVISION.

BATHS OF NASSAU.

THE duchy of Nassau, though small, comprises a great variety of scenery; while its extensive woods, the fertility of its soil in most parts, its vineyards, producing some of the most esteemed wines, and its mineral springs—to which vast numbers annually resort, and which are likewise largely exported—are never-failing sources of richness. The most beautiful parts are in the northern portion, near Limburg, along the banks of the Lahn, in the Rheingau, and in several of the sequestered valleys of the Taunus mountains. The air on the higher grounds is light and bracing. The natives are generally healthy, industrious, obliging, and sober—intoxication being rarely met with. As in most parts of Germany, education is compulsory; so that all are at least able to read and write. Begging is strictly prohibited.

No part of the world contains—within so small

a space—so many valuable medicinal springs, differing in their nature, as this duchy. They rise, for the most part, at or near the foot of the Taunus range, and are consequently but a short distance from each other; and, as the communication between the more distant ones has of late been greatly facilitated by the completion of the railroad, we may visit within a brief period the cold saline springs of Soden, the sulphurous spring of Weilbach, the acidulous chalybeate of Kronthal, the hot saline of Wiesbaden, the warm of Schlangenbad, the cold chalybeate of Schwalbach, the hot alkaline of Ems, besides several others, as Fachingen, Geilnau, Selters, &c.

WIESBADEN.

OF these various places, Wiesbaden claims the first and most extended notice, as being the capital of this compact territory, and as one of the most ancient and most frequented baths of Germany, the springs having been in high repute in the time of the Romans.

The visitor, ascending the course of the Rhine, may reach Wiesbaden either by steaming up the river to Biberich, whence it is distant two and a half miles, or by taking the railway on its right bank at Lahnstein (which is likewise the station on the Rhine for Ems). On approaching from Biberich, the valley of Wiesbaden is seen from the intervening rising ground enriched by gently-rising hills, covered with corn-fields and fruit-trees, behind which, on the north and north-east, rises the range of the Taunus, the dusky hue of whose pine-woods strikingly contrast with the white buildings of the town and the verdure of the surrounding meadows.* A prominent object in the view is an elegant stone edifice with gilded domes, situate on the acclivity of the Neroberg, the Greek chapel erected to the memory of the late duchess. On entering the town, the visitor sees displayed before him a handsome range of

* Wies-baden—Meadow-bath.

houses, fronted by an avenue of trees (Rhein-strasse), terminated on the right by the railway-station, whence is continued, at a right angle for nearly half a mile, the Wilhelms-strasse, consisting for the most part of first-class lodging-houses, which occupy one side, having on the opposite side a spacious promenade shaded by a fine avenue of lofty planes and the recent extension of the public gardens to the railway-station. At the opposite extremity is a wide Place, formed on three sides by the large Four Seasons hotel with its annex, the hotel de Nassau, and the theatre. Fronting the Place is a spacious enclosure, tastily laid out with flower-beds, embellished with two handsome fountains, and bordered on either side by rows of lime-trees and lofty colonnades, beneath which are shops for the sale of fancy articles. At the end stands the Cursaal, comprising rooms for balls, play, refreshments, reading, &c. The principal saloon, supported by columns of variegated marble, presents a striking appearance, and the smaller saloons are fitted up with great taste and elegance. The reading-room, well supplied with German, French, and English journals, is free to all visitors. Three or four gaming-tables are in almost constant operation from 11 A.M. to the same hour at night, with about three months' interruption in the winter; play being under the supervision of the Government, and the subjects of the duke being prohibited from playing.

The public grounds behind the Cursaal are laid

out with great taste; shrubs and parterres of flowers bordering a large piece of water, whence paths, well supplied with seats, and sheltered by acacias and other trees, diverge in various directions through the park-like openings and towards the numerous villas which have been erected of late years on the adjacent low hills on either side. A winding path, extending from the grounds up the valley to the village and ruins of Sonnenberg, is the most frequented afternoon promenade. The town or the military band plays every afternoon behind the Cursaal, and not unfrequently in the evening, either out of doors or within the building. The Austrian and Prussian military bands likewise occasionally come over from Mayence.

On returning from the Cursaal, a pleasant sheltered path behind the colonnade on the right leads to the eastern end of the Wilhelms-strasse, at a right angle with which is the Taunus-strasse, which constitutes one of the quadrangular frontages of the town, corresponding to that of the Rhein-strasse on its western side. Halfway down this street is the passage leading down to a small Place, where rises the principal spring (Kochbrunnen). A Trinkhalle, or colonnade, extends from the spring to the end of the Taunus-strasse, beneath which a crowd of water-drinkers perambulates in the morning between six and half-past seven o'clock.

On one side of the Place is the hospital for patients requiring the use of the waters, and in

the centre the spring is seen, agitated and bubbling from the escape of the carbonic acid, so as to resemble water in a state of ebullition, and, from its high temperature, emitting a considerable quantity of vapour. The bathing-houses in the immediate neighbourhood — the European, the Romerbad, &c., in the Place, the Rose hotel (nearly as large as the Four Seasons), and the Englische Hof lodging-house, derive their supply of water from this spring. From the Kranzel, a Place close to the Kochbrunnen (the centre of which is embellished with a marble group, representative of Hygeia), a street (Langgasse) passes through the centre of the town, in a direction parallel with the Wilhelms-strasse. Here is the Adler hotel, comprising the post and diligence-offices, and possessing one of the largest dining-rooms. Its baths are supplied by a special spring, of a less elevated temperature than the Kochbrunnen. From the Langgasse, the Webergasse — another street of shops, &c.—conducts to the Place already mentioned, between the Four Seasons and Nassau hotels; another street, passing beneath the arch of the ancient clock-tower, leads to the market-place, one side of which is occupied by the ducal Palace—the interior of which is fitted up with taste, and is well worth visiting.

The streets of the old town are narrow, indifferently paved, and contain nothing remarkable, unless a portion of the Heidenmauer (Heathen Wall), near the Post, be so considered. The Friedrich, and other modern streets, are,

however, broad, well paved, and regularly built, intersecting each other at right angles, and consisting, for the most part, of private residences. The new church, with its lofty spires, the Catholic church and the Ministerium (public offices), are structures that would do credit to any capital. The chief streets and promenades are lighted by gas. The population of the town now amounts to near 20,000 souls, by far the greater part of whom are Protestants.

A large proportion of the visitors remain in the hotels for the convenience of the baths, but many, who contemplate a protracted sojourn, engage apartments; the preferable situations are the Wilhelms-strasse and the villas on the rising grounds. The Taunus-strasse, likewise, presents good accommodation, as do the Rhein, Friedrich, and other streets in the modern portion of the town, though these latter are rather distant from the spring and baths. Dinners may be cooked at home, or may be had from a restaurateur's, but many visitors in lodging-houses prefer dining at the *tables d'hôte*, of which there are two daily at the principal hotels, at one and at five o'clock, the latter being higher in price and superior in quality.

Great improvements have been effected in Wiesbaden of late years; nothing has been neglected to maintain its reputation as the most-frequented watering-place in Germany, not only by invalids requiring its waters, but by those who seek recreation. In fact, its central situation amid numerous places of interest within a mode-

rate distance, the natural beauties of the surrounding country, the variety of walks and rides, the pleasing views presented from the heights, together with the resources possessed by the town itself, combine to render Wiesbaden an eminently favoured spot. Among the localities most resorted to in the environs are Sonnenberg, the Geisberg, with its experimental farm, the Faisanrie, the Dietenmühle, Walkmühle, Clarenthal (a farm surrounded by woods, occupying the site of the ancient monastery founded by the emperor Adolph of Nassau), Frauenstein; and nearer the town, the Nerothal and the Neroberg, to which lead paths easy of ascent through the woods. On this hill, as already mentioned, is the Greek chapel, the interior of which is a perfect *bijou* of frescoe, carving, and sculpture.

The Platte, a ducal hunting-seat, placed on an elevated part of the Taunus ridge, and visible from a considerable distance, is one of the first objects towards which most visitors direct their course. It is about an hour's drive from Wiesbaden, on the high road to Limburg; the pleasantest way is, however, to ride through the woods, passing by a fine weeping oak beyond the Geisberg. The interior is fitted up with furniture, &c., made for the most part of stags' horns. From the roof is displayed an extensive and varied prospect, including the windings of the Rhine for many miles, the plains bounded on the east by the Berg-strasse mountains, with the town and the woods of Taunus lying immediately beneath.

Wiesbaden is well supplied with carriages plying for hire, and with donkeys for those who prefer riding. The theatre is open throughout the year for the performance of operas and dramas, which are got up in a very creditable style. Artistes of celebrity frequently perform, or give concerts in the Cursaal. It is not closed on Sundays, when, likewise, the shops continue open, and gaming is in full force; many visitors come into the town from Mayence, and elsewhere, on these occasions, and dine at the *tables d'hôte*. The Museum contains a very good collection of natural history, objects of antiquarian interest found in the neighbourhood; some dating from the occupation of the country by the Romans; as also a picture gallery and an extensive library, whence books may be taken home.

Mayence is distant about twenty minutes by rail, and is resorted to by Wiesbaden visitors on Fridays, when the military bands of the garrison (Austrian and Prussian) play on alternate weeks on the terrace of the public garden, which commands a delightful prospect of the Rhine and its banks.

On account of its situation in a valley, sheltered on the north and east from winds, the town is felt to be hot and oppressive in the summer months, which state of the air, though generally favourable to those using the waters, as seconding their action, is disadvantageous to many persons in health, who, however, may generally avoid the feelings of languor and indisposition arising from this cause by taking exercise in the day-time out of the valley,

among the woods on the hills, where the air is fresh and invigorating. The sheltered situation of Wiesbaden renders it, however, eligible for an autumnal or winter residence. Its temperature is equable, and the mildness of the climate may be inferred from the fact, that various shrubs and plants, indigenous to southern climes, thrive exceedingly well in this locality. The ground and the atmosphere near the springs are rendered warmer by them, and snow rarely remains long in the town.* Several English families have been induced to select Wiesbaden, of late years, for a winter residence; for, independently of its climate, there is, as may be supposed, abundance of accommodation as respects lodgings, and provisions are of good quality. There are, moreover, great facilities for the education of young people—either in the schools or by private teachers.

Wiesbaden, however, is not a desirable place of abode for young people in the summer season. The population is not remarkable for longevity, nor is the appearance of its children healthy; the great majority of the inhabitants seldom breathe the purer atmosphere of the higher ground, or take active exercise, and their health suffers in consequence. The most prevalent diseases are, in the warmer months, gastric and typhoid fevers, and atonic dyspepsia; congestion of the abdominal

* Dr. Braun remarks that the humidity of the air is greater than in other southern localities of the Taunus, on account of the vapour from the springs.

viscera, piles, and dropsical affections, are likewise not unfrequent. Scrofula is very prevalent, as are also chronic bronchitis and rheumatism. On the other hand, acute inflammatory diseases occur comparatively seldom; intermittent fevers are rarely met with; pulmonary consumption is much less frequent than in the surrounding districts, and the epidemics which at various times have prevailed among the populations of many of the German towns have not extended their devastating influence to Wiesbaden.

As I do not purpose to enter into a detailed description of places, but desire chiefly to note the circumstances in which valetudinarians are more particularly interested, I proceed at once to speak of the chief source of attraction to a large proportion of visitors, who, from different parts of the world, resort to Wiesbaden—viz., its mineral springs. The extent to which these are employed, in the form of baths alone, may be inferred from the fact that the town possesses no less than thirty-five bathing establishments, and upwards of 800 bath cabinets. These waters were likewise in high repute in ancient times, among the Romans.*

* Even within my recollection, the amount of the population and visitors has more than doubled. Dr. Braun states in his work the following to be the proportion of increase within the present century :—

Year.	Inhabitants.	Patients.
1800 . . .	2,000 . . .	900
1825 . . .	6,000 . . .	4,000
1854 . . .	15,000 . . .	26,000

The Kochbrunnen and Adler springs have already been mentioned; the Four Seasons and some bath-houses are supplied by their special springs; but all drinkers drink of the Kochbrunnen. The principal establishments have douching apparatus, Douching, however, is not so well managed at Wiesbaden as at several other baths, particularly in France. There are two or three establishments that have *douches descendantes*, but they are not much used; the height from which the water falls is too great, being from fourteen to sixteen feet; consequently, the lateral douche is almost exclusively used, the water being pumped from outside the bath, and passing through a flexible tube introduced by a hole in the door, an attendant being in the cabinet to direct it against the part of the body indicated. Hence it results that the douche is often too powerfully administered, and much harm, instead of good, may be occasioned. Another deficiency of the Wiesbaden douches is, that they are only given in the bath, the whole body being exposed, whether necessary or not; whereas, in many other baths, an arm or leg, passed through a screen or board with apertures, may be subjected to the douche without the patient taking off his clothes or going into a bath.*

The temperature of the Kochbrunnen is 158 deg. Fahrenheit; consequently, the water is too hot to

* At the Römerbad the douche can be taken independently of the bath.

be drunk quickly; nor is this advisable, as this, like other mineral waters, is better digested when taken slowly by little at a time, than when a quantity of water is taken at once into the stomach. The Adler spring is not so hot, and that of the Schützenhof, which is farthest off, has a still lower temperature, there being a difference of fifteen degrees between it and the Kochbrunnen. There is no doubt that all the springs have a common origin at or near the Kochbrunnen, and that the difference in their temperature depends upon the water passing some distance underground before coming to the surface, as has been found to be the case of several other places where the springs were supposed to be different. In a therapeutical point of view, however, the question is not of much importance, as the water being left to cool in reservoirs, or in the baths, for several hours before it can be used, till it approach the requisite degree of temperature for bathing, the effects must be the same.

In chemical composition the springs are identical; the principal ingredient is muriate of soda, which exists in large quantity. The only hot springs in Germany which resemble it in this respect are those of Borecette, near Aix-la-Chapelle. Those of Bourbonne-les-Bains and Balaruc, in France, have also some analogy with the Wiesbaden springs. The water contains other salts in small proportions, as is seen in the analytical table.

On account of the large quantity of saline substance, the high temperature of the water, and the

gas which it contains, the action of the baths is somewhat exciting.* In most instances, the drinking a glass or two of the Kochbrunnen causes a sense of general warmth, with slight perspiration upon the forehead or lip. When its use is continued, it promotes the action of the skin, generally increasing its secretions, as also those from other organs, as the kidneys or the mucous membrane of the alimentary canal, though very frequently no sensible effects are experienced. Occasionally, however, unpleasant consequences ensue upon drinking two or three glasses, as headache, giddiness, flushing, throbbing of the temples, &c.; and if these should recur upon its repetition, the internal use of the water had better be discontinued, and a cold saline, as Kissingen or Homburg, substituted, if circumstances indicate that these are likely to be beneficial. The water is, however, in general very well borne by the majority of patients to whose cases it is suited.

A single bath of the Wiesbaden water will generally be followed by no particular sensation, beyond the agreeable feeling resulting from a warm salt bath. In some persons, however, especially if of full habit, headache and other unpleasant symptoms may be induced; and people in health,

* The first work on Wiesbaden was published upwards of two centuries ago. It appears that at this time it was customary for patients to begin with a bath of half an hour, and to increase the duration a quarter of an hour daily, till it reached three hours or more. In some cases patients bathed twice a day—about five hours in all.

as well as those to whose cases the baths are not applicable, incur great risk from persisting too long in their use, or from taking them at too high a temperature; and several have reason every year to regret their imprudence in this respect. As regards the particular cases to which these baths are more especially applicable, I see no reason to alter the opinions already expressed in former editions of this work, the general justness of which has been confirmed by more extensive experience of their effects: and first, as respects the cure and relief of gouty and rheumatic affections, it has become pretty evident of late years, in England, that the high reputation which the Wiesbaden waters have enjoyed from time immemorial in Germany has not been over-estimated. Numbers of these patients annually return home in an improved state; and several of those whom I have known, who were for a long series of years subjected to repeated attacks of gout, have escaped a recurrence during the winter and spring, after having gone through a course of the baths, some of whom have returned, in subsequent seasons, greatly improved in health and appearance, more for the purpose of guarding themselves from a relapse than from any actual necessity.*

In cases of long standing, of the atonic kind, with or without deposition of calculous matter in

* Several of these patients did not drink the waters; and though it has of late years been denied by some writers that the constituent principles of mineral springs are absorbed during the bath, I am convinced that the

the joints, occurring in persons about or beyond the middle period of life, the Wiesbaden baths are calculated to render the most effectual service. Though bathing is the most essential part of the treatment, it is advisable in most of these cases to combine with it the internal use of the water. Mild douching will also tend very much to the dispersion of local swellings, puffiness, stiffness of the joints, of the wrist, fingers, or foot, and also of chalky concretions, although it should not be used if there be a tendency to inflammatory action, nor until a certain number of baths have been taken. During an attack, the baths will require to be suspended, till the more severe symptoms have subsided; when the patient may again begin, by previously drinking the water while confined to his room. In general, patients who have been accustomed to free living do not bear a low regimen, and will be the better, after the inflammatory symptoms are allayed, for being allowed substantial food, if an inclination be felt for it, care being taken that the quality be plain and light, and that the quantity be small. In the majority of cases of erratic, irregular, or repelled gout, these baths will also be productive of great benefit, and will not unfrequently cause the morbid action to restrict itself to one spot; a more regular attack being sometimes induced previous to an

contrary opinion, which is the most prevalent among bath physicians, is the correct one. I have entered at some length into the consideration of this question in my work on "The Curative Agency of Mineral Waters."

amelioration taking place. Persons who have experienced only two or three attacks, but in whom the predisposition is strong, may generally expect to derive permanent benefit from the baths, provided they are subsequently cautious in their mode of living, and do not indulge too freely in the pleasures of the table; on the other hand, where there is a tendency to acute inflammation, and in persons of a plethoric or a highly-irritable habit, I should consider Wiesbaden less likely to be beneficial than an alkaline or a slightly-mineralised spring, as Vichy, Ems, Teplitz, Wildbad, Bath, or Buxton, or than the internal use of a spring like Carlsbad, Homburg, Kissingen, or Marienbad, combined or not with baths, according to circumstances.

I should be inclined also to counsel many young persons, in whom the gout developed itself at an early age, in consequence of a strong hereditary tendency, to give the preference to a spring of this kind; though it is probable that they would derive advantage from Wiesbaden. It cannot be expected, however, that a single course of the waters will suffice to remove the disease; and, in order to have the chance of a permanent cure, persons afflicted with gout would do well to return, for two or three consecutive seasons, to the springs from which they derive benefit; passing the intervening months in a suitable climate, and paying attention to the regulation of their diet and mode of living.

As the mornings are frequently chilly, and it

is of importance to prevent the action of a cold atmosphere on the surface of the body, while under a course of bathing, I do not in general recommend to English patients the very early hours of rising and drinking the water adopted by the Germans; half-past six or seven will be sufficiently early, even for those who take their bath before breakfast, which should be taken an hour after drinking. Those who dine at one o'clock may again drink about seven in the evening; while for those persons who prefer dining at five, or later, from two to three will be the best time for taking the second dose. The effects of the water are thus better sustained than when the whole quantity prescribed is taken in the morning, and an interval of four-and-twenty hours is allowed to elapse between the periods of drinking; the water is often thus better digested, and is well borne, whereas the same quantity, if taken before breakfast, would sometimes give rise to unpleasant symptoms, or occasion a too active operation upon the bowels or kidneys. It is also sometimes advisable, when a long course of these or other mineral waters is required, to recommend a temporary suspension and change of air for three or four days, after a certain period of drinking and bathing has elapsed; by this means the system is not too early saturated, and the patient returns to resume the use of the water in a more fit state for its absorption, and with a greater probability of more durable benefit resulting therefrom.

Most chronic rheumatic affections will be removed or greatly relieved by the Wiesbaden baths. In the slighter cases, not of long standing, a short course, for about three weeks, will be frequently sufficient. In the more intractable cases of articular and muscular rheumatism, as also in the pains of a rheumatic nature affecting the face, head, and other parts, a more prolonged course will often be required, combined with the use of the douche. In some cases the hot-bath, vapour-bath, or douche, may be advantageously employed, especially in elderly persons whose skin is dry and seldom perspirable. Where, however, the complaint has supervened upon, or has been continued from, an acute attack during which any symptoms of the heart or pericardium being affected were present—which is more frequently the case than is generally supposed—it would be well to ascertain, by auscultation, that no positive lesion exists, as it would very likely be aggravated by the employment of the water. Those rheumatic affections depending upon long exposure to wet or cold, to which military men in colonial service are peculiarly subject, are especially relieved by these baths. Several bad cases of this kind have fallen under my observation, in which the most beneficial and unexpected results followed a full course of the waters.

Almost all thermal springs are, however, recommended in cases of rheumatism; and there is no doubt that several patients who have derived benefit from those of Wiesbaden would also

have been benefitted by others ; and also, that some waters of a different character would have succeeded in cases where little or no benefit ensued from those of Wiesbaden. A person may derive advantage from Wildbad, or any other simple thermal spring, after the failure of a sulphurous spring, or a strongly-impregnated saline one, as Wiesbaden. This, however, must be considered as an exception depending upon peculiar circumstances, not always apparent, as the reverse would be more frequently the case ; and if extensive statistical data could be impartially obtained respecting the comparative value of different mineral springs in this disease, I have no doubt it would be found that, though a simple thermal spring and a hot saline one are both beneficial in rheumatic, and in several other diseases, yet that the latter would be more generally successful ; that the benefit derived from its use would be obtained in a shorter period of time, would be of a more durable kind, and that relapses would less frequently recur than when the former kind of spring had been employed. It does not, however, ensue from this that a slightly-mineralised thermal spring is not preferable in some cases, though not in the majority—as, for example, where the disease is combined with much nervous irritability ; where it is of a subacute form, and calming and sedative remedies are more clearly indicated ; as also in young persons of a full or plethoric habit ; in which instances a hot sulphurous spring—as Aix-la-Chapelle, or a saline one, like Wiesbaden—

would be likely to produce a too perturbatory action; while the simple thermal springs of Plombières, Luxeuil, Wildbad, Gastein, would, in all probability, be extremely effectual in allaying the irritability, and in removing the disease. On the other hand, where, together with rheumatic affections, there is a state of general relaxation and debility, the internal use of a chalybeate spring would be more likely to procure their removal; joined either with a course of tepid saline baths, or with baths of the chalybeate water, if not counter-indicated by the patient's condition. Where fixed pains, local indurations, or swellings exist, the use of the douche may be advantageously combined, after a few baths have been taken. Certain intractable cases, which have resisted mineral waters, as well as the other remedies employed, may yet frequently be relieved by vapour-baths, or by the Turkish baths, which are established at several places, as also by hydropathy, though, in general, thermal baths are most productive of permanent benefit.

Nervous pains, recurring in paroxysms, affecting the branches of particular nerves of the face, head, or extremities, to which the term neuralgia or tic is generally applied, and which not unfrequently originate from a rheumatic or gouty diathesis, from the suppression of habitual discharges, or of cutaneous eruptions—which causes of disease, though perhaps somewhat over-estimated by Continental practitioners, are not sufficiently attended to in England—are more likely to

be relieved and cured by a properly-directed course of mineral waters than by pharmaceutical remedies or local applications. To many of these cases Wiesbaden would be exceedingly applicable, especially when the functions of the skin are sluggishly performed, and there exists a congested state of the abdominal or pelvic viscera, with retardation or irregularity of the periodical secretion in females. In those cases which appear to arise from other causes, as moral influences, a high state of nervous excitability, &c., I should be more inclined to recommend waters of a different kind. Water or vapour douches may in general be advantageously combined with the baths and the internal use of the same water—or of a water of a different nature, as that of Homburg, Marienbad, &c., according as circumstances may seem to indicate their employment.

The state of abdominal plethora, with congestion of the liver, and obstruction in the circulation of the *vena portæ*, termed by the Germans *Unterleibsvolblütigkeit*, with its consequences, as impaired digestion, deficient or vitiated biliary secretion, piles, &c.—occurring for the most part in persons about or beyond the middle period of life, who have led a too sedentary life, or have been addicted to the pleasures of the table, and which is marked by more or less protuberance of the abdomen, with diminished muscular and nervous energy—is one well calculated to be relieved by the use of the Wiesbaden waters, internally and externally employed. The baths, by exciting the

activity of the nervous and vascular systems, and by determining powerfully to the surface, tend materially to equalise the circulation and to remove the internal congestion; while the absorption of the water contributes to improve the quality of the blood; by its internal use, the secretions of the mucous membranes, of the alimentary canal, of the liver and kidneys, are often perceptibly increased in quantity, at the same time that the mesentric glands and absorbent vessels are stimulated to increased activity, and the digestion is consequently improved. Even when under these circumstances the employment of the water is not followed by immediate sensible effects, it is frequently not the less efficient on that account; and unless some inconvenience be experienced, it should be persisted in, as, after a certain time it will generally be followed by relief. In several of these cases, especially where there exists hardness or tension in the region of the liver, spleen, or in other parts of the abdomen, the douche will be of material assistance in the treatment; a cold aperient gaseous water, as Kissingen, or either of the above specified, being preferred for drinking. In many cases of this kind where bathing is counter-indicated, and constipation exists, patients would do better to resort to Carlsbad, or to one of the springs already named, according as circumstances may indicate.

In hemorrhoidal affections especially, which are very commonly a consequence or an accompaniment of the above-mentioned state, the effects

of the Wiesbaden springs are often very marked ; indeed, the late Dr. Peez attributed to them a regulating and controlling power in these affections, observing, "The periodical and habitual hemorrhoidal flux, if not too strong nor too weak, if not accompanied with painful symptoms, experiences no change by the action of these baths ; especially if it be necessary to health ; if, however, it be too abundant, so as to threaten life, the Wiesbaden water, if not used too hot, removes this dangerous symptom—a too strong flow is diminished, one that is too weak is increased or ceases altogether, according as the condition of the patient's health requires." The physicians at other baths also speak in very decided terms of the effects of their waters in these complaints ; as, however, they are mostly of a secondary nature, whichever mineral spring is best calculated for the removal of the causes upon which they depend should be preferred, though it is seldom that bath physicians are inclined to acknowledge in other springs an efficacy superior to those to which they are attached.

In many cases of paralysis, baths of thermal waters offer the most efficient, and often the only means of arousing the nervous energy of the system, and of the paralysed parts ; and few have a more beneficial influence in this way than those of Wiesbaden ; but here, again, it cannot always be determined beforehand that these baths will be more suitable in a given case than those of other springs containing but a small proportion of solid and gaseous substance ; for experience shows that

the latter occasionally succeed after the failure of the former. This circumstance cannot be satisfactorily accounted for, except upon the principle of idiosyncrasy, or by the supposition that the disturbing action of a thoroughly-impregnated spring is less adapted to certain of these cases than the more tranquillising and sedative influence of a simple thermal or slightly alkaline warm spring. In most instances, however, where there does not exist a high degree of nervous excitability, or tendency to fulness in the cerebral vessels, the baths of Wiesbaden may be used with great prospect of advantage; especially when the complaint is of a rheumatic origin, or depending upon the impression of poisonous influences upon the nervous system, as malaria, the abuse of mercury, or the employment of lead or some other metals by workmen; as also in those cases where the disease appears to be of a purely local nature, not connected with cerebral disease, but arising from deficient energy of the nerves of the part, or of the spinal marrow, consequent upon exposure to cold or wet, or other analogous causes. Even in paralysis affecting a limb or one side of the body, remaining after an apoplectic seizure, baths of this or other mineral waters may often be advantageously employed, provided there remain no symptoms of cerebral congestion, or organic disease.* Plethoric individuals, and those whose

* This question was discussed some time ago in the Academie de Medecine of Paris.

digestive organs are disordered, will frequently require some preparatory treatment, previous to using the baths, in paralytic as well as in other complaints.

These, then, are the principal diseases which the Wiesbaden waters are more especially calculated to relieve, and in which their use in the form of the bath and douche is the most essential part of the treatment. There are, besides, various other complaints to which the external or internal use of the water, or both combined, is extremely suitable, in common with several other mineral springs ; but of which the peculiar circumstances of each case require to be investigated, in order to enable the practitioner to decide upon the spring likely to be most effectual. Of these, many scrofulous affections will be cured or greatly ameliorated by the internal or external application of these waters, at an early or late period of the season, but not in the height of summer ; especially enlarged lymphatic glands of various parts, and of the mesentery, occurring in children or young persons of a torpid habit, with tumid upper lip and abdomen, a vitiated state of the intestinal secretions, and a harsh, dry condition of the skin. Here the exciting and resolvent powers of the waters are exceedingly effectual, by improving and augmenting the secretions of the alimentary canal, and of the skin ; while, by stimulating the absorbent and vascular systems, they mostly cause the speedy diminution of glandular or bony swellings. In most cases of this disease, however, a water like Kreutznach would be preferable.

Another case in which the Wiesbaden springs are often eminently serviceable is, where there is a generally-disordered state of health, without the existence of any actual disease or material derangement of any particular functions, except, perhaps, impaired digestive powers—as is very frequently seen in Londoners and inhabitants of large cities, closely engaged in trading, mercantile, or professional occupations; as also those who have been resident in a tropical or unhealthy climate; such a state, though relieved and palliated for a time by medicines, not unfrequently terminates in a serious functional or structural disease, if allowed to continue for a long period; and nothing would attend more effectually to its removal than temporary absence from the cares of avocation, change of air and mode of life, and the employment of an appropriate thermal spring.

The same may be said of several cases of hypochondriasis, with disordered digestive functions, to which Wiesbaden is applicable, both on account of its waters tending to rectify the deranged state of the digestion, and also from the beneficial influence which would be exerted in most instances on the patient's *moral*, by the movement of the place, its cheerful appearance, the beauty of its environs, and the neighbourhood of so many objects of interest. To some patients of this class, tepid bathing, with the internal use of a cold gaseous spring, is most applicable. To others, again, certain other mineral springs are best adapted.

The suppression or painful performance of periodical functions peculiar to females is frequently benefitted by the Wiesbaden baths; especially if the cause be cold, checked perspiration, or a congested state of the abdominal or pelvic viscera. Some syphilitic affections, especially where much mercury has been employed, and certain chronic cutaneous diseases, psoriasis, impetigo, &c., where the skin is generally in a dry state; as also eruptions of the face depending upon derangement of the alimentary canal or liver, will often be removed by baths of a warm saline water like Wiesbaden; and likewise by sulphurous or alkaline springs, either alone or combined with the internal use of the same, or some other mineral water. In certain bronchial and laryngeal affections, with cough, and scanty or deficient expectoration, the Wiesbaden baths, combined with the internal use of the water, and in some cases the inhalation of its vapour, may be expected to be of material advantage.

On the other hand, these springs, like most others, will generally be prejudicial in organic disease of the lungs, heart, or large vessels; in disorganization of the abdominal or pelvic viscera, with fever, profuse hæmorrhage, or discharges *per vaginam*, depending upon the presence of serious structural disease.

The beneficial effects of the Wiesbaden and other powerful springs are mostly evident during the time of their use, after the system has been for some time subjected to their action; they are, however, sometimes manifested consecutive to dis-

charges, or eruptions of a critical nature; the bath, by its perturbatory action, and exciting the vital energies, frequently bringing diseases from the chronic to a more acute state previous to their removal. Hence a slight degree of feverishness, with increase of long-standing pains, &c., are frequently proofs of the beneficial action of the water, and precursors of a favourable change. In other instances, no perceptible effect or amelioration takes place during the employment of the waters, but such becomes apparent after they have been for some time discontinued. When this is the case, or when a degree of benefit has been derived during the course, in long-standing or intractable disease, it would be most advisable for the person to return the following season, as it can scarcely be expected that complaints which have existed for months or years are to be always removed by three or four weeks' course of mineral waters. The invalid, under such circumstances, should therefore be contented with the proofs he has already received that the waters have been of service, and may, in most instances, look forward with confidence to a removal of the disease, or to a still greater degree of amelioration, on resuming their use the following season.

As climate has also great influence on the production and removal of several diseases—especially gout, rheumatism, neuralgia, paralytic, bronchial, and scrofulous affections—patients who have been benefitted by a course of mineral baths will find the benefit to be of a more lasting nature, and that

they will be less liable to relapse, if, instead of returning to the more humid and variable atmosphere of most parts of Great Britain or Ireland, they could pass the winter in the south of Europe. This is more especially advantageous when a repetition of the course is advisable in the following summer; as the effects of the waters would be in a great measure kept up; and being seconded by a warm climate during the winter, the invalid would return to the springs under the most favourable circumstances for deriving permanent benefit.

The more recent analyses of the Kochbrunnen by Lade and Fresenius differ materially from the former one of Kastner, representing the spring to be much richer in salts and gas. They approximate very closely to each other. The following table shows the contents of a pint of water:—

Muriate of Soda	.	.	.	.	52·499
„ Potass	.	.	.	.	1·119
„ Ammonia	.	.	.	.	0·128
„ Lime	.	.	.	.	3·617
Sulphate of Lime	.	.	.	.	0·692
Silicic Acid	.	.	.	.	0·460
Carbonate of Lime	.	.	.	.	3·210
„ Magnesia	.	.	.	.	0·079
„ Iron	.	.	.	.	0·043

with minute fractional portions of a grain, and traces of Carbonate of Barytes, Strontian, Manganese, Phosphate of Lime, and organic substance; making a total of fixed substances, 63 grains.

Free Carbonic Acid, 10 cubic inches.

The latest local publications on the waters of any consequence, are those of Doctors Müller and Braun. The latter physician, in his “Monogra-

phie" (1859), has recorded the results of some experiments he made respecting the physiological effects of the waters (which, however, are not peculiar to them). I have adverted to them in my work on "Mineral Waters." He ascribes the beneficial effects of the waters in cases of rheumatism to the stimulation of the skin by the action of the bath, and the consequent increase of the cutaneous secretion, as also to the increased renal secretion consequent on drinking the water. Stimulation of the skin rarely occurs, however, at Wiesbaden, as at some other baths, where eruptions occur during their use. It may also be produced by a variety of agencies, as Turkish baths, the hydropathic processes, &c., which, though often productive of benefit, yet do not effectually combat the predisposition of the disease in chronic cases, nor secure the patient against relapses. Many mineral waters likewise which, when taken internally, act on the kidneys, are yet, even when combined with baths, not the most calculated to produce permanent results in rheumatism. The same may be said of gout.

SCHWALBACH.

LANGEN-SCHWALBACH, so termed from the length of the street of which it formerly consisted, is a small town of 2,500 inhabitants, situate in a valley on the high road from Wiesbaden to Ems and Coblentz. It is a two hours' drive from the first-named bath, and four and a half hours' from Ems ; but by the formation of the new road through the valley to join the railway at Dietz, Ems will shortly be reached in half that time. Eltville, on the Rhine, is about six miles distant, and diligence communication with it, passing through Schlangenbad, is now established. A road is likewise about to be made from Schwalbach, through the beautiful Wisperthal, to join the Rhine at Lörch, so that access to it will be greatly facilitated. Schwalbach lies considerably higher than the vale of Wiesbaden, from which it is separated by a steep hill (Hohe Wurzel), over which the more interesting old road passes. The acclivities of the hills bounding the valley on either side being denuded of trees, the sun's rays are powerfully reflected upon the town, so as to render the heat at times inconvenient, yet in general the air is light and bracing, especially in the surrounding woods, and on ascending the heights.

To a passing traveller, the town itself does not present a very attractive appearance, yet there

There are few places where the environs are of a more pleasing character, or where a few weeks in the summer could be more agreeably passed by those who do not seek the amusements, and would avoid the bustle of the larger watering-places. Owing to the increased number of visitors, Schwalbach has been greatly improved of late years; many new houses have been erected on the rising grounds; the accommodation is better, though, especially as respects the living, there is still much room for improvement. The paths through the valley and about the hills are well kept, and are supplied with seats at convenient distances. The principal hotels are the Allée-Saal, the Post, and the Duc de Nassau, which is the one most generally favoured by the English. The Allée-Saal contains a public room where concerts and other entertainments are frequently given, and to which a reading-room is annexed. The Allée, a fine avenue of trees, leads from the hotel to the principal promenade, between the Weinbrunnen and Pauline springs, and, together with the trees on the Stahlbrunnen promenade, afford sufficient shelter from the heat in the middle of the day. Beneath the Allée is the chief edifice of Schwalbach, the ducal bath-house, comprising a public promenade room and numerous roomy bathing cabinets, divided into three compartments, appropriated to baths of the three above-named springs. The water being cold, is warmed by steam to the required temperature for bathing, so that its properties are scarcely altered. A colonnade, with

booths for the sale of fancy articles, books, &c., extends along the whole length of the building.

Near the bath-house rises the Weinbrunnen, which has retained its name since the time of the Romans, by whom it was termed "Aqua Vinaria." About a quarter of a mile up the valley is the Pauline, which, though some years ago in much vogue, has latterly been but little used for drinking. The broad, shaded paths on either side of the intervening meadow-land is the usual promenade at the hours of drinking the waters (morning and evening), when a musical band is in attendance. The drinkers at the Stahlbrunnen (enclosed in 1740) are less numerous than at the Weinbrunnen. This spring is separated from the valley in which rise the two others by a hill. A fourth spring (Rosenbrunnen) is used only for supplying the baths. Several other springs rise in and about the town; but they are not employed medicinally.

The walks and donkey-rides extending beyond the Pauline in different directions along the valley, and among the hills, through woods of oak, ash, and fir-trees, are highly beautiful and varied. Those also which are continuous with the poplar avenue leading from the Stahlbrunnen are extremely interesting, while on the opposite side of the town the visitor will be equally gratified by the beauty of the environs, whether he turn to the left and ascend the beautifully-wooded valley to Adolphseck, and the picturesque ruin of Hohenstein, five miles distant, or take the Wiesbaden

road as far as the Eisenhammer, and stroll among the hills and valleys in that direction.

There is at Schwalbach no Cursaal or public hall for *réunion* in the evening. This deficiency is much felt by visitors who are isolated from their families, and justifies the complaints expressed by some, of the dulness of the place, especially in bad weather, when there is no indoor resource against ennui. The drainage of the town likewise requires to be improved, on which point Professor Miller, of Edinburgh, thus expresses himself in his recent pamphlet on "Neuenahr": "In some parts of the streets, and in most of the hotels, the stench from the inefficient drains is not only most offensive, but most prejudicial. No wonder that gastric fever is ever and anon showing itself, and that Kurgäste take odd turns every now and then, without well knowing the reason why! Drain! drain! drain! should be dinned into every ear in Germany."

No less just are the professor's observations with reference to the piece of water intended to be ornamental, formed some years ago, and to the superjacent meadow between the promenades: "On the upper range of walks, the brook (or *bach**) trickles down through a wet, sour meadow or marsh, covered with rank grass and weeds, and terminates in the muddy pool already alluded to; where, too, the musicians take their stand, and where the Kurgäste mainly love to congregate.

* Schwalbach—Swallow's-brook.

On a hot, sunny day towards noon, all looks gay and wholesome; but in the early morning, when you strike away to some hill-top and look back, you find the whole town overlaid with a thick white fog, which on more minute examination may be found to have its root and centre, as it were, in this same pond and pleasure-ground. The same thing, to a less extent, is apt to occur at night too, and adding to this the inevitable peculiarity of such a place as to climate—in having hot, sultry days, with chill and even cold mornings and evenings, and the change coming suddenly, especially at sundown, one is at no loss to understand how rheumatic, bronchitic, and other complications, are apt to disturb the otherwise prosperous Kur. What could be easier than to drain the wet meadow, converting it into good prime *grass*, at the same time drying up the pond and making it a good bowling-green, or laying it out in flower-beds?"

If the former part of this recommendation were adopted, it would not, I think, be so necessary to dry up the small piece of water, which, while adding to the appearance of the place, would not be likely to prove prejudicial.

The water, having a temperature of 8 deg. Reaumur, is pleasant and bracing. Most persons after drinking a glass or two experience a degree of increased vigour, imparting, as the author of the "Bubbles" expressed it, "a desire to face the hill."

When it agrees, it does not produce any unpleasant feelings, or constipation of the bowels, but a

sensation of exhilaration and general *bien-être*. In some persons, however, especially if plethoric, its action is so exciting, that even a small quantity could not be repeatedly taken without risk, neither could it be borne in many cases where there existed a high degree of nervous irritability. The three springs vary in the amount of solid constituents. The Stahlbrunnen contains but little saline substance (four and a half grains), and nearly three-quarters of a grain of carbonate of iron, to the point; hence it is termed the steel spring, in contradistinction to the others; in the Weinbrunnen, the taste of the metal is not so marked, owing to its smaller proportion, and to the larger amount of salts contained in an equal quantity of water. The Pauline spring has less iron than the Stahlbrunnen, and also less salts and gas, which are not so intimately combined with the water, on which account it is less efficient: with some persons, however, it agrees better than either the Weinbrunnen or the Stahlbrunnen.

From the different proportions in which the constituent parts are combined, the Schwalbach springs are capable of fulfilling various indications, and are applicable to the majority of cases in which chalybeates are required. When one spring disagrees, one of the others is frequently found to answer remarkably well; hence Schwalbach has the advantage over other places which only possess one spring, or where the springs—if there be several—do not vary materially in their constituent proportions.

I consider the Weinbrunnen to be in general the preferable spring for drinking; its constituent parts being intimately combined with the water, and in the proportion best adapted for producing a tonic effect, without being too astringent or heating. In composition it holds an intermediate position between the Pouhon of Spa—which the Stahlbrunnen more nearly resembles—and the Trinkquelle of Pyrmont, containing about twice as much salts, gas, and iron, as the former, and considerably less of the saline and gaseous parts than the latter, though nearly as much iron. This water is best adapted for exportation, and may be drank at a distance, combined or not with a course of baths at another spring. I have often recommended the internal use of the Schwalbach water to patients using the baths of Wiesbaden and Schlangenbad.

These springs are more particularly suited to cases of pure general or local debility, not depending upon the presence of disease of any particular organ, but arising more from general poorness of blood, with a deficiency of its red globules, and, as a necessary consequence, a laxity of the solids, with sluggishness in the performance of the functions of life, as in leucophlegmatic and chlorotic individuals. In debility of the stomach and bowels, with consequent scanty or impaired secretion, they are a most efficient remedy; and, by exciting the activity of the glandular apparatus, while at the same time giving tone to the muscular coat, they tend to remove a torpid or a too relaxed state of the alimentary canal, much better than other tonics

er astringents, the action of which being mostly of a temporary and palliative nature, is too often followed by an aggravation of the malady.

A constipated state of the bowels not unfrequently arises in indolent habits from a deficiency of their vitality and muscular tone, and may often be removed by remedies which best impart increased vigour to the system. On the other hand, a degree of relaxation may arise from the same cause, and from preternatural weakness of the mucous membrane—hence these opposite states may originate from the same source—viz., debility—and may often be rectified by a similar remedy; thus these waters, whose action is generally constipating, may, in cases where inactivity of the bowels arises from deficient tone of their muscular coat, by removing the cause, become the most effective aperient.

I find this view of the action of chalybeate waters, in removing obstinate constipation in some cases (which I expressed many years ago), corroborated by the author of a standard work on mineral waters, who observes: "Not only the power of the voluntary, but also that of the involuntary muscles, that have lost their tone, is increased by the employment of chalybeate springs. Prolapsus *ani* or *vaginæ*, with descent of the uterus, from relaxations of the muscles, and inactivity of the muscular coat of the bowels, which, having become habitual, has produced an arrest of the secretions and constipation, may be remedied by these means. Iron, by its local impression on the

mucous membrane, and by its astringent effects on the secretions which serve for digestion generally, retards the peristaltic action ; nevertheless, there is in the operation of iron, when combined with carbonic acid and saline substance, as respects many persons, a stimulus which increases the amount, and regulates the secretions of the alimentary canal and its appended viscera, and restores the activity of its muscular tunic. A young irritable woman, whose bowels acted habitually only every six or eight days, had an action three times a day on taking a saline chalybeate. Sometimes obstinate constipation is removed after a few days' use of chalybeate waters. This effect of iron has been generally too little noticed by physicians." *

In cases of nervousness in either sex, with the tendency to spasmodic action, so frequently occurring in young females, when there is no manifest visceral congestion or *engorgement*, the waters are generally highly efficacious in removing the morbid susceptibility of the nervous system. Where, however, there exists high nervous excitability, especially in persons of a plethoric habit, with irregularity in the distribution of the blood to particular parts, as marked by frequent headaches, flushings, coldness of the extremities, and disordered menstruation, they are not advisable, and cannot be borne, till after the irritability has been allayed, and the circulation of the blood more

* Dr. Lersch—"Einleitung in die Mineralquellenlehre." 1860.

equalised by sedative and tepid baths, as Schlangenbad, or by other means; when this has been effected, chalybeate springs may be used with the greatest probability of permanent benefit. They are likewise well calculated to remedy the deranged state of health, with general weakness, so frequently seen in residents of large cities, either when it is a consequence of over-anxiety, the pressure of particular avocations, &c., or of dissipation. Nothing would be so likely to restore vigour to the nerves, and colour to the cheeks, under these circumstances, as a course of chalybeate baths, with the internal use of a chalybeate spring, when not contra-indicated. In some elderly persons, also, whose nervous energy and digestive power are impaired, the springs of Schwalbach, and the bracing quality of the air, would prove excellent restoratives; though in extreme old age, or where there exists great depression of the powers of life, they would not be admissible.

Cases of the nervous kind of hypochondriasis, without material disorder of the digestive functions, would most likely be benefitted by waters of this class, which would likewise be highly serviceable in some cases of relaxation of the mucous membrane of the air-passages, without inflammatory complication, but attended with mucous expectoration, or with occasional passive hæmoptysis, with muscular debility and mental lassitude. Persons who are liable to profuse perspiration, supervening on slight exertion, and arising from general weakness or from a too relaxed state of the cuta-

neous pores, would generally derive benefit from a course of these waters ; as would also many patients labouring under incipient tuberculosis, in which the deficiency of iron in the blood is apparent, when not accompanied by manifest pulmonary disease. Several physicians, especially in France, have of late years strongly advocated the employment of chalybeate waters in these cases, and I have seen marked good effects result from their use during the summer months.

The Schwalbach waters are not unfrequently recommended to patients who have undergone a course of those of Ems or Wiesbaden ; and the change to the more bracing air of Schwalbach is often of great service in removing the lassitude and relaxation sometimes remaining after their use. As, however, the beneficial action of the above-mentioned and other springs is frequently not manifested till some time after they have been discontinued, much harm has resulted in not a few instances, from patients employing chalybeate waters immediately after a course of thermal baths. The late Dr. Fenner, in one of his works, alludes to the abuse thus frequently made of chalybeate springs in these terms : “ While it is not to be denied that in many cases an after-cure by means of chalybeate waters cannot be dispensed with, yet it must be admitted that their much too general and vague employment has been the occasion of great harm. Experience but too frequently teaches us, that patients who had become considerably better by their course of thermal

waters, have got much worse, and lost the advantage they had previously obtained, from being ordered to use a chalybeate spring." * Hence it would be advisable, when subsequent critical effects were expected, not to employ a chalybeate, by which their occurrence might be prevented: and even when tonics are considered necessary, it would be best to allow some interval of time to elapse between the employment of two classes of springs differing so much in their nature.

In most instances the internal use of one of the Schwalbach springs is combined with baths, which are, however, in many cases the principal means of relief. In fact, from the whole surface of the body being exposed to the action of the water in bathing, a certain amount is absorbed, and the tonic effects are frequently experienced by the patient immediately after the bath, which is thus a valuable means of obtaining advantage from these waters, when their internal use produces constipation, headache, and other unpleasant symptoms, as not unfrequently occur in weakly and scrofulous children, and persons of a full though flabby habit. Where also there exists some local affection, as rheumatic pains, weakness of parts, relaxation of the ligaments of joints, neuralgic complaints, &c., the baths will be the most essential part of the treatment, and the douche may in most of these cases be advantageously employed.

In cases of dysmenorrhea, menorrhagia, and leu-

* Uber Nachkuren.

corrhoëa, arising from general debility, or local relaxation, and not depending upon a state of irritation or vascular congestion, from fifteen to twenty-five baths would be likely to render effectual service. The baths should be taken at rather a low temperature, as twenty-three deg. R., as the object of them is to strengthen, and not to relax, which a hotter bath might do. At first, a slight shuddering is generally experienced, which does not last more than a minute or two, and is succeeded by a comfortable sensation of warmth. In chlorosis, torpidity of sexual functions, stomach and bowel debility, uterine relaxation, the weakness remaining after acute disease or profuse discharges, in atony or laxity of the skin and muscles, partial paralysis, or passive hæmorrhage, the waters are generally most applicable. Dr. Fenner observes, what requires to be noted, that passive hæmorrhages and the discharge of leucorrhœa become much increased at the commencement of the treatment, but on continuing the baths, they gradually become less, and ultimately cease. It is a bad sign when the copious discharge is suddenly stopped by the too powerful contraction of the vessels induced by the baths, as it returns shortly after, and a degree of weakness succeeds. When speaking of sterility, Dr. F. remarks: "All baths have been praised for their power in this respect; all have their Bubenquelle. Whether one goes to Carlsbad, Marienbad, Franzensbad, Pyrmont, Spa, Ems, or elsewhere, one will equally hear wonderful histories,

and at no place will it be admitted that the individual spring fails." *

A spring like Ems would be more likely to remedy this condition in cases where there existed a high degree of irritability, either general or local, with painful menstruation, tendency to cramp, or nervous weakness, combined with an extreme susceptibility originating from irregular distribution of blood, and undue determination to the uterine system. On the other hand, where sterility is connected with an apathetic or atonic habit, coldness of temperament, torpidity in the performance of the vital functions, nervous debility depending upon diminished vitality, depressing moral impressions, or serious illness, general paucity of blood or chlorosis; or else with local debility of the uterine system, either from chronic leucorrhœa or copious hæmorrhage; there would be more probability of its being remedied by the employment of chalybeate springs, or by other tonic means calculated to remove its causes. The tendency to recurring abortion may often be removed by a course of chalybeate baths and waters, when the above-mentioned causes have been instrumental in producing it.

Dr. Genth, one of the resident physicians, has published "The Iron-waters of Schwalbach," a great portion of which is taken up with the investigations of pathologists with respect to the amount of iron in the blood under various condi-

* Die Bäder in Schwalbach.

tions of the economy—the absorption of water, iron, and other substances into the blood by means of the skin, &c. Having treated of these subjects when speaking of the action of mineral waters in general, I deem it unnecessary to enter upon their consideration in this place.

Analysis of the springs by Fresenius, in 1855.
Amount of constituents in a pint:—

	Stahlb.	Weinb.	Pauline.
Bi-carb. Soda	0·158	1·884	0·134
Mur. Soda	0·051	0·066	0·050
Sulph. Soda	0·060	0·047	0·048
Sulph. Potass	0·028	0·057	0·031
Carb. Lime	1·699	4·393	1·655
Bi-carb. Magnesia . .	1·629	4·467	1·299
Carb. Iron	0·643	0·443	0·518
Manganese	0·141	0·069	0·091
Silex	0·246	0·357	0·119
	—	—	—
Grains	4·660	11·967	4·029
Free carb. Acid, c. in.	22·899	20·819	18·229

By this it appears that the amount of solid constituents in the Stahlbrunnen and Pauline is about the same. Fresenius' analysis differs slightly from that given by Dr. Genth, which specifies upwards of six grains to a pint of the Stahlbrunnen, and also states the iron to be a trifle more in the Weinbrunnen than in the Stahlbrunnen. The amount of gas is there stated to be much larger in all the springs, that in the Pauline to as much as 39,580 cubic inches. After a long continuance of wet weather, the Weinbrunnen sparkles less and tastes less fresh than in fine, dry weather.

SCHLANGENBAD.

THIS bath is an hour distant from Schwalbach, half an hour from the Rhine at Eltville, a two hours' drive from Wiesbaden, either by the old Schwalbach road, or by the more beautiful one passing by Biberich along the Rheingau.

Few places would be more eligible, as a summer residence, for those who prefer seclusion and tranquillity to the crowd and bustle of large baths, than Schlangenbad, which possesses most of the advantages sought for by those whose health requires rather repose than energetic medication. Situated in a beautiful and sequestered valley, enclosed between well-wooded hills (on which paths, easy of ascent, have been constructed to the summit, whence may be obtained fine views of the surrounding country), and near the richest part of the Rheingau, it possesses great facilities of communication with the other baths of Nassau. The various objects of interest within an easy distance will enable visitors to vary their rides and drives, while pedestrians will derive much gratification from exploring the beauties of the forest scenery—particularly through the valley in the direction of Schwalbach. Those who are unable or disinclined to ascend the hills, or to make distant excursions, may take air and exercise at any time of the day in the shaded alcoves formed by the

interlacing of the boughs of trees, and extending a considerable distance towards the woods from the promenade.

Besides the original large establishments—the old and new bath-houses and the Nassauer Hof hotel—many buildings have been erected of late years for the accommodation of the increased number of visitors, including the hotels Planz, Victoria, Russischer Hof, and neat villas on the road to the Rhine. At the Nassau hotel, which is ducal property, as also at the bath-houses, the apartments are clean, neatly furnished, and reasonable—the price of each being inscribed over the door. Most persons content themselves with a bed-room, and dine at the *tables d'hôte*, where the dishes, if not so varied as at Wiesbaden, are, perhaps, better adapted for the preservation of health—being good in quality and sufficiently abundant. There is a reading-room, but no place for *réunion*, the ancient promenade-room having been lately removed to form a terrace continuous with those of the promenade, while the ball-saloon is now transformed into the church.

The bathing cabinets in the bath-houses are exceedingly convenient—more so, indeed, than at most other baths. They are, for the most part, lofty and well ventilated; some are divided into a dressing-room and a large and spacious marble *baignoire*, capable of containing four or five persons, though only intended for a single person. The bather, consequently, is not obliged to lie down in water about two feet deep, but has ample

space to move about, the water being admitted in large quantity, so as to rise nearly breast high; the temperature can also be increased at pleasure, by admitting more warm water; although some persons, in the height of summer, prefer bathing at its natural temperature, about 22 degrees Reaumur.

The springs have been used remedially since 1694. They rise at the foot of the Bärstadter Kopf—one of the highest hills of this part of the Naunus chain; and are eight in number, three rising immediately behind the old and three behind the new bath-house, being received into vaulted reservoirs which supply the baths. The fountain which flows before the façade of the old establishment, and serves for drinking, is supplied by the Rohrbrunnen. The eighth spring—the Schactbrunnen—rises also within the new establishment; its temperature is somewhat higher than the others, and it contains somewhat more of saline substance.

From its chemical composition, the water may rank with the alkaline thermal springs; a pint contains about six grains of solid substance, being double the quantity contained in the same proportion of the Wildbad water; one half, or three grains, being carbonate of soda; it is consequently very analogous to that of Neris, in France. It contains but a small proportion of carbonic acid gas, not more than a cubic inch and a half to the pint, which, however, is more than in the water of Baden. Medicinally considered, it may be ap-

plied to most of the cases where a soothing effect is required ; some rheumatic and neuralgic affections, with the character of irritability, would derive great advantage from a course of these baths.

Baths of common warm water, it is well known, are not suited to rheumatic cases, inasmuch as they tend to debilitate the system, and diminish the tone of the skin, rendering it more susceptible to the influence of atmospheric vicissitudes ; whereas, baths of thermal waters, containing even less saline substance than Schlangenbad, are found by experience to have a contrary effect. A congestive state of internal organs, with deficient circulation of the capillaries of the skin, in weakly and delicate persons, would be likely to be relieved by these baths ; more especially when the lungs or air-passages are implicated, and baths of a gaseous water, more strongly impregnated with saline substance, as Ems, would not be well borne. In such a case, the internal administration of a water of a different kind, as Weilbach or Selters, might be advantageously combined with the baths.

Schlangenbad ranks high as a bath for the relief of nervous affections of a spasmodic nature. Hufeland, who is considered a high authority on the subject of mineral waters, says, in speaking of Schlangenbad : " Its operation is softening, purifying, and sedative, allaying irritability. I know no bath so proper for all kinds of nervous affections, especially in females unable to bear medicines, or mineral waters in general ; and where the chief indication is to diminish morbid irritability

and convulsion. In such cases Schlangenbad is a true and often an only means of strengthening the nerves, while Pyrmont and Driburg would often fail." He likewise observes, with respect to its restorative properties in persons advanced in life: "I know of no bath so well fitted to preserve the character of youth, and retard that of old age; and this I know from experience, that its yearly use gives to an old man cheerfulness, greater pliability of limbs, and increased vigour."

A bath of this water, like others of the same class, does, in fact, impart softness to the skin, with a pleasurable sensation while it lasts, and a feeling of *bien-être* for the rest of the day. The late Dr. Fenner said, in his flowery style: "Vous sortir des eaux de Schlangenbad rajeuni comme un phénix; la jeunesse y devient plus belle, plus brillante, et l'âge y trouve une nouvelle vigueur," which is not so figurative a language as many might suppose, as is testified by the improved appearance of many young persons, and the increased activity of older ones, who have gone through a course of these baths.

The resident physician, Dr. Bertrand, remarks, in his pamphlet, with reference to their remedial applicability: "The baths possess a calming action upon the nervous system in general; they allay abnormal states of irritation, and thus produce a more harmonious condition of the nervous economy: hence many patients feel their movements much lighter and easier after taking a certain number of baths. It is not uncommon to see persons whose

nervous system is affected, drag themselves with difficulty to the bath at the beginning of the course, and soon after find themselves in a state to undertake tolerably long walks, and even to ascend the neighbouring heights."

The waters of Schlangenbad may, then, be considered as an efficient means for regulating the functions of the skin, and a specific for calming the nervous and vascular systems; they ameliorate the crisis of the blood; increase the natural secretions; and, lastly, impart to the sphere of vegetative life a more decided character of health. These results take place in so mild a manner, that Osann might with some reason say of these waters, that "there does not exist, at least in Germany, any other bath which in this respect can be compared with Schlangenbad."* In a few instances, however, which have fallen under my observation, even the baths of Schlangenbad have proved exciting, even when not taken at a high temperature, and have increased the existing nervous irritability.

Besides the cases already mentioned, a course of these baths is more particularly indicated in disorder of the cutaneous functions, accompanied with dryness of the surface, or morbid irritability; in prurigo, lichen, and some of the forms of skin disease where a sedative action is required, and the use of more powerful waters might aggravate the symptoms; as also in cases of painful or difficult menstruation, arising from visceral congestion or a

* Les Eaux Minerales du Duché de Nassau.

ate of exalted nervous excitability. Dr. Bertrand speaks highly of the effects of the baths in relieving pulmonary congestion, especially when accompanied by incipient tubercles of the lungs; and, combined with appropriate internal means, they would be likely to prove efficacious in some of these cases.

The Schlangenbad baths, either alone or combined with the internal use of a chalybeate or other mineral spring, according to circumstances, would be an excellent restorative applicable to persons whose general health is disordered, without any definite local complaint; as is frequently seen in those whose minds are affected by the anxieties attendant on commercial or professional pursuits, and also in those who have been engaged during several months in the routine of metropolitan dissipation. They are likewise frequently useful as a precursory measure to the employment of more strongly-mineralised baths, as also in allaying the excitation which these latter occasionally produce. Many elderly persons whose skin is dry and rough, and who complain of stiffness of the limbs, would frequently find their inconveniences removed, and their general health improved, by a short residence at Schlangenbad. These baths are contra-indicated where there exists a state of general relaxation of the system, of torpor of the visceral functions, mucous discharges arising from want of tone, prostrations, and in impoverished conditions of the blood. Drinking whey is advantageously combined, in many instances, with the use of the baths. Goats are driven in to be milked, and the whey is drank

on the terrace in the morning, at which time, as also in the afternoon, the band plays. It allays nervous and vascular excitation, and is a good deal used in cases of affections of the respiratory apparatus, complaints of the digestive organs, attended with irritability, and in eruptions of the skin arising from stomach disorder or a vitiated state of the blood.

EMS.

EMS may now be reached from the Lahnstein station, on the Rhine, in about twenty minutes by the railroad which makes the circuit of great part of the duchy, passing along the right bank of the river and inland from the above-named station to Limburg. The high road from Schwalbach is hilly, and not particularly interesting, till it joins the line at Nassau, a pretty hamlet delightfully situate on the Lahn, which is crossed by a neat suspension bridge. The most prominent feature in the scene is formed by the ruins of the castle on the hill overlooking the village; the surrounding district having been the original patrimony of the duke's ancestors, from it the duchy derives its name. From Nassau the high road skirts the river, winding between cultivated and well-wooded hills.

Bad-Ems is built for the most part on the right bank of the Lahn, at the foot of a range of nearly precipitous and rocky hills. Its position is striking and beautiful, and the adjacent country is highly picturesque, especially some of the converging valleys and along the banks of the river—either down the stream to its junction with the Rhine, or upwards beyond Nassau to Arnstein, the Geilnau and Fachingen springs. Fine views are obtainable from the heights, and several ob-

jects of interest, including Lahneck and Stolzenfels castles, are within an easy distance.

The principal buildings of Ems are the Curhaus and the Cursaal. The former, a large, irregular edifice of considerable antiquity, comprises numerous rooms for lodgings, a public saloon for dining, and the baths. The ground floor is occupied by a vaulted area, where are the drinking-fountains of the two principal springs, around which crowds of drinkers are collected every morning in the height of the season, and where booths are open for the sale of various articles. The Cursaal, rebuilt some years ago, contains a handsome quadrangular ball-room, and elegantly-furnished rooms for play. The reading-rooms are well supplied with journals, and—as at Wiesbaden—are free to the public. The public garden in which the Cursaal stands is but of limited extent, on account of want of space between the houses and the river. On one side is a handsome colonnade, with shops for the sale of articles of taste. The promenade along the river extends from the garden to the grounds of the Four Towers, a large, isolated building, serving for a lodging and bath-house, which, with its turrets at each of the four angles, forms a striking feature of the view. This establishment is annexed to the hotel d'Angleterre, which is most frequented by English visitors. The Russie and the Four Seasons likewise hold the first rank among the hotels. The river is crossed by the old bridge of boats opposite the Curhaus and the railway-station, and

By a modern suspension bridge for pedestrians. On its left bank are several rows of lodging-houses, the Panorama, Victoria, and smaller hotels, and a new bath-house, replete with every convenience for the efficient employment of baths, douches, vapour, &c. Here also a neat English church has recently been erected by subscription.

Ems is not a very eligible place of summer residence for those who do not require to use its waters; though during two months of the year (July and August) it is thronged with visitors from different countries. From the extreme narrowness of the valley, and comparative deficiency of free ventilation, the heat and oppressive nature of the atmosphere are, in the height of the season, at times excessive, producing general relaxation, languor, and lassitude in healthy persons, and not infrequently aggravating the condition of invalids. The town is, moreover, but indifferently provided with shade; while the hills on either side are so steep as to render their ascent fatiguing to pedestrians. On this account numerous well-conditioned donkeys are always in readiness for excursions, and afford the best means by which weakly persons can take exercise on the hills, where the air is invigorating. Patients with whom the heat would disagree, but to whose cases the waters might be applicable, would therefore do well to repair to Ems early in June; the end of August and the month of September are objectionable, on account of the great difference of temperature between the middle of the day and

the mornings and evenings, the sun rising late and setting early behind the hills, as also on account of the fog and humidity which arise from the river. This disadvantage is admitted by one of the local practitioners, Dr. Ibell, who, after speaking of the sheltered position of Ems from cold winds, and the general mildness of the winter, remarks: "But this smiling picture has its shady side; the woody heights which surround Ems on all sides have the sad privilege of attracting the vapours of the atmosphere, and, as in all narrow valleys, the banks of the Lahn are, especially in autumn, liable to be enveloped in a thick fog during the first hours of the day."*

The waters of Ems were known to and used by the ancient Romans, who, it appears, from the remains of fortifications and tombs, and from the coins and medals found in the neighbourhood, had established one of their principal stations at this spot. The numerous mineral springs arise from the base of the steep mountain Baderberg, immediately behind the Curhaus; on both banks of the Lahn, as also in the bed of the river; gas bubbles being constantly seen escaping from the surface of the water opposite the Cursaal. Eighteen of these have been examined and analysed; their temperature varies from 18 to 44 (Reau.); they are mostly used for baths, three being principally employed for drinking—viz., the Kesselbrunnen, the Kranchenbrunnen, and the Fürstenbrunnen; to these

* Les Eaux Thermales d'Ems.

has lately been added the Neubrunnen. Carbonate of soda is the predominating ingredient in these waters; muriate of soda exists also in no inconsiderable quantity, as will be seen from the analysis. The springs are the most efficient alkaline thermals in Germany, and, both as respects temperature and the nature of their composition, resemble those of Vichy, which have likewise a range of temperature varying from 18 to 44 deg. There is, however, a great difference in the amount of the principal mineralising ingredient, the bicarbonate of soda, which is more than double in the Vichy springs. The analogy is closer between the springs of Ems and the less-known ones of St. Nectaire, in Auvergne, the temperature of which ranges from 20 to 31 deg., and which contain about twenty-four grains of carbonate of soda, eighteen of muriate of soda, with thirteen cubic inches of carbonic acid gas to the pint of water. Tepnitz, which belongs to this class, is, on the other hand, a more slightly alkaline water, containing but a small portion of saline and gaseous constituents, as compared with the Ems waters.

The action of the water, internally taken, is essentially alterative, diminishing the crasis of the blood, improving the quality of the secretions of the alimentary canal and the kidneys, in most instances without any material increase in their quantity. Indeed, as respects the state of the bowels, the reverse is not unfrequently the case, and it sometimes becomes necessary to have re-

course to medicine. A slight degree of perspiration is not unfrequently produced, especially when the internal administration of the water is combined with baths. A considerable portion of the gas escapes when the water is employed in the form of bath, it does not occasion the same stimulating effect as other baths more strongly impregnated with saline and gaseous substance; hence, while determining to the surface, and consequently increasing the functional activity of the skin, thereby relieving congested states of the mucous membranes or parenchymatous viscera, it has generally, at the same time, a sedative operation on the nervous system, allaying morbid irritability, or undue vascular excitation. In certain individuals, however, the baths sometimes produce an exciting effect, and could not be continued without danger of aggravating the disorders under which they labour; this sometimes arises from their being taken at a higher temperature than is suited to the peculiar idiosyncrasy or constitution of the individual, or to their being too long continued.

The different proportions of the mineralising substance of the springs of Ems, and the difference of their temperature, afford the practitioner a wider sphere for their employment, and enable him the better to adapt their administration to particular conditions and constitutions; the Kesselbrunnen being better suited to certain cases than the more gaseous and cooler Kranchenbrunnen, or the Fürstenquelle, and *vice versa*. The

latter spring, on account of its lower temperature and smaller proportion of gas, is milder in its action, and is generally prescribed in cases where the other springs would disagree. The same may be said of the Neubrunnen.

With respect to the special adaptation of these springs a great variety of complaints is enumerated by the local practitioners; though to several of these other thermal springs might be no less applicable. Thus the Ems waters, like most other warm springs, have been much recommended in gout and rheumatism; but in most cases of the more fixed and chronic forms of these complaints, especially in elderly persons, I should prefer a spring of a different kind.* In the milder and more erratic forms, especially in young subjects, and co-existing with much nervous irritability, the springs of Teplitz or Wildbad would be preferable. Dr. Ibell remarks, with reference to the cases of gout in which these waters are calculated to be of service: "Certain patients, especially if they have pursued an arduous career—if they have much exerted at the same time the mind and the body—sometimes present great exaltation of the sensibility, combined with a general prostration of strength; the whole organism is in an excessive state of irritability. In these subjects the gout does not localise itself, nor manifest itself in a

* In former times the baths, which were greatly prolonged, and taken at a high temperature, were much employed in rheumatic cases.

critical manner. The depression of the vital powers does not then admit of our having recourse to active or energetic means, while the nervous erethism excludes the employment of tonics. In any similar condition the well-directed administration of the Ems springs, internally and externally, produces the most advantageous results. Whether these results be owing to chemical action, to vital reactions, or to a modification in the plasticity of the fluids and textures of the body, it is certain that the Ems waters cure some forms of gout, and that the patients return home, if not radically cured, at least greatly relieved. The same may be said of certain forms of rheumatic affection."

Notwithstanding the contrary opinion that has been expressed by some physicians, I entertain no doubt that much of the benefit derived from this and other alkaline waters (especially the more strongly-impregnated ones of Vichy) in cases of gout is owing to the absorption of the principles of the water into the blood, which tends directly to remove its superabundant acidity, which in other subjects evidences itself in a tendency to the formation of gravel and stone, in which cases this class of waters is no less efficacious, especially when there exists a deranged state of the stomach. In these cases a course of the baths, combined with drinking, is of essential service, not only by determining to the surface and regulating the functions of the skin, but also from the direct action of the alkali, which is known to produce a

sedative effect on those organs, and by chemically altering the quality of the blood, to render the urine less irritating to the urinary passages. In some of these cases the Ems baths might be advantageously combined with drinking a cold gaseous water, containing a larger proportion of alkali.

The resident practitioners likewise speak highly of the effects of these waters in disorders of the digestive functions, especially when combined with scorbut of the liver; and there is no doubt that in many of these cases, accompanied with heartburn, acidity, and other symptoms of a vitiated state of the gastric secretion, their employment is attended with considerable benefit; they are also well adapted to rectify some deranged states of the health (occurring more particularly in women and children), without any particular organ appearing to be the seat of disease, if used at a time of the year when the relaxing effects of the atmosphere would not be likely to counteract their beneficial operation.

Dr. Diel, who was a highly-estimated physician practising at Ems for upwards of thirty years, strongly recommended a course of these waters in congested states of the abdominal circulation, with its consequences — hemorrhoidal affections, &c. (Other thermal and cold waters are, however, very efficacious in this class of cases, as will appear from the perusal of this and my other work on mineral waters. The chief difficulty in these and other instances, where a variety of springs is calculated to render more or less service, consists in discrimi-

nating the cases to which particular ones are most applicable.

Dr. Doring, in his work on Ems,* adds his testimony to the beneficial action of the waters in this class of complaints, and in some measure compares them with the Carlsbad springs, as does also another of the Ems physicians, quoting the phrase of Kreysig—viz., “Ems is a milder Carlsbad.”† With the exception of temperature, there is, however, no other point of resemblance between the Ems and the Carlsbad waters; both their composition and *modus operandi* being very different. The Carlsbad water is energetic in its action, being mostly productive of sensible effects at the time; and though it contains some carbonate of soda, yet sulphate of soda is the predominant ingredient, of which the Ems water scarcely contains a trace. The Carlsbad water, moreover, is almost exclusively taken internally, whereas at Ems bathing constitutes a principal, and, in many instances, the more essential part of the treatment. In fact, I should say that the waters of Ems would be inapplicable, or would be productive of little or no benefit, in most of the cases to which Carlsbad is particularly adapted; on the other hand, Ems would be productive of advantage in several complaints where Carlsbad would be prejudicial.

* Ems, mit seinem Heilquellen, &c.

† Dr. Sprengler's “Effects of the Thermal Waters of Ems.” 1854.

It is, however, in diseases of the respiratory organs that Ems has acquired the highest reputation, patients affected with these diseases forming annually a large proportion of its visitors. Kufeland, referring to the effects of the waters in this class of complaints (though his knowledge was restricted to the German springs), remarks: "We know how few mineral springs there are that can be used with safety in disease of the lungs. Patients with these affections are usually prohibited from visiting a mineral spring; here the reverse is the case; and, in my opinion, Ems stands alone with Selters in this respect." Diel also spoke highly of the efficacy of the waters in these cases, and in some varieties of asthma. These recommendations from such high authorities have induced many consumptive patients to flock to Ems, a large proportion of whom were doomed to disappointment, in consequence of the disease being in too advanced a stage, or from the waters and the locality being but little suited to the cases. It is, however, acknowledged by all the local physicians, that, in confirmed phthisis, the Ems waters are unsuitable; and a more just appreciation of their action in cases of this kind exists at the present day, when a knowledge of the properties of the most-frequented springs is more generally diffused among the profession and the public; and, in most cases, where there exists a probability of permanent benefit being obtained, should consider a sojourn at Ems during the summer months as more likely to be prejudicial

than advantageous. The local practitioners, who have recently written upon the waters, admit that their virtues have been too highly extolled in pulmonary diseases. Thus, Dr. Ibell remarks: "Ems is perfectly indicated in chronic catarrh of the air passages. Some surprising cures of this kind have procured for Ems the reputation of a panacea for all consumptions, and especially for pulmonary consumption. Some have too greatly exaggerated, others have too much depreciated the waters. The numerous unsuccessful results in cases already beyond the resources of art, should not lead to an unjust estimation of the value of means which, employed methodically, and at a fit time, are calculated to be of the greatest service in chronic affections of the chest. So long as there does not exist in the lungs depositions of tubercles, producing and keeping up a state of irritation, and so long as the vascular system presents no febrile erethism, and when the disease is not owing to any particular dyscrasy (as syphilis or scrofula), then Ems is useful; I do not say always, but most frequently. With respect to tuberculisation in general, and especially pulmonary tuberculisation, judging from my own experience, I consider that our springs are not suited to these organic alterations. The vital reactions to which they give rise, especially the excitation of the *muscular* (vascular?) system which ensues upon their use, only admit of their gradual employment, beginning by small doses. This is the only way in which they

can be borne in states of irritability of the system."

Thus the Ems waters can only be considered as calculated to render material service in some cases where there exists a predisposition to pulmonary tuberculisations, or where tubercles exist in the latent state; and even of these cases a large proportion would derive equal, if not more advantage from the use of mineral waters of a different character, and from the more invigorating atmosphere of a different locality.

Dr. Diel, as also Dr. Ibell, express themselves favourably with respect to Ems as a winter abode for patients with pulmonary disease. The former author speaks of patients going to Mont Dore and to Bath, to use the waters in the winter. If, however, he were acquainted with these places, he would be aware that Mont Dore is deserted except during the season; and if visitors go to Bath in the winter, scarcely any, and probably none suffering from pulmonary affections, go there exclusively for the waters. Ems, in fact, offers no inducement either in point of locality or climate for any one to pass the winter there; and it is altogether destitute of resources at this season for mental occupation or recreation. It is, however, a too prevailing error among watering-place practitioners to exaggerate the advantages of their respective localities. On the occasion of a former bath-physician having too universally extolled the Ems waters, Dr. Wetzlar remarked in his work on mineral waters: "Thilenius calls on the unbe-

liever, and bids him come and see. I have come and have seen what I have seen in every other bath—viz., that some of the sick were cured or relieved, and others left the place uncured and unrelieved. I saw some who still had their gouty and rheumatic pains when they left. I saw other patients arrive with hoarseness, who, when they went away, could not speak a loud word, and others, who, when they left, coughed and breathed as badly as when they came.”*

Dr. Sprengler remarks, with respect to the effects of the Ems waters in consumptive cases: “All the cures hitherto effected at Ems may be comprehended under the rubric of chronic catarrh; only chronic catarrhs are curable by these waters. Protracted or neglected acute catarrhs, without dyscrasic basis, or change of structure, allow of a decidedly favourable prognosis. But if the pathic deposits should be the cause of the catarrhal irritation of the respiratory mucous membrane, the prognosis will be less auspicious. When, however, the pathic deposits have ceased, and a chronic catarrh remains behind as an independent disease, in which the patient continues in the same sickly state as in his former complaint—in such cases Ems will prove beneficial in curing, not the primary malady, but the secondary one, which, by duration and intensity, had become independent; and as, on the one hand, the pathic product continually gives rise

* *Über Gesundbrunnen und Heilbäder.*

oo renewed catarrhs, so, on the other, the long duration of the catarrh occasions fresh deposits of pathological products, which, according to the law of analogous formation, soon assume the character of the first exudation. If we succeed in curing the catarrh, we put a stop to the previous pathological process—for instance, tubercles. Thus, in Edms, it is not the tubercles that we cure, but the chronic catarrh, the exciting cause, the dangerous attendant and successor of tuberculosis.”

It has, however, been demonstrated, by the researches of both French and English pathologists, that bronchitis or catarrhal affections of the mucous membranes of the air passages does not produce the tuberculous deposit, which arises from a vitiated condition of the blood, and that the co-existing bronchial irritation is but the effect of the presence of the morbid product in the lungs, although when existing in any considerable degree, or permanently, it accelerates the course of the malady. To combat the catarrhal affection is, therefore, to leave its cause as operative as before; and though, by this means, temporary ameliorations may not unfrequently be obtained at the most favourable season of the year, no lasting benefit can be expected, and the symptoms would, in the great majority of instances, recur sooner or later, when patients are subjected to unfavourable atmospheric or other influences at other periods. The primary object of the physician in consumptive cases should be to rectify the abnormal condition of the blood, which is not likely to be effected

in the majority of cases by drinking or bathing in the Ems waters, or by patients sojourning during the summer months in the oppressive atmosphere of its valley. "Tuberculous patients," says Dr. Lersch, "go to Ems mostly to their prejudice, when the disease is not in its first stage, and is not complicated with abdominal obstruction. The cautious use of one of the warm springs is in all cases to be regarded only as an adjunct in combating this dyscrasy. The vapour acts prejudicially on these patients. Richter likewise speaks of these patients coming to Ems and becoming worse." Having, in another work, entered fully into the consideration of climates, it is unnecessary that I should enlarge upon it in this place.*

Dr. Sprengler has a chapter on the advantages of Ems in emphysema, or abnormal distension of the air-cells, which, in itself, is not a primary disease, but a consequence, in most cases, of long-continued bronchial irritation in debilitated or elderly subjects, and the use of an alkaline thermal water, by improving the condition of the membrane, may indirectly relieve the accompanying emphysema. Dr. Sprengler adds: "An additional requirement is a supply of pure, dry air, unmixed with noxious matters; a third object is to augment artificially the contraction of the walls of the cells of the lungs, for which purpose the *exciting air of a mountainous country* is peculiarly

* On the Influence of Climate on Tuberculous Disease.—(A Prize Essay.)

adapted. All these indications are answered by the soda thermals of our picturesque neighbourhood, where the air is pure, stormy weather almost unknown, and where sudden changes of temperature never occur."

From what has been already said, it will appear that Ems is but little calculated to fulfil this latter indication; and with respect to chronic bronchial and laryngeal affections in general, I am of opinion that, though Ems may be advisable in some of the cases marked by the characters of excitability, yet in the more torpid forms of these complaints, occurring in lymphatic or scrofulous subjects, or in old persons, other waters and situations would often be preferable to those of Ems. In many affections of the respiratory apparatus, the inhalation of the vapour of the water is of material service as a palliative measure. A vaporarium has lately been added to the baths at the Curhaus, for the purposes of general or local vapour baths and inhalation.

Dr. Doring, as well as some other local practitioners, recommend the Ems waters in scrofulous diseases; and in the erethetic form of this disease, I should say that, when not employed in the hot months, they are likely to be productive of great amelioration, especially in children of a florid habit, with enlarged glands of the mesentery, of the neck, &c., the water being drank alone, or with milk, and its internal use being combined or not with bathing, according as circumstances may indicate. In some scrofulous cases, Ems is also

often serviceable as a preliminary means to the employment of a more tonic medication, tonics being very often indicated for these patients, who, however, are frequently unable to bear them without the previous use of remedies of a solvent, or sedative, or mildly-exciting kind.

In several nervous complaints to which women are more particularly liable, especially when marked by the character of general or local irritability, as hysteria and other spasmodic disorders, a course of the Ems baths and waters proves eminently beneficial, both from their sedative and alterative qualities. Dysmenorrhœa and amenorrhœa, when not depending upon a relaxed state of the system, but arising from undue excitation, irregular circulation and congestion, are likewise disorders to which these waters are applicable, as also to some cases of hypertrophy of the uterus. Respecting this latter disease, Dr. Sprengler remarks : "There is no curative agent that deserves to be put into comparison with the natural ascending douche at Ems, especially when the disease is accompanied with dysmenorrhœa or amenorrhœa. No other remedy is capable of softening the indurated texture to the same degree within the same period of time ; the more torpid the individual, the more positive the indication ; the more obstinate the dysmenorrhœa, or amenorrhœa, the higher must be the degree of warmth, the stronger the jet employed." Of the neuralgic form of dysmenorrhœa, or uterine colic, he observes : "Relief from pain, and a feeling of ease, are a general consequence of the appli-

cation of the douche, so that patients willingly submit themselves to its employment, and themselves require a repetition."

The ascending douche spring—Bubenquelle—(*source des garçons*) is a natural jet of water, rising in an enclosed basin through a small metallic tube to the height of three feet. It is employed in cases where the douche *ascendante* is indicated, especially in complaints of the female generative organs, and it has acquired a reputation for the removal of sterility, though there is reason to believe that much harm has resulted from its abuse in these cases. Sterility arises from a variety of causes, some of general or local nature, connected with the state of the health or with functional derangement—others of a purely physical kind; and these causes require to be investigated before the remedy applicable to the particular cases can be ascertained with any probability of success. Where there exists dysmenorrhœa, or high nervous irritability, the Ems baths, by their tranquillising effects on the nervous system, and their general alterative properties, tend to restore the disturbed equilibrium between the vital state of the uterus and that of the system in general; and in this way they may conduce to remove sterility, which object the local stimulation of the douche doubtless promotes in some cases. Dr. Ibell warns practitioners and patients against the too indiscriminate use of the douche *ascendante*. "The Bubenquelle," he observes, "to which surprising virtues have been as-

cribed, differs from other springs of Ems only in the circumstance that a stronger natural pressure causes its water to be emitted a few feet higher.

“On account of its exciting action, the douche should be recommended with caution. This spring has been much praised as a remedy for sterility, and every year we see its improper and immoderate use not only prove ineffectual, but also give rise to serious consequences. It would be advisable that this spring be employed only on the official prescription of a physician.”

Among the other complaints in which the local practitioners speak favourably of the Ems waters, are the *enrouement*, or weakness of voice, with hoarseness, arising from chronic irritation and enlargement of the mucous membrane of the fauces, to which public speakers, singers, and clergymen are frequently liable; stomach or bowel disorders, with acidity and torpor of the liver. In analogous cases, however, various other thermal springs would be no less applicable than those of Ems. Dr. Sprengler ascribes specific virtues to them in the removal of fatty liver; but I confess that I am strongly inclined to doubt his explanation of the effect said to be obtained in this disease. “It is,” he says, “particularly against fatty liver, of such frequent occurrence, especially in tuberculosis, that our warm soda springs are of use, not only by their increasing the secretion of bile, but also by the possibility of thereby producing a saponification of the fat in the liver. The waters of Ems, by removing the chronic

catarrh of the air-passages of the stomach, and the adipose infiltration of the parenchyma of the liver in tuberculosis, undoubtedly render essential service in this disease; they improve the constitution and the nutritive process, and thus contribute indirectly to the checking, or even the healing, of tubercles."

In certain chronic cutaneous disorders, where the sedative action of alkaline baths is indicated— as lichen, prurigo, some forms of eczema, &c.— the Ems waters would often be beneficial.

The springs, though varying in temperature, do not materially differ in the amount and respective proportions of their constituent ingredients. The following, according to Fresenius' analysis in 1851, will show the composition of a pint of the Kesselbrunnen, which has a temperature of 115 deg. Fahr.; that of the Krankenbrunnen being 80 deg., the Fürstenbrunnen 94 deg., and the Neubrunnen 118 deg. :—

	Grains.
Bi-carbonate of Soda . . .	10·94
Muriate of Soda . . .	7·77
Bi-carbonate of Lime . . .	1·45
„ Magnesia . . .	0·94

with minute fractional portions of a grain of sulphate of soda, silica, &c. Total, 21·77 grains; free carbonic acid, 20 cubic inches.

WEILBACH.

THE Weilbach spring rises near the village of the same name, in a plain about halfway between Mayence and Frankfort, and but a short distance from the railroad. There is on the spot no other accommodation than is afforded by a bath and lodging-house, containing upwards of 100 rooms, dining and assembly saloon, &c., and two or three detached houses. A pleasantly laid-out promenade garden surrounds the spring, whence is obtained a pleasing view of the Bergstrasse and Taunus mountains, with the intervening country, through which flow the Rhine and the Main. Soden and Kronthal lie near to Weilbach, Homburg is about two hours, and Wiesbaden one hour distant.

The water feels soft and unctuous to the touch ; its taste is not unpleasant, its odour slightly sulphurous. It is of a low temperature (11 Reau.), but is warmed up to the required heat for bathing by means of a steam apparatus, so that its properties are but little impaired by the process. A considerably quantity of *cruchons* is sent to other parts of the duchy, and to the large towns in the neighbourhood. By exportation to a distance, the water loses, however, somewhat of its characteristics and virtues ; but little is consequently sent to foreign countries. A course of drinking

this water is not unfrequently combined with bathing at Wiesbaden, Schlangenbad, or elsewhere.

Germany scarcely contains any sulphurous springs of note, except those of Aix-la-Chapelle, Warmbrunn, and Baden, near Vienna; for though the cool springs of Weilbach, Nenndorf, and Eilsen, may be very useful in some cases, they cannot be compared with the thermals which have a more energetic action, but they approach nearer in their effects to the weaker warm springs of the Pyrenees, as St. Sauveur, or still more to those of Moffat, in the north of Britain, which the Weilbach water resembles in temperature, amount of saline and sulphurous impregnation.

A course of this water may, then, be considered applicable with great prospect of advantage in those cases where sulphurous waters are indicated, but where the more exciting ones would not be well borne, and is well adapted to delicate and irritable habits. When taken internally, it affects more especially the mucous membranes of the alimentary canal, air-passages, urinary and uterine apparatus, improving the secretions, without causing in most instances a sensible increase in their quantity, though in some cases the bowels or kidneys are slightly acted upon, and the sensible perspiration is increased; the latter especially, when bathing is combined with the internal use of the water, a miliary eruption being occasionally produced on the surface of the body. Hence the baths are calculated to procure the removal of

some chronic skin diseases of the papular, pustular, or dry scaly varieties, of ulcers and other complaints of a syphilitic origin. The water may be also used with advantage in some cases of stomach and liver derangement, with the character of irritability and with altered secretion; in uterine congestion, with dysmenorrhœa; in hemorrhoids from languid abdominal circulation, when not combined with a torpid state of the bowels; in enlarged glands of the neck and mesentery in delicate children; in gravel, and irritation of the urinary organs with *catarrhus vesicæ*, &c.; though in some of the above-mentioned states other mineral waters might be preferable, which could only be decided by an inquiry into their individual peculiarities.

It is, however, in diseases of the lungs and air-passages that Weilbach enjoys a greater degree of reputation, more than one half of the patients who resort thither being affected with these complaints; and I consider, from what I know of its effects, that the Weilbach water is calculated to render great service in many cases of bronchitis, laryngitis, and in some of incipient tubercular consumption, as it allays irritability, facilitates expectoration, and might often be used when other springs would be too exciting. In some cases the water is drunk mixed with milk. Doctors Thilenius, Wetzlar, and others, have spoken favourably of this spring in these cases.

Dr. Roth, who practised a few years ago at Weilbach, likewise speaks of the efficacy of its

water in diseases of the lungs and air passages, especially when complicated with hemoptysis.* He states, from Jung's analysis, that this water contains a larger proportion of sulphurous gas than any other of the German springs, which may possibly be the case; but, as we have seen, Germany does not excel in sulphur springs. The more recent analysis by Fresenius shows but a comparatively small proportion of this gas—viz., 0.166, while that of free carbonic acid (in a pint of the water) amounts to 3.126 cubic inches, that of the sulphuretted hydrogen to only 0.166. The quantity of saline substance is 11.556 grains, of which upwards of 3 grains are carbonate of soda, 2 carbonate of lime, $2\frac{3}{4}$ carbonate of magnesia, and 2 muriate of soda. The most recent notice of Weilbach is contained in a pamphlet published last year by Dr. Stiff, who gives an account of the newly-discovered spring, containing a not inconsiderable portion of muriate of soda ($9\frac{1}{2}$ grains) and of carbonate of soda ($7\frac{1}{2}$ grains), as also small portions of sulphate of soda ($1\frac{1}{3}$ grains), the carbonates of lime and magnesia, with minute fractional portions of carbonate of lithia, bromate of soda, iron, silex, &c., comprising altogether 20 grains of fixed substance and a small quantity of carbonic acid gas, with a fraction of sulphuretted hydrogen—its temperature being 10 Reau., according to the analysis of Fresenius in 1861. Though in as far as regards the nature of its constituents

* Notice sur les Eaux de Weilbach. 1854.

this spring may be considered as having some analogy with the other, yet, as the amount of their mineralising ingredients differs greatly, their action must also be essentially different. Dr. Stiff terms it the soda-lithia spring, and considers it as approaching to Bilin in respect of these constituents. The Bilin water, however, as will be seen on referring to its last analysis, is of a purely alkaline acidulous nature, containing a large amount of soda and carbonic acid gas, with a very small proportion of muriate of soda (3 grains). With more justice has the new Weilbach been designated an alkaline salt water, by Dr. Ditterich, in his recent work. He remarks that "Germany is deficient in relatively alkaline-saline springs, possessing only saline-acidulous ones; and that this spring, with its not inconsiderable proportion of carbonate of lithia, affords valuable additional means of combatting the lithic acid diathesis."* Dr. Stiff states that in the first days of the exhibition of the water in these cases an abundant lithic acid deposit is produced, but after a short time the amount of lithic acid in the urine diminishes and ultimately disappears. This water is likewise calculated to be of service in bronchial and in some dyspeptic affections; and no doubt its discovery will give rise to an enlargement of Weilbach; though, as it bears exportation well, many persons would prefer drinking it at other places, which present more resources.

* Klinische Balneologie. 1862.

SODEN.

SODEN is a neat village, containing about 1,000 inhabitants, situate 170 feet above the sea, in a beautiful valley at the base of the Taunus range, immediately beneath the town and ruined castle of Königstein, and is distant about an hour from Wiesbaden (by the Frankfort railway to the Höchst station), and two hours from Homburg by carriage. Among the objects of interest in the neighbourhood may be mentioned the ruins of Falkenstein and Kronberg, the Kronthal, the Feldberg, and the Alkkönig, the highest of the Taunus hills. From the sheltered position of the valley, the climate is mild, and rather of a sedative character, the air being somewhat moist, on which accounts it is not unsuited to some cases of pulmonary and bronchial disease of an erethetic character, to which also some of the waters are adapted. Soden, though a good deal resorted to by Frankforters on holydays, is not a pleasure bath, there being but little resource for recreation. There is a neat Cursaal, with public rooms for *réunions*, concerts, &c., and the adjacent garden, of considerable extent, is tastily laid out. There are in the Curhaus apartments for visitors, and good accommodation is obtainable at the Frankfort, the European, the Holland Hof, the Hotel Franz, &c., as also at the various lodging houses, the

number of which, especially along the Königsteinstrasse, has greatly increased of late years.

The springs are numerous, about twenty-three being enclosed; and though of similar composition, they vary greatly as regards the amount of their constituent principles and temperature. The two principal ones rise in the garden, the others all within a short distance. They are numbered from 1 to 19. No. 1, the Milchbrunnen, has a temperature of 19 deg. Reau., and is used for drinking; No. 3, the Warmbrunnen, is 17; No. 6, the Soolbrunnen, 16; No. 6*a*, the Wilhelmsbrunnen, 15; No. 6*b*, the Schwefelbrunnen, 13; No. 18, the Wiesenbrunnen, and No. 19, the Champagnerbrunnen, 12. The last named bubbles and sparkles very much; its taste, like that of Seltzer water, is piquant and refreshing, and but slightly salt. It contains 50 grains of muriate of soda, 59 carbonate of lime, and as much as 50 cubic inches of carbonic acid in a pint of water.

The following analysis by Liebig exhibits the proportion of saline and gaseous substance in some of the above-named springs:—

	Milchb.	Warmb.	Wilhelmsb.	Soolb.
Muriate of Soda .	17·68	26·13	104·10	114·40
„ Potass .	0·16	1·29	2·53	3·52
Carb. of Lime .	2·73	4·47	8·38	0·63
„ Magnesia .	1·37	2·63	1·28	0·29
„ Iron .	0·16	0·30	0·30	0·60
Sulphate of Lime .	0·19	0·25	0·98	0·76
„ Silex .	0·16	0·23	0·30	0·50
Grains .	23·46	35·30	117·92	129·58
Carbonic-Acid Gas, cubic inches .	17·	35·9	48·9	14·

The Wiesenbrunnen, rising in an adjacent meadow, contains 94 grains muriate of soda, with 8 grains carbonate of lime, and is a good deal employed for drinking. There is, likewise, a gaseous or acidulous spring (Sauerbrunnen), containing 51 grains carbonate of soda, and 3 carbonate of lime. Another salt spring has recently been obtained by boring in the public garden, and is employed for the baths. Traces of bromine and manganese have been detected by Liebig, but none of iodine. It will be seen that those springs which possess the smallest amount of saline substance are of a higher temperature than those which are richer in salt; and these circumstances, together with their number, enable them to meet a variety of indications. In the amount of solid constituents, especially common salt, the stronger springs resemble Soden, near Aschaffenburg, which, however, contains more lime, and but a very small proportion of gas. On the other hand, the salt springs of Kissingen (which they likewise resemble) contain more muriate of soda and gas, and some of the Kissingen springs likewise contain sulphate of soda, which is absent in those of Soden. The Kreutznach salt springs, though containing more salt than the weaker Soden ones, are less rich in carbonic acid gas. They are all, however, more or less applicable to the same category of cases.

The action of the water, internally taken, is solvent, and may prove aperient or diuretic according to the particular spring and the amount of

water drunk. Taken in smaller quantities, it exerts a beneficial action on the mucous membrane of the air-passages. The operation of the baths is somewhat stimulating, not unfrequently giving rise to an eruption on the skin, and sometimes to determination of blood to the head; though those results may arise from the too high temperature of the bath, or from its being otherwise improperly employed. The diseases in which the Soden waters are most calculated to be beneficial are the erethetic variety of scrofula, where there is much susceptibility to cold; chronic catarrhal affections of the air passages, when combined with general irritability, and where a more bracing climate would not be well borne; and in incipient tuberculosis, in which the less strongly-mineralised springs would often remove the catarrhal complication, though not acting so directly as some other waters on the essence of the disease; some inveterate cutaneous diseases without inflammatory complication, and some dyspeptic affections. Dr. Kolb speaks highly of their effects in cases of torpor of the liver, in abdominal plethora complicated with piles, and in the tendency to consumption in persons of a scrofulous habit.* Dr. Thilenius likewise remarks that they are very efficacious in anemia and chlorosis, as also in some cases of dysmenorrhœa, amenorrhœa, and chronic uterine hypertrophy. "Experience proves," he says, "that Nos. 6*a*, 6*b*, 18 and 19 are best suited

* Die Heilquellen von Soden. 1855.

to abdominal affections, whereas 3, 4 and 1 are most useful in thoracic diseases."*

Whey is not unfrequently taken with the waters, or drunk combined with bathing. The waters are largely exported, and are often drunk by patients passing the baths at Wiesbaden and Ems.

* *Traité des Eaux Minerales du Duché de Nassau.*

KRONTHAL.

THIS beautiful and fertile valley is thickly planted with chesnut and other fruit trees, and is enclosed between gently-rising hills, which join themselves on the north and east with the Taunus range. The bath lies at the foot of a hill, on which stands the old town of Kronberg. The picturesque ruins of the castle, seen from a distance, form a striking object in the landscape; and though it has hitherto been principally resorted to by visitors from Frankfort and other places in this part of the country, yet, as its mineral springs may be ranked among the best of their class, there is little doubt that many persons will be induced to give them a trial, in preference to undertaking a long journey to more distant springs of analogous character. Two large houses, and some others which have been erected within these last few years, serve for the accommodation of the visitors, several of whom reside in the town, which is not more than half a mile distant. The Curhaus contains a large saloon, where the *table d'hôte* is held, some very commodious bathing cabinets, and about fifty neatly-furnished apartments. The resident physician has also a large house in which visitors can be lodged.

Two springs are chiefly used—the Trinkquelle, or Stahlquelle, and the Wilhelms, or Salzquelle. The temperature of the former is 11 deg., that of

the latter 13 deg. The water tastes agreeably cool, acidulous, and chalybeate. Both springs contain a large quantity of gas, which forms bubbles on the surface, so as to resemble water in state of ebullition. The Wilhelmsquelle contains somewhat more salts, but less iron and gas than the Trinkquelle.*

Judging from their composition, and from a comparison with other mineral springs, I consider that those of Kronthal may rank with the most valuable alterative waters of Germany. In the amount of muriate of soda the Trinkquelle approaches the Cannstadt spring. The Wilhelmsquelle is more laxative than the Trinkquelle, and is, consequently, in some cases better borne. The sensible action of the Kronthal springs, however, seldom affects the bowels, but most usually the kidneys, though not so as to produce inconvenience. They are generally well borne, and after using them for a few days most patients feel themselves refreshed and invigorated. A course of these waters would be most applicable in cases where a tonic and, at the same time, a solvent effect is required, as in general debility, combined with nervous and vascular irritability, frequent palpitations, &c.; in weakness of stomach and bowels,

* 35 grains, of which 27 muriate of soda; carbonic acid gas, 29 cubic inches. The Trinkquelle contains 22 grains muriate soda, 4.17 carbonate lime, with fractions of sulphate lime, carbonate magnesia, iron, silex, &c., and 140 cubic inches carbonic acid.

with deficient or unhealthy secretions ; relaxation of mucous membranes and of their capillary vessels, producing, when those of the air-passages are affected, cough, mucous expectoration, and passive bleeding from the surface ; when the uterine system is implicated, too profuse periodical discharges, leucorrhœa, &c. ; as also in some nervous disorders, as hysterical and hypochondriacal affections, where the direct chalybeates would prove too heating. The richness of the springs in carbonic acid has been made available for baths and douches of this gas, which are highly efficient in cases where a powerfully-stimulating effect is required, as in torpor of the system or of the functions of particular parts, some kinds of general and local paralysis, and defective power in the organs of sense.

FACHINGEN.

THIS long-known and much-esteemed mineral spring rises close to the village of the same name; but, notwithstanding the beauty of the environs—which equals that of Ems, while the valley is more airy and less hemmed in by steep hills—and the medicinal efficacy of the spring, there are no lodging houses on the spot, the only building being the residence of the Verwalter, who superintends the bottling and packing of the water. There is, however, little doubt that if there were proper accommodation, the place would be resorted to, now that it is near the railroad. Around the house are avenues of poplar and lime trees, which, by a little labour, might be converted into an agreeable promenade.

The water taken into a glass is clear, sparkling and emits small bubbles of carbonic acid. Its taste is agreeably cool and refreshing, piquant, and alkaline. Many prefer it as a summer beverage, mixed with sugar or wine, to Seltzer water, from which, however, its composition differs, inasmuch as a pint contains some iron, as much as 17 grains of bi-carbonate of soda, and 30 cubic inches of free carbonic acid, while there are only $4\frac{1}{2}$ grains of muriate of soda, and two of carbonate of lime. Hence it stands foremost among the alkaline springs, none of those of Germany, except Bilin,

containing so large a quantity of alkaline salt. In this respect it approaches nearly to the hot springs of Vichy; from which, however, it differs in temperature, and in containing iron. It also contains nearly twice as much gas as the Vichy springs, on which account, as also from its low temperature, it is much pleasanter to drink than even the Lardy or the Celestins at Vichy, which is the coolest spring (18 deg. Reau.).

The Fachingen water may, therefore, be considered applicable to some of the cases in which the Vichy springs would be recommended; though these latter are a great deal employed in the form of bath, are more solvent, and hence better calculated to procure the dispersion of swellings or *engorgement* of the abdominal viscera, as the liver, spleen, &c., while Fachingen having a more tonic property, and not being used for bathing, would be more adapted to rectify a faulty state of the mucous membrane of the alimentary canal, with acidity, weak or painful digestion, &c. It is also well suited to the treatment of chronic bronchial and tracheal affections, asthma with copious expectoration, when there is not much constitutional irritability or tendency to inflammation; in which case Selters or Weilbach would be preferable.

Several writers on mineral waters, as Thilenius, Ritter, Diel, Hufeland, &c., have spoken highly of the efficacy of the Fachingen water; the last-named physician terms it "a powerful and highly-efficient mineral water, in many cases unique in its way." He further says: "Its peculiarities consist in its

richness in carbonate of soda and carbonic acid, and their combination with a not inconsiderable quantity of iron; hence it is a solvent remedy without being astringent and constipating; and is highly serviceable to many hypochondriacal patients who labour under obstructions of the digestive organs, with debility and acidity; a case which so frequently occurs, and in which neither the purely aperient nor the strengthening chalybeate waters can be borne." Gouty people may also drink the Fachingen water habitually with advantage; the good effects of alkalies in this disease being well known. It is more adapted to render service in the erratic gout in nervous individuals, than in that kind which occurs habitually at intervals, of a more fixed nature, and combined with deposition of chalky concretions in the joints; in which case the Wiesbaden baths would be more likely to relieve. These baths may sometimes be advantageously combined with drinking the Fachingen water, which may also be administered with benefit to children with enlarged glands, tumid abdomen, debility of digestion and of the muscular system, where a strong saline or a chalybeate spring would produce too much excitement.

But there is another class of cases in which the Fachingen water is calculated to be of great service—viz., gravel and stone in the bladder. Some cases of stone may be greatly mitigated by mineral waters strongly impregnated with alkali and carbonic acid gas. The late Dr. Petit, of Vichy, several years ago, observed: "What above all

tended to the discontinuance of the employment of alkalies (in cases of stone) is the circumstance that they were formerly administered in a state of purity, or only slightly carbonated, and were thus frequently very irritating and even dangerous; they could consequently only be given in too feeble doses to impart to the urine the degree of alkalinity necessary to produce the desired effect; but by their combination with carbonic acid they are rendered innocuous when perfectly saturated, without losing any of their solvent property; hence they may be employed in much larger doses.”*

The expectation of this physician, that alkaline waters would be able to dissolve or to disgregate stone, when actually formed, has, however, proved to be fallacious. The lithic acid form of gravel would almost always be relieved, if not cured, by waters of this kind.

* See “Vichy,” in the “Baths of France.”

SELTERS.

THE spring of Nieder-Selters, in the north of Nassau, though not resorted to by invalids, supplies many parts of the globe with the highly agreeable beverage known by the name of Seltzer water, of which about a million and a half of bottles are annually used in the duchy and exported to other countries. The water is also very efficacious in several diseases, and is used extensively upon the Continent as a remedial means. It contains as much as 36 grains of saline substance to the pint, of which 16 are muriate and 55 carbonate of soda, and 15 cubic inches of carbonic acid gas, with which it is intimately combined; in this respect it has the advantage over the Geilnau spring, which possesses a larger quantity of gas, but no muriate of soda, and less of the carbonate. There is but a very minute portion of iron, and even this is precipitated in the bottled water, which, moreover, is decomposed by the smallest quantity of vegetable substance, as a piece of straw getting into the bottle, sulphuretted hydrogen being thereby produced. The water is easily digested, and does not occasion congestion or determination of blood to particular organs, like several strongly-impregnated gaseous waters, on which account it is often advantageously employed in some febrile and inflammatory

affections. Its action is, in general, cooling, exhilarating, and alterative, improving vitiated secretions of the mucous membranes, giving tone to their glands, and promoting absorption. It may generally be taken without risk by robust and plethoric individuals, and is of great service in cases of torpor of the vascular and glandular systems, stomach derangement, with acidity and constipation, tendency to gout in full habits, and scrofulous complaints. "But," says Hufeland, "it is in chronic diseases of the lungs, and especially in pulmonary phthisis, that the water is of the greatest efficacy. In this disease, when other powerful remedies produce no good effect, Seltzer water has often an extraordinary efficiency. Where there exists relaxation of the mucous membrane, by the exciting property peculiar to it, the energy of the relaxed vessels and mucous glands becomes re-established; in the tubercular kind it resolves obstructions without exciting inflammatory irritation; and where inflammatory complication exists, it regulates the abnormal secretion, and often prevents suppuration. I say this after great experience, and could quote many cases of success. Seltzer water seems to contain the due admixture of principles required in this disease—viz., a slightly stimulating action, and the faculty of producing an increase in the power of the lungs and glands without causing determination of blood to them, or accelerating the circulation through the body. It produces the best effects in this disease when mixed with a third part of warm milk, espe-

ably asses' milk." Other waters are, however, no less efficacious, and, notwithstanding this high eulogium, patients labouring under anthisis, and their friends, must not expect, when the disease is fully developed, that Seltzer water, any more than other remedies, can be productive of permanent benefit; though in the early stage its use, aided by suitable hygienic measures, may tend to check the disposition to the disease.

Vetter speaks highly of the advantage of Seltzer water given in small and frequently-repeated doses, after proper evacuations, in the fevers usually prevalent in summer, and complicated with erethism of the upper part of the alimentary canal, or what are commonly called gastric fevers, in which vomiting is so often a distressing symptom.* I have had several opportunities of witnessing the beneficial effects of this water in cases of fever, and in diseases of the respiratory apparatus.

The Seltzer water would also be serviceable in cases of irritation of the urinary organs, or tendency to the formation of stone or gravel, in chronic inflammation of the mucous membrane of the bladder, with ropy mucous secretion. It is frequently added to the Rhenish wines, to destroy their acidity, and, mixed with sugar, forms a very refreshing drink in summer. When employed medicinally, a large quantity, not less than a bottle a day, is requisite.

* Heilquellenlehre.

BATHS OF GERMANY.

PART II.

SECOND DIVISION.

BATHS OF OTHER DISTRICTS
ADJACENT TO THE RHINE.

AIX-LA-CHAPELLE.

GERMANY, though rich in other kinds of mineral springs, possesses but few sulphurous ones; the principal thermals being those of Aix-la-Chapelle and Baden, near Vienna. Weilbach, Nenndorf, Eilsen, and Langenbrucken near Heidelberg, are cold.

The springs of Aix-la-Chapelle are of very high antiquity, having been employed medicinally by the Romans, of whom many inscriptions and other relics have been found, and by whom they were termed *Aquis granum* (the waters of Granus). To them the town owes its name and prosperity, the German term *Aachen* being a derivation from the Latin *Aquæ*. It is pleasantly-situated at the foot of a chain of hills, in a well-wooded and fruitful valley, enclosed between gently-rising grounds clothed with verdure and well wooded. A boulevard surrounding the town,

planted with lime and chesnut trees, forms an agreeable promenade, having been constructed on the site of the ancient walls, after the conclusion of peace in 1815. The population amounts to about 53,000. The most remarkable public edifices are the Hotel de Ville and the Cathedral, or Chapelle, part of which was built by Charlemagne, where the remains of this potentate formerly reposed. Within the last forty years the town has been greatly embellished; wide and well-paved streets having risen to accommodate the increased number of visitors. The hotels and bathing-houses are numerous, conveniently fitted up, and provided with requisite apparatus for the employment of the waters in the form of baths, douches, or vapour-baths. The most frequented hotels are the Quatre Saisons, Grand Monarque, Neullens, the Bellevue, and the Imperial. There is a large and convenient theatre, with a good corps for the performance of operas and dramas. The Redoute, or public rooms, are allotted to restoration, balls, concerts, &c. The environs abound in pleasant drives and walks; the favourite resort of the inhabitants is to Louisberg, a hill close to the town, of which it commands a good view, as also of the adjacent town of Borcette, and the varied scenery of the surrounding country.

The chief point of *réunion* in the morning is at the Fontaine Elise. Drinkers assemble round the fountain, which is about thirty feet below the surface, their glasses being filled by females, who are thus constantly employed at drinking

hours. A portico in front of the spring enables them to walk about in wet weather, during the intervals of drinking. At one end there are rooms for refreshment, at the other an excellent band plays in the morning and evening. The fountain is supplied from the chief spring, de l'Empereur, the water passing through pipes under ground. A pretty garden is annexed.

Ever since the epoch of Charlemagne these waters have been in great repute. He frequently held his levees while in the bath. Six springs, divided into the superior and inferior, rise within the town. The three superior sulphurous ones rise near to each other: their proximity is sufficiently evidenced by the smell peculiar to sulphuretted hydrogen. The Source de l'Empereur is the hottest; its temperature is 133 Fahr. (46 Reau.). It supplies the Fontaine Elise, the Bain de l'Empereur, the Bain Neuf, and the Bain de la Reine d'Hongrie. The Source de St. Quirin is another of the superior springs, which rises within the bathing house of the same name. Its temperature is 122 Fahr. The inferior springs rise in a lower quarter of the town; their temperature does not exceed 118. They are termed the Sources de la Rose, St. Cornelius, and St. Charles, and supply the bathing-houses of the same names, as also a drinking fountain. They are but slightly sulphurous, and are less exciting than the superior springs, and can often be employed when these would disagree.

Besides the above-mentioned establishments, there is a bath for poor patients, to whose cases the waters are adapted.

The following table of analysis, by Liebig, will show the proportionate amount of ingredients in a pint of water of the spring l'Empereur, with which the other springs are identical in composition, containing only a smaller portion of solid substance. In this respect the analysis does not materially differ from that of Monheim, quoted in the preceding edition of this work:—

Muriate of Soda	20·2705
Bromate of Soda	0·0276
Iodate of Soda	0·0040
Sulphuret of Sodium	0·0729
Carbonate of Soda	4·9950
Sulphate of Soda	2·1712
" Potass.	1·1861
Carbonate of Lime	1·2173
" Magnesia	0·3952
" Strontian	0·0016
" Iron	0·0733
Silex	0·5077
Organic Substance	0·5773
Carbonate of Lithia	0·0022

Grains . 31·5019

Proportion of Gases absorbed by the Water according to Bunsen

	L'Empereur.	St. Quirin.
Azote	9·00	6·41
Carbonic Acid	89·40	93·25
Proto-carbonated Hydrogen.	0·37	0·26
Sulphuretted Hydrogen	4·00	0·00
Oxygen	1·23	0·08
	104·00	100·00

Proportion of Gases ascending in the Water.

	Empereur.	St. Quirin.
Azote	66·98	81·68
Carbonic Acid	30·89	17·60
Proto-carbonated Hydrogen.	1·82	0·72
Sulphuretted Hydrogen	0·31	0·00
Oxygen	0·00	0·00
	—————	—————
	100·00	100·00

When drank, the water is alterative, and mildly aperient when taken in small quantities; it is diuretic and diaphoretic, or in other cases produces no sensible effect at the time. After some days' drinking, the skin, in some instances, emits a sulphurous odour; the water acts, likewise, in particular cases, upon the mucous membrane of the urinary organs, and air passages, on the liver, promoting the abdominal circulation—and on the absorbed vessels and glands, without, however, materially increasing the secretions of these organs: during the use of the water, small calculi are occasionally expelled from the bladder. Used in the form of bath its action is extremely penetrating and exciting, especially when of high temperature. It is liable to cause determination of blood to the head and to the lungs in persons who are thereto predisposed, and is generally contra-indicated in persons of full habit of body, in those subject to hæmorrhage, to great irritability of the vascular system; and in cases of organic disease of the heart or other important viscera. The baths are best suited to cases in which torpor or atony is the prevailing character, and to persons of a

lymphatic constitution. Douches are frequently combined with the baths, the efficacy of which, especially in cases where the limbs are affected, is materially promoted by frictioning and shampooing, male and female rubbers being employed for this purpose. Vapour baths are likewise employed—the head being enclosed in the bath when the inhalation of the vapour is required; in some cases of disease of the respiratory apparatus the local vapour baths are likewise administered.

Foremost among the diseases in which the Aix waters and baths are useful may be ranked chronic affections of the skin. In these cases, though the natural heat of the water and its impregnation with saline substances would generally be productive of advantage—as is seen at other baths—yet there can be no doubt that the sulphurous property of the water renders it more universally efficacious, and its effects more permanent. Most of the varieties of eczema, psoriasis, impetigo, lepra, and prurigo, as also eruptions of a syphilitic origin, would be cured or alleviated by these baths, combined with the internal administration of the water, and, in some instances, with vapour baths. Dr. Wetzlar strongly recommends the exhibition of ioduret of potassium, and an application of the ointment, combined with the baths, in cases of long duration, and vapour baths in obstinate cases of psoriasis.

These, like other thermal waters, are beneficial in gout and its local consequences (especially when accompanied by abdominal complication), in rheumatism, and also in paralysis, when not connected

with structural disorganization of the brain or spinal cord, but when of a peripheric origin or of a local nature. The particular indications for according a preference to Aix over other baths calculated to benefit this class of complaints, are deducible only from an investigation of the peculiarities of individual cases.

Several pages of Dr. Wetzlar's work are taken up with the details of four cases of a disease till lately little known, and hitherto intractable—viz., progressive muscular atrophy, the course of which appears to have been arrested by the Aix baths. In all these cases, the disease began in the hands. They present the peculiarity distinguishing them from others that have been recorded by Professor Cruveilhier, M. Aran, and Dr. Meryon, in attacking subjects advanced in life, instead of children and young subjects. One of these subjects was a female, the sister of another patient, similarly affected. Dr. Wetzlar justly remarks, that the arrest of muscular atrophy, so extensive and of such long duration as in these cases, by the baths, indicates the little probability of the disease being caused by lesions of the central or peripheric nervous system; and that if, in some cases, lesion of the nervous system has been detected by *post-mortem* examination, it remains to be proved whether this be not rather a consequence than a cause of the muscular atrophy.*

* *Traité Pratique des Eaux Sulfureuses d'Aix-la-Chapelle.* Bonn, 1856.

The internal use of the Aix waters, combined or not with baths and douches—according to existing indications—is especially beneficial in cases of hepatic inactivity, piles, hypochondriasis, and disordered health from residence in unhealthy climes, where a revulsive action on the intestinal canal is not particularly called for, in which cases Carlsbad, Marienbad, or Kissingen would be preferable. The waters, combined or not with vapour inhalations, are likewise well adapted to cure or relieve chronic bronchial and laryngeal affections, with increased secretion, especially in old persons. Their employment is counter-indicated when there is reason to suspect the existence of tubercles in the lungs.

In cases of metallic poisoning from the action of lead, the abuse of mercury, &c., by which the constitution is materially impaired, the Aix baths frequently render great service, the sulphurous saline water producing, according to Dr. Lersch (who is a resident in the town), on the one hand, a solution or decomposition of the combination formed by the metal, with the organic substance of the body; and on the other, their expulsion, by the activity imparted to the secreting and excreting organs.* Another writer mentions, as a circumstance corroborative of the fact of the elimination of mercury which has long remained in the system, that under the use of these waters salivation is not unfrequently occasioned, and sometimes

* Enleitung in die Mineralquellenlehre. 1855.

mercurial ulcerations ensue in the mouth and neck.* Vapour baths are likewise sometimes combined with the mineral water course in these cases.

The waters are no less efficient in many cases of long-standing secondary or tertiary syphilitic complaints, and especially where these have been aggravated by injudicious mercurial treatment. In the simple and uncomplicated forms of syphilis they are not indicated. It is (says Dr. Wetzlar) by neutralising the effects of mercury that they complete the cure, if the syphilis be already extinguished, or they cause this latter to appear with unequivocal symptoms, if there be still any latent virus.

“If we are in doubt,” adds this author, “whether the disorder is of a syphilitic nature, or is of mercurial origin, we have only to subject the patient to the thermal treatment, make him drink the sulphurous water, and take water or vapour baths, and we shall soon be enlightened. If the disease be simply mercurial, we shall soon see a change for the better, and the amelioration will be progressive until the cure is complete. If, however, the syphilis be not destroyed, the amelioration which manifested itself in the first instance will stop short, and the disease will remain stationary, or will even be aggravated after a few days. This stoppage, especially when followed by an aggravation of the symptoms, presents a direct

* Dr. Reumont. Aachen's Schwefelthermen. 1856.

indication for a renewal of the antisyphilitic treatment." The ioduret of potassium, according to Dr. Wetzlar, becomes much more powerful by combination with the waters. He states that he has seen a great many patients, who had taken this remedy in large doses, without deriving any advantage, before going to Aix, or who had only derived a temporary advantage from its employment, who were completely and permanently cured by the combined use of the waters and small doses of this remedy. He likewise observes that mercury given during a course of sulphurous waters maintains all its specific power in syphilis, without any of its frequently disagreeable or injurious consequences.*

Hufeland remarked, long ago, with reference to the Aix waters, in syphilitic complaints: "It is well known how great is the number of people in whom, from pure neglect, or an improper mercurial treatment, the disease has attained its worst form, having become almost rivetted in the constitution; and how ostensibly its effects resist the ordinary remedies. Ophthalmiæ, ulcers, especially in the throat, indurated and suppurating glands, caries, cutaneous and nervous affections, are the secondary symptoms which present themselves to the observation of the practitioner, who may vainly attempt to cure them by mercury; they would even become worse, and the usual substitutes

* Practical Observations on the Cure of Syphilitic Affections. 1860.

for this remedy would prove of no avail. In such cases the springs of Aix are of the highest efficacy, and many patients owe their recovery to them. The waters are no less effectual in removing the consequences of the original disease than in neutralising those of the mercurial poison.”*

The following conclusions are expressed by Dr. Lersch on this point: “In doubtful cases the Aix waters are an efficient diagnostic means, and in the latent forms of secondary syphilis, where no positive symptoms have appeared they cause them to become manifest. They are an excellent preparatory measure for other treatment, which otherwise might prove inoperative; they are especially of service in cutaneous affections, the remains of syphilis, and also in improving the health of persons who have suffered from the maladministration of mercury, or who have laboured under the more complicated forms of the disease.” Dr. L. thinks that the Aix waters are not sufficiently appreciated in cases of disease of abdominal viscera, especially of the liver, when complicated with gall-stones.

Old ulcers, the consequences of wounds, whether made by sharp instruments or fire-arms, contractions of the limbs, from fracture or other injury, are benefitted by the waters of this class, which frequently determine to the surface musket-balls or other foreign bodies lodged in the textures; the mechanism of which process is, according to Dr.

* *Practische Uebersicht der Heilquellen Deutschlands.*

Mersch, as follows: "The excitation of the vascular system gives rise to local congestion (at the seat of the injury), which is especially kept up by the topical employment of the water; this congestion is accompanied by a copious secretion of pus, which facilitates the dislodgment of the foreign body, at the same time the nutrition of the surrounding parts is improved, especially near the source of the irritation, by which the cavity is narrowed, and its foreign contents are pressed outwardly."*

In cases of scrofulous and other enlargement of the glands or viscera, neuralgic affection, or uterine disorder, these waters would often prove very effectual; but as other waters of the same class and of other classes are likewise frequently efficacious in these complaints, the special indications in particular cases require to be closely investigated, in order that the practitioner may be enabled to decide which kind would present the greatest probability of advantage in any given instance

As respects several of the disorders here referred to, the sulphurous principle is perhaps less active in producing the amelioration which the waters are calculated to effect than the saline ingredients and the high temperature, though it may considerably modify their operation; for it will be observed, on referring to the analysis, that the sulphurous impregnation is very slight, whereas

* Op. cit.

in the Pyrenean springs this is the predominating quality, the amount of saline substance being but small. A recent writer remarks on this point: "The large or small proportion of saline constituents contained in a sulphurous spring greatly modifies its action. Thus, according to Liebig, a quart of water of the spring l'Empereur, at Aix-la-Chapelle, contains 4.10 grammes of fixed principles, of which 2.64 are muriate of soda, and only 0.00950 of sulphuret of sodium; whereas the Pyrenean springs, which are most sulphurous (Barèges, Cauterets), scarcely contain 0.2 grammes of saline constituents; hence the specific action of the sulphur must necessarily be more decidedly manifested in these latter. The proportion of the sulphurous principle in mineral waters is, however, much smaller than that of the other constituents of most springs."* Indeed, from the circumstance of several of the Aix springs being free from sulphurous impregnation, it has been inferred that the superior springs are referable to the class termed by M. Fontan accidental sulphurous; that is to say, a saline spring acquiring a sulphurous impregnation from passing through animal or vegetable substances near the surface; whereas the naturally sulphurous springs possess this property from their origin within the depths of the earth, though it may not be sensibly manifested. Thus the most sulphurous springs of the Pyrenees, when examined at the source, and free

* Dr. Herpin—Etudes sur les Eaux Minerales.

ffrom the contact of the air, scarcely emit any
ssmell, the peculiar odour being much more
mmarked at some distance from the source, and in
tthe bath reservoirs, when the water becomes in
ssome degree decomposed. It does not, therefore,
mnecessarily follow because the sulphurous odour is
vvery manifest in the neighbourhood of a spring of
tthis class, that the water is so much the more im-
ppregnated with the sulphurous principle; some of
tthe weaker springs in this respect emitting the
sstrongest odour.*

* M. Constantin James regards the baths as simply
ssaline; he remarks: "The spring l'Empereur, which
ppasses for being one of the most sulphurous springs of
lEurope, loses, by the mere fall of the water into the bath,
sall its sulphurous principle, and the water becomes in the
tbath a simply saline alkaline one, as it was at its origin,
lbefore being impregnated with a little sulphur from its
ppassing through organic matter."—Guide Pratique aux
lEaux Minerales.

BORCETTE.

THIS small town, containing a population of 6,000 inhabitants, lies within a mile of Aix-la-Chapelle, with which it is connected by a promenade. It possesses several hot springs, which, like those of Aix, are divided into superior and inferior. Their composition is analogous; the differences between them being principally in point of temperature and amount of constituents. The temperature of the highest is 166 Fahr., being the hottest spring in Germany. Near the drinking fountain is the large hotel, where the greater portion of the visitors are accommodated. Many of the drinkers, however, lodge in Aix. The Kochbrunnen, or boiling spring—like its namesake at Wiesbaden—contains a large amount of muriate of soda, with small portions of carbonate of soda and other salts, and, according to Monheim, twenty-seven cubic inches of carbonic acid gas to the pint of water. Five bathing-houses are supplied by the superior springs. Vapour baths are likewise employed at a higher temperature than at Aix. The inferior springs are not unlike the sulphurous ones of Aix, though less sulphurous. The large bathing-house, La Rose, is supplied by its special spring. The baths are well furnished with douching apparatus.

The waters of Borcette are less exciting in their

operation than those of Aix; they may be used in some cases where the latter would not be so admissible, and are sometimes used preparatory to them. The saline springs are applicable to some of the complaints in which those of Wiesbaden are recommended. Having already enumerated the principal ones under that head, I need not recapitulate what I have there said. Borcette, though not possessing the superior accommodation, resources, and *agremens* of Wiesbaden or Aix, being a less expensive place, would, on that account, be better suited to some invalids.

CHAUDE FONTAINE.

THIS pretty spot is on the line of railroad between Spa and Liege, about two leagues distant from the latter place.

The carriage road from Spa is carried through valleys rich in pasture land, corn, and fruit-trees, between verdant hills, and following the windings of the little river Vesdre, on the left bank of which, and in the most beautiful part of the valley, stands the village, consisting of the Hôtel des Bains, and about twenty houses, in several of which visitors can be accommodated. There are also the large Hôtel de Liège, and the smaller one d'Angleterre. The road along the bank of the river, being skirted with avenues of poplar and other trees, affords a delightful shade at all hours of the day; while on the hills behind the village, and on the opposite side of the river, pleasant and shady paths, easy of ascent, have been constructed, presenting from various points views of pastoral beauty and fertility rarely to be surpassed.

The spring rises into a well, thirty feet deep, which, when uncovered, emits a considerable quantity of vapour, and from which the water is raised by means of a machine, into a reservoir, whence it is conducted into the different *baignoires*, the baths being taken at the natural temperature of the

water; and as the supply is abundant, each bather may allow the water to continue flowing during the period he may remain in the bath. Like that of Schlangenbad, the water is tasteless, has a soft and unctuous feel, and is so beautifully clear, that the smallest object may be perceived at the bottom of the bath; the sensation, while bathing, and subsequently, is equally pleasant and refreshing as at other springs of the same nature.

The bathing establishment adjoins the Hôtel des Bains. The bathing cabinets are large, clean, and convenient, several of them containing two *baignoires*, sunk below the level of the ground, each about seven or eight feet long, and four or five deep. The price of each bath is also lower than at most other watering-places: both the accommodations and the baths have been latterly much improved.

This water has been employed for bathing upwards of two hundred years; but in 1716 came into more general use, as a means for the treatment of disease, at which period also the baths were put into better order. It has been analysed by M. Lafontaine, a chemist of Liège, and contains a small quantity of carbonic acid, with about two and a-half grains of saline substance—principally muriate of soda and carbonate of lime—to the pint. Its temperature is between 26 and 27 (Reau.), being somewhat lower than that of Wildbad. A course of these baths may be recommended in several cases where a mildly sedative effect is required, as specified under the head of

Schlangenbad. In some cases the internal use of the Spa water may be advantageously combined with the bathing. Chaude Fontaine lies convenient for patients residing at Brussels, or in Belgium. It is, however, very inferior to Schlangenbad or Wildbad, in point of accommodation and resources, and has not the advantage of seclusion, being greatly resorted to by the Liège people on holy-days.

Chaude Fontaine, as also Spa, though not in Germany, yet being near to the frontier, may not inaptly be noticed in connexion with the baths of the Rhenish districts.

SPA.

Belgium is comparatively deficient in important mineral springs. The most frequented of them is Spa, which has for a long period been greatly resorted to, and has given the generic name of spas to watering-places having mineral springs. The small town, containing a population of 4,000 inhabitants, is situate about ten leagues distant from Aix-la-Chapelle, about an equal distance from Liège, and three leagues from Chaude Fontaine—being connected with the main line through Belgium to the Rhine by a branch railroad at the Pepinstère station, whence trains run to and from little more than half-an-hour several times a day. It lies 1,000 feet above the level of the sea, in a pleasant valley of the Ardennes, at the base of and enclosed between two projecting angles of a precipitous hill, forming an amphitheatre, by which it is sheltered from the north and east. The walks and rides in the environs are beautiful and varied, and numerous well-conditioned ponies are kept for the accommodation of equestrians—riding being greatly in vogue. At the entrance is the Place Royale, connected with the avenue *du Marteau* and the celebrated *Promenade de Sept Heures*, bordered by rows of lofty lime trees, which is the most frequented. The avenue terminates in a rotunda, where occa-

sional entertainments take place. From the avenue a short street of shops leads to the square, in which rises the principal spring (Pouhon), beneath a portico, over which is a tablet to commemorate the sojourn of Peter the Great at Spa. The other chief edifice, at an angle of the square, is the Redoute, or public rooms, for restauration, balls, gaming, &c., which are spacious, lofty, and embellished with carvings of figures in stucco relievo. Large sums are not unfrequently staked, but generally the play is not so high as at Homburg or Baden. A public ball is given weekly, and a handsome theatre is comprised within the edifice, where a performance takes place almost nightly.

The other portions of the town present nothing particularly worthy of note. The streets, for the most part, are irregularly built; houses of a superior class frequently alternating with those of mean appearance, or even with cottages. Of the principal hotels may be mentioned the Bellevue, on the avenue, and the York, in the town. Provisions are good and abundant, and the *tables d'hôte* well served. The town has recently undergone several improvements, and is lighted by gas.

Spa is not an expensive place of sojourn, and there is no lack of resources for amusement. It has its club; and parties into the country, balls, and *fêtes champêtres*, with illuminations, are often announced. Concerts and exhibitions of various kinds are not unfrequently given at the Vauxhall, a building about half-a-mile distant, and

traces are appointed for stated periods. Winding paths, easy of ascent, and supplied at intervals with resting-places, enable the visitor to reach the summits of the hills behind the town, which command pleasing prospects of the surrounding country, with the "forest of Ardennes" stretching away into the far distance. The Chateaux d'Amblèr, de Franchemont, the Cascade de Coo, the Grotto de Remonchamps, are among the objects of interest in the environs to which excursions are most frequently made. In the immediate neighbourhood, the road leading by a gradual ascent to the Sauvenière spring is also much frequented.

The country around Spa abounds in chalybeate springs, and oxide of iron is occasionally visible on the rocks. The Pouhon is, however, the only spring which rises in the town. The waters belong to the class of the more pure chalybeates, and contain but a small quantity of saline substance and gas in proportion to the relative amount of iron, as compared with other springs. (On this account the water tastes more astringent than some others, and when exposed to the air, the iron is more speedily deposited in the form of a reddish-brown sediment.

An avenue of horse-chesnut trees connects Spa with the Geronstère spring, two miles distant, and surrounded by pleasure grounds. The water tastes less astringent than the Pouhon, and is slightly sulphurous. It is generally recommended in cases where the action of the Pouhon would be too heating, the quantity of iron

being comparatively small in the Geronstère. The Sauvenière and Groesbeek springs are also at some distance from the town, in the woods; the former contains more gas than the Geronstère. About a mile from the latter are the two Tonnelets, less mineralised, and chiefly used for baths, for which purpose there is a building on the spot.

The late Dr. Ash observed, that the quantity of carbonic acid gas was augmented in certain states of the atmosphere, both in the springs themselves and in the adjacent clefts in the rocks, which circumstance may account for the discrepancy in different analyses in this respect, particularly during the prevalence of north winds.

Compared with the Schwalbach springs, the action of the Spa waters is more heating and astringent; their predominant salt being carbonate of lime. They may be considered as generally applicable to the same kind of cases which I have enumerated under that head; though particular circumstances would form an indication for preferring sometimes the one, sometimes the other springs. Where a patient has no particular predilection for the locality of Spa, I should, in most cases, prefer Schwalbach, as I consider that in the Weinbrunnen are combined, in the fittest proportion, the iron with the saline and gaseous constituents, and this spring disagrees with very few persons to whose cases chalybeates are adapted. The baths, also, which cannot be better arranged than at Schwalbach, offer an additional, and in some instances a prin-

principal means of deriving advantage from the springs; the supply of water being abundant, persons may bathe in the one or other kind, according as the circumstances may require; whereas, at Spa, the only spring in the town, the Pouhon, has not a very abundant supply of water for bathing. There is a bath-house, with a plunge bath and bathing cabinets; but the baths are not generally employed.

As respects the remedial advantage of baths of chalybeate waters, a high authority on mineral waters—the late Dr. Kreysig—justly observed: “Tepid baths of the chalybeate waters ought never to be neglected, in addition to their internal administration. These baths are of very great efficacy; they not only second the action of the water taken internally, but they often suffice alone to effect a complete cure. It frequently happens that delicate patients cannot support the internal use of the water, or can only bear a small quantity; it is then best to abstain from its internal exhibition, and to pursue the treatment by baths alone.”*

This confirms what I have observed at Schwalbach, and the opinion that iron is absorbed from the bath in most cases.

Of the local publications upon the waters, the works of Dr. Lezaack, and of Dr. Cutler, the resident English physician, deserve special mention.†

* Des Eaux Minerales, naturelles et artificielles.

† Spa et ses Eaux.

Analysis of the Pouhon, by Struve.

Sulphate of Potass	0·07
„ Magnesia	0·03
Muriate of Soda	0·44
Carbonate of Soda	0·73
„ Lime	0·99
„ Magnesia	1·12
„ Iron	0·37
„ Manganese	0·05
Silex	0·49
	4·35
Grains	4·35
Carbonic Acid, cubic inches	8·19

Monheim found the amount of carbonic acid to be 21 cubic inches. According to this chemist, the other springs (with the exception of the Geronstere) contain about the same proportion of this gas, but all contain much less saline substance than the Pouhon.

KREUTZNACH.

THIS bath lies on the Nahe, about ten miles from Bingen, and is now connected by railroad with Mayence, Coblenz, and other towns on the left bank of the Rhine. The valley presents a variety of pleasing scenery—the road being carried along the left bank of the river, which placidly winds through rich meadows, or between approximating hills, clothed with verdure or cultivated for the growth of the vine. The town, containing 8,000 inhabitants, is situate in the most beautiful part of the valley, and is connected by an ancient stone bridge with the modern portion, built on an island formed by the division of the stream, and with the opposite bank, comprising the public garden and the principal bathing and lodging houses. At the angle of the bridge and the road are the picturesque ruins of a large church. The promenade-road, bordered by rows of acacias and commodious lodging-houses, with booths for the sale of fancy articles, terminates opposite the Curhaus, an open space adjoining the garden, at the extremity of which and of the island rises the principal spring, the Elizabeth-brunnen, whence there is an ascent by a flight of steps to a platform overlooking the river and its banks. The hill of Lautzenberg forms the most prominent feature in the view, rising immediately behind the town;

from the ruined castle on its summit may be enjoyed an extensive prospect up and down the valley.

On the right bank of the river, on either side of the avenue, are several handsome detached lodging-houses, and at its extremity, on the road to the salines, the Rheinstein Hotel. In this part is also the Hof von Holland, and a little further on to the right the principal hotel and bath-house, Oranienhof, where in the season a large party sits down daily at the *table d'hôte*. The baths in this house are supplied by a special spring rising within the grounds.

The walk along the banks of the river to the salines, or salt springs, about a mile distant, is pleasing. Here, as at Kissingen and Nauheim, there are immense wooden sheds, fifty or sixty feet high, filled with thorn-bushes exposed to the free action of the air. The water is pumped up by machinery into troughs extended along the top of the sheds, whence it falls through the bushes; so that, from the evaporation which takes place when it is received in the reservoirs at the bottom, it has acquired an increase of between seventeen and twenty-four per cent. of salt. The brine, or mother-water, is then boiled in large iron vats till the salt is deposited; it is then collected for exportation. The springs have been used for the extraction of salt from a very early period, and medicinally from the middle of the fifteenth century, after which they fell into disuse till 1817.

The scenery beyond the salines is of a singu-

larly bold and romantic character. Bare rocks, from three hundred to five or six hundred feet high, rise perpendicularly from the river, which, winding around their base, is diverted from a direct course, so as almost to form a circle. The loftiest and most remarkable of these rocky hills, the Rheingrafenstein, has a ruined castle on its summit, commanding fine views of the surrounding country; the ruin Eberburg, standing on an elevated point, likewise constitutes a striking feature in the scene. At some distance further on, in the direction of Sobernheim, are some quicksilver mines, which are often visited by strangers, the ruins of the castle of Dhaun, Krybourg, &c.

The air of Kreutznach is salubrious. The inhabitants are, for the most part, unspoilt and obliging; the accommodation, though not first-rate, is good; provisions are plentiful, and living reasonable, as compared with some other places of resort. There is, however, but little resource for recreation, beyond excursions in the environs, donkey-riding, rowing on the river in flat-bottomed boats, and an occasional concert or other exhibition. There is no public saloon exclusively appropriated to *réunions*, balls, &c.; the large room of the Curhaus being used for dining (at one o'clock) and restauration. In this building there are apartments and single rooms, and convenient baths. There are two libraries and reading-rooms (Schnabel's and Voigtlander's), where *Galignani*, the *Times*, and some French journals are received; but, on the whole, those who do not require the

waters would find Kreutznach to be but a dull place of sojourn. At Munster-am-Stein, within a short distance from Kreutznach, and connected by railroad, a large hotel and bathing-house has recently been opened, for the employment of its springs at the source.

Some of the springs rise on the island, others in the river near the town. The principal are Elisen (or Elizabeth) and Carlshaller-brunnens; the former is exclusively used for drinking, the water being drawn by means of stop-cocks and distributed to drinkers. It is clear, emits a few gas bubbles, has a saltish bitter taste (something approaching to that of Epsom salts). The temperature of the Elisen-brunnen is 11, that of the Carlshaller 21 (Reau.): the former contains the largest quantity of gas, of which the latter has very little.

The following is the most recent analysis of a pint of the Elisenquelle by Bauer:—

Muriate of Soda	72 $\frac{3}{4}$
„ Lime	13 $\frac{1}{3}$
Carbonate of Magnesia	1 $\frac{3}{4}$
Muriate of Lithia	0 $\frac{3}{5}$
Bromate Magnesia	0 $\frac{1}{4}$
Iodate Magnesia	trace
Iron	0 $\frac{3}{4}$
Manganese	
Silex, &c.	
	90
Grains	

This analysis nearly accords with that of Löwig, but differs materially from that of Osann, who

states the whole amount of solid constituents to be only 75 grains, of which 59 muriate of soda, only 2 muriate of lime, but as much as $6\frac{1}{4}$ bromate of lime. He also states the amount of carbonic acid to be only 4 cubic inches to the pint. This statement may have been correct at the time the analysis was made; the discrepancy being accounted for, as a local writer observes, by the changes which have taken place in the amount of saline substance at different times. Thus the Münster-am-Stein springs, when analysed in 1825, yielded 56 grains of fixed constituents from the pint of water, and about the same quantity when again analysed by Löwig, several years later. Mohr, however, found in the same quantity of water, in 1853, $67\frac{1}{2}$ grains, of which 56 are muriate of soda, and nearly 10 muriate of lime. Others of the springs have undergone alterations in the quantity of their constituents. The composition of all is similar, though varying from each other in the amount of salts; they also vary greatly in point of temperature—from 10 to 24 degs. (Reau).*

The concentrated salt water, after evaporation, contains, in 18 ounces, 1,124 grains of saline residuum, of which 927 are muriate of soda, 155 muriate of lime, and $9\frac{3}{4}$ bromate of soda. The *Mutterlauge* is the deposit remaining after the crystallisation and separation of the salt, in the

* Dr. Trautwein. Die Soolquellen zu Kreutznach. Second Edition, 1856.

form of a brownish semi-fluid. Formerly this substance was thrown away until it was used by Löwig for the fabrication of bromine. After standing for some time in a vessel, the upper part is tolerably clear; when shaken, it froths like beer; it has a sharp, almost burning taste, which remains long on the tongue. When placed in contact with the skin, it makes it red after a short time, and if the application be long continued, a papular or pustular eruption is produced. Liebig found in 30 pounds 6 drams of bromine; Löwig obtained from the same quantity 4 ounces. According to Mohr's analysis, 16 ounces yielded 2,620 grains, of which 2,014 were muriate of lime, 287 muriate of magnesia, 130 muriate of potass, 122 muriate of soda, 66 bromate of soda, and a small quantity of iodine.* The mutterlauge is extensively used, added to the baths, frequently to the extent of several quarts to each bath, and is also exported in considerable quantity.

The baths in the bath-houses are raised to the proper temperature by the addition of warm water. In the Curhaus the water is warmed in the *baig-noire* by means of vapour introduced into the interspace of its double bottom.

The great majority of visitors drink the Elisenbrunnen—which, as has been shown, is a cold spring—many using at the same time the baths, either of the natural water, or with the addition of mutterlauge. The Munster-am-Stein are the

* Trautwein. Op. cit.

warmest springs. In general the coolest of these springs, which are the richest in salts, are more adapted to persons of plethoric habit, and to torpid constitutions, where the bowels are inactive. Delicate and nervous subjects, on the other hand, and those disposed to diarrhœa and cough, are best treated, according to Dr. Trautwein, by the warmer Munster-am-Stein springs, which are milder and less irritating. The water of the cool springs is not unfrequently taken mixed with milk.

The Kreutznach springs differ from some others of the same class (as Nauheim, Kissingen) in containing bromine and iodine, which are known to be so efficacious in the treatment of glandular diseases; and though the quantity of these substances in the amount of water drank during a course would be too small if separately used to have any specific effect, yet it materially assists when in combination with the saline ingredients, and when the mutterlauge is added to the baths the quantity of bromine absorbed is not inconsiderable.

A writer, whom I have already quoted, observes respecting the action of waters of this class: "Several of them contain bromine and iodine, the special action of which substances, though weak in the waters themselves, is powerful, from the amount contained in the concentrated waters, or lees, which are added to the baths in some places, as Kreutznach. These waters, especially Nauheim, Soden, and Kissingen, likewise contain a large proportion of carbonic acid gas,

which is separately employed in the form of gas baths and douches. The medical properties of these waters are very decided; their operation is directed more particularly towards the organization in general; and though at first they more or less excite the organs with which they come in contact (stomach, bowels, skin), yet a persistence in their use produces alterative and solvent effects, rather than any decided increase of the secretions. They materially tend to modify the quality of the blood, increasing its fluidity, and consequently that of its products. Saline waters exert a directly specific effect upon the glandular and lymphatic system, and upon the parenchymatous abdominal viscera. Hence the reputation they have acquired as being one of the best means for procuring the dispersion of lymphatic tumours and swellings of a scrofulous nature.”*

It may well be supposed, from the strong impregnation of the water with salts, that the Kreutznach baths have an exceedingly stimulating operation. They require more than ordinary precaution in their administration, and frequently induce powerful reaction, with irritation of the skin, not unfrequently accompanied with eruptions of a papular, pustular, or furuncular nature. Two kinds of eruptions thus produced are particularly specified by Dr. Prieger: one kind comes on from direct irritation of the surface after a few baths, in blueish spots as large

* Herpin. Op. cit.

ass a Prussian dollar, which, after a short time, assume a yellowish hue and disappear. The other occurs chiefly about the joints and parts covered with hair, in the form of small pustules, having a dark red base, and usually comes on after the twentieth bath, lasting ten or twelve days; and leaving once disappeared, does not return, even if the baths be continued. This kind, however, seldom appears, except in diseases of the skin and lymphatic glands; it is of a critical nature, being usually the precursor of a favourable change.*

As respects the action of the baths, Dr. Wiesbaden observes: "The water *absorbed* into the mass of humours produces in them changes analogous to those which are observed from its internal use, with the difference, that in the former case it is the skin and the superficial lymphatic glands which are subjected to its direct action; whereas in the latter it is the intestinal mucous membrane and the abdominal glands.

"The secondary effects of the bath will be annihilated or suppressed so much the more by the local reaction of the skin, inasmuch as, when in a state of irritation, it loses the power of absorbing the water; and absorption takes place with difficulty in a water so concentrated, that the body can scarcely be kept at the bottom of the bath. From this it results that, by adding too much substance

* Kreutznach, und seine Brom, und Iode-haltigen Heilquellen.

to the bath, the particular virtue of the waters cannot develop itself, because its action is restricted to the local irritation of the skin, of which action advantage may be taken in the treatment in some affections of a torpid nature. Thus we should never lose sight of the twofold character which is manifested in the operation of our springs, and which is always determined by the difference in their mode of administration. It is neither the delicacy of the skin nor its degree of susceptibility to external influences that can regulate the conduct of the physician in this respect; for the clear and delicate skin of ladies is often insensible to the action of a bath which would irritate in the highest degree the rough and hard skin of a blacksmith; and thus we are not always able to produce critical eruptions by the largest quantities of mother-water. The concentration of the water, carried up to a certain point, will so prevent absorption, that the secondary effects can in no wise manifest themselves, and a large quantity of mother-water will produce very little effect. The cutaneous eruptions," he adds, "which appear after a certain number of baths, is too constant a phenomenon for them to be ascribed to the influence of warm baths. There are many cases in which eruptions break out when no mother-water has been added to the baths. A distinction must be made between the cases in which nature—separating the noxious part from the mass of humours modified by the baths—chooses the skin whereby to elimi-

minate it, and that in which the skin is the seal of pathological products, which are only the effects of an excessive local irritation, occasioned by baths either too hot or containing too much irritating substance. These eruptions are of the same significance, as respects the external employment of the mineral water, as are the alvine evacuations produced by its internal use. These evacuations appear at a stated time, and represent the visible effect of the revolution which has been effected in the interior of the organism. Evacuations, when produced *mal à propos*, hinder the water from being absorbed, so that its virtue exhausts itself in useless efforts in its action on the bowels. The case is analogous as respects the external use of the water. The eruptions must be considered, in the majority of cases, as critical phenomena of the disease itself, whereas an excessive quantity of the mother-water added to the baths would only highly irritate the skin, and their efficacy would be spent in a useless stimulation.”*

Dr. Trautwein likewise speaks of the profuse perspirations, eruptions, and even boils, which supervene upon using the waters, especially when drinking is combined with bathing, and also occasionally *in those who restrict themselves to drinking the water*. He also cautions practitioners and patients against the mistake of confounding the eruption which sometimes comes on after a few days' bathing (which may depend upon the bath being

* Kreutznach et ses Eaux Minerales.

too stimulating, or its being taken at too high a temperature) with the critical eruption which appears some time afterwards as a consequence of the constitutional reaction, indicating that the saturation point is attained. The Brunnen-fever, which is likewise indicative of the system being saturated with the water, when it occurs, usually comes on in the fourth, fifth, or sixth week of the course.

From the investigations of Dr. Englemann (another resident practitioner who has written on the waters) upon the absorption of the water from the bath, it appears that this process is best effected in healthy adults at a temperature of 32 (Centigrade). The absorption is less either at a higher or a lower temperature. The degree of absorption, under otherwise similar conditions of the body, mainly depends on the degree of strength of the patient. It is not increased by fasting, by moving about, or by rubbing while in the bath.

The special indications for the employment of the Kreutznach waters are cases in which the blood, being deficient in salt, superabounds in albumen, as is more particularly manifested in the scrofulous cachexy: no others acquired in so short a time so high a reputation for the cure of scrofulous complaints, and also as a prophylactic means where there is a scrofulous tendency in young subjects—the water internally taken being alterative and laxative, while the baths act powerfully upon the abdominal system, diminishing glandular

enlargements, and remedying other local ailments arising from this source. It is in the more torpid forms of the disease that Kreutznach is calculated to render the most effectual service. In subjects of an erethetic disposition, or where there is a tendency to inflammatory action, the waters would not always be so applicable as some others. Dr. Vetter remarked on this point: "Kreutznach is less indicated than other springs in the erethetic and irritative forms of tubercular and glandular enlargement, with a tendency to the formation of coagulable albuminous products. In similar cases, occurring in delicate and irritable subjects, though the effect of saline springs is undeniable, yet alkaline springs, internally and externally employed, are greatly preferable, on account of their mildly solvent and penetrating operation."* On the other hand, Dr. Vogler, of Ems, remarks in his work: "I cannot agree with the opinion of some practitioners, that soda and alkaline mineral springs would be the best adapted to the erethetic forms of scrofula, whilst saline springs containing bromine and iodine would be more applicable to scrofulous subjects of a lymphatic temperament. Whatsoever be the form assumed by scrofula, I should always be disposed to give the preference to saline springs, provided the treatment be regulated by the requirements and the individuality of the patient."

Dr. Wiesbaden also says: "The springs of

* Handbuch der Heilquellenlehre.

Kreutznach are highly efficacious in this particular form (erethetic) of scrofula." He recommends a modification of the treatment—baths of a lower temperature, and not of a stimulating character—with the moderate internal use of the water, in the one case; and baths gradually made stronger by the addition of mother-water, in the more torpid form.

In several cases of the erethetic variety, however, I think that a thermal saline would be best adapted to render service in the first place; after which, recourse might be had to the more strongly-impregnated saline water. Sometimes, likewise, chalybeates would be preferable to either of the above classes of waters.

With respect to the treatment of cutaneous diseases by the waters, Dr. Wiesbaden observes that a distinction must be made between the cases in which the affection is primarily of a local nature—subsequently implicating other organs than the skin—and those in which the disease originating in other parts of the organism, gradually draws the skin within its sphere of action, and where the skin is merely the organ on which are deposited the noxious humours rejected from the blood. In the former case, the skin must be directly acted upon, and the effects of the waters restricted as much as possible to it, by adding to the baths, according to the degree of irritability of the affected parts, a large quantity of mutter-lauge, or mother-water; in the latter, if the disease have an intimate relation to scrofula, the

glyserasy must be combated by the internal and external use of the waters in small quantity, avoiding any super-excitation of the skin, and of the intestinal mucous membrane.*

The Kreutznach waters, like several others, are also calculated to be of service in cases of relaxation of the mucous membrane of the air passages, with copious secretion; in some disorders of the digestive organs, as liver hypertrophy; in syphilitic complications, though, as has been already stated, sulphurous and alkaline thermal waters are often best calculated to remedy these complaints, as also a large proportion of cutaneous diseases; hence, it is only by investigating the peculiarities of individual cases that a correct judgment is likely to be arrived at, as respects the preference that should be accorded to one spring over others in any given case. Chronic rheumatism, especially when occurring in scrofulous constitutions, is often benefited by these baths, the pains (as at saline, thermal, and sulphurous springs) being in some cases not relieved, and not unfrequently aggravated during the course, or being reproduced in parts which had been long free from them—which

* Dr. Trautwein enumerates as the chronic cutaneous affections most likely to be cured or alleviated by the baths (simple or concentrated), psoriasis, eczema, pityriasis, impetigo, lepra squamosa, as also pruritus, from a morbid sensibility of the skin, and weakness of this organ, accompanied with tendency to profuse perspiration. In the more obstinate cases, the baths must be resumed a second season.

effects are followed by subsequent cure or long exemption from them. Patients with a tendency to pulmonary tuberculisations, which is so frequently allied to scrofula, as also others affected with chronic bronchial and laryngeal affections, often derive material benefit from a proper employment of the waters, which is often combined with the inhalation of the atmosphere of the salines, and the vapour from the evaporating pans used for the extraction of the salt. There is a room where the saline vapour can be inhaled. Patients likewise walk in the open galleries of the thorn-bush shed, on the side opposite to that from which the wind blows, so as to obtain the full advantage of the open-air saline inhalation. This method has been advocated for the treatment of pulmonary phthisis, from its having been observed that the disease scarcely ever occurs in men occupied in saltworks, and is very seldom met with in their neighbourhood. "At the Schonbeck salines," says Dr. Lersch, "it is of very rare occurrence; and men in the first stage of the disease, when occupied in these works, get well. MM. Tolberg and Schmit state that at Rosenheim and at Bex, where consumption was formerly common, it disappeared after the formation of salt works." I have, in my work on the "Influence of Climate," referred to the opinions on this point of some other competent writers, from a consideration of which the inference may be drawn that the inhalation of a saline atmosphere and vapour, though often eminently serviceable in

bronchial and tracheal affections, where there does not exist much irritability of the air passages, may also be regarded as a preventive; but that it can scarcely be efficacious as a curative means in phthisis, when the disease is fully established.

The Kreutznach baths have been a good deal used in cases of ovarian and uterine hypertrophy and tumours, on account of the supposed special action of the iodine in reducing those enlargements; but though they have been of service in some of these cases, by the general action of the waters on the system, yet there is no doubt that much harm has likewise resulted from their too general and indiscriminate employment. If the baths with the natural water have a stimulating operation, how greatly must this not be increased by the addition of large quantities of the mutter-lauge (sometimes to the extent of twenty quarts to the bath)? And it may well be inferred what must be the effect of baths so concentrated, continued perhaps daily upon delicate females, who constitute no inconsiderable proportion of those patients. Ovarian enlargement, uterine hypertrophy, and tumour, as well as other affections of this system, often the consequences of difficult labours, frequently diminish, or remain in a passive state for years, without giving rise to serious inconvenience, even when their presence is ascertained; and they may be excited into activity, as well as much injury done to the constitution, by undue interference. That such has been the case with respects these waters, I have had opportunities

of convincing myself, during my visits to Kreutznach; and that I am not singular in my opinion, may be seen from the animadversions on this abuse made by physicians not connected with the locality. Dr. Lersch, expressing himself on this subject, quotes Dr. Scanzoni, a practitioner of considerable eminence at Wurtzburg, who observes that some cases are arrested in their growth, but that he never found any material diminution of the enlargement to ensue; in some cases the swelling became larger, even while the waters were being used, and the patients became worse, afterwards experiencing abdominal congestion. Dr. Wiesbaden likewise speaks strongly on this point in a separate pamphlet, and Dr. Trautwein remarks, that "violent congestion of the lungs, heart, and brains not unfrequently result from too great an addition of the *mutterlauge* to the baths, which in other cases, by too greatly stimulating the skin, draws the fluids to the surface, and prevents the absorption of the water into the system."* It is satisfactory to note that these various animadversions, added to the experience acquired from unfavourable cases, have of late years had the effect of greatly circumscribing the employment of the waters, which are now used with more discrimination in these complaints. The iodine exists in the waters (as may be seen in the analysis) in too infinitesimal an amount to exert any special action in effecting the reduction of these enlargements;

* Noch ein Wort über Kreutznach.

and even the comparatively large quantity of the bromine in the baths has its special action in some measure neutralised by the excessive amount of salts. "The therapeutical significance of springs containing iodine and bromine," says Dr. Seegen, "depends not only on the absolute amount of these substances, but especially upon their relation to the quantity of the other constituent parts. The same amount of iodine and bromine that would be of importance in a weak saline spring would have a very subordinate value in a strongly-impregnated spring, especially as respects the internal administration."*

Analysis of the Oranienquelle and of the Munster spring:—

Contents of a Pint of Water.

	Oranienquelle, by Liebig.	Munster, by Mohr.
Muriate of Soda . . .	108·705 . . .	53·72
" Lime . . .	22·749 . . .	9·76
" Magnesia . . .	— . . .	1·29
" Potass . . .	0·460 . . .	1·18
Bromate of Magnesia . . .	1·780 . . .	—
" Soda . . .	— . . .	0·58
Sodate of Magnesia . . .	0·012 . . .	—
Carbonate of Lime . . .	0·255 . . .	0·98
" Magnesia . . .	0·130 . . .	—
" Iron . . .	0·356 . . .	0·02
Silex	0·999 . . .	0·06
Earthy Phosphate . . .	0·095 . . .	—
Grains	135·846 . . .	67·59
† Temperature	10 . . .	24 (R.)

* Handbuch der Heilquellenlehre.

† The Carlshaller and Theodorshaller springs contain

Analysis of the Munster mutterlauge, according to Polsdorff :—

Contents of a Pint.

Muriate of Lime . . .	1789·97
„ Magnesia . . .	230·81
„ Potass . . .	168·21
„ Alumina. . .	1·56
„ Soda . . .	226·37
Bromate of Soda . . .	59·14
Sodate of Soda . . .	0·05
Muriate of Lithia . . .	7·95
	<hr/>
Grains . . .	2484·16

The bath has usually in the first place an addition of one quart of mutterlauge, the quantity being gradually raised to ten quarts. It thus contains 20 pounds of salt, with somewhat more than four ounces of bromate of soda.

It may be inferred from the minute fraction of iodine, as compared with the amount of salts, how little this substance can be productive of any specific action, and how far the term iodine water is justified, as applied to Kreutznach.

less salt than the Munster, of which there are 9 grains muriate of lime in the former, and 14 in the latter, and of muriate of magnesia from 3 to 5 grains.

NEUENAHR.

THIS bath, which has lately come into general notice, is somewhat more than an hour's drive from Remagen, on the left bank of the Rhine, up the picturesque Aarthal, which contains within a small space several springs of the same nature, but having different temperatures. The Landskrone springs, rising at the foot of the hill of the same name, the Hepfinger, and Apollonariusbrunnen, are alkaline acidulous cool springs, rich in carbonic acid gas, and not unlike Seltzer water. The latter, obtained by boring, has a temperature of 17 degrees (Reaumur). Higher up the valley, close by the village of Beul, five springs of analogous composition, but of higher temperature, have likewise been obtained by boring, and constitute the group of Neuenahr. The Victoriaquelle has a temperature of 22 to 24; the Augustenquelle 25 to 27; the Sprudel (which rises every hour, during fifteen minutes, to a height of twenty-four feet), 26 to 30; the Badequelle, 23 to 24; and the Mariensprudel (which likewise rises to a height of twenty-five feet), 31.

The analysis of Mohr exhibits the contents of a pint of water:—

	Augustenq.	Mariensq.	Victoria (from Prof. Miller).
Carbonate of Soda .	5.99	5.62	10.80
„ Magnesia	1.77	2.68	3.74
„ Lime .	1.68	1.61	3.30
Muriate of Soda .	0.71	0.69	0.91
Sulphate of Soda .	0.58	0.76	0.73
Oxide of Iron .	0.04	0.06	0.10
Earthy Matter .	0.13	—	—
Silex	0.17	0.19	0.25
Carbonic Acid .	—	—	12.86
	—	—	—
Grains .	11.07	11.61	32.69
Carbonic Acid Gas, cubic inches*	24.73	22.52	

These springs, it will be seen, have some analogy in composition and temperature with those of Ems, though less warm, and containing scarcely any muriate of soda, of which the Ems water possesses a tolerably fair proportion. They rank, however, in the same class, and may be regarded as a kind of mild Vichy.

According to the account in Professor Miller's pamphlet (already quoted), from which the ensuing notes are taken, as I have not yet myself visited the place, there is a clean, comfortable, well-managed hotel, with a hundred beds, under the supervision of the inspector, who speaks English; a Trinkhalle, beneath which rise three springs, surrounded by pleasure grounds, a reading-room, with the *Times* and *Galignani*; convenient baths, with douches and shower bath; a musical band,

* Dr. Seegen. Handbuch der Heilquellenlehre. Second edition. 1862.

English Church service (by the German pastor); pleasing environs, a good road through the valley, and well-kept paths on the adjacent woody hills; on the summit of the Neuenahr, the ruins of Tomberg, Ollbruck, &c.; Ahrweiler, the village of Saach-heim, the convent of Kalvarienberg, and further off, Altenahr, with its picturesque valley—these interesting points for excursions.

The category of complaints in which the waters are likely to be efficacious is, according to Dr. Weigden, the resident practitioner, a tolerably large one, including dyspepsia, slighter affections of the liver, lithuria, vesical catarrh and stone—*“small concretions may be actually dissolved”* (?)—scout, rheumatism, chronic pulmonic and laryngeal affections, asthma, clergyman's sore throat—*“phthisis is palliated, but no pretence to make a cure”*—skin diseases, uterine disease, scrofula, hypochondriasis.* It is almost needless to observe, that to many of these complaints either springs would be quite as applicable, and to some more so. Like other waters of this class, their sphere of applicability is more especially comprised within the range of stomach complaints, with acidity, some chronic catarrhal affections, and some diseases of the urinary apparatus, including lithic acid gravel and tendency to stone—the baths, like other thermal alkaline, saline, or sulphurous ones, being well calculated to render service in

* Neuenahr, a New Spa on the Rhine. 1861. Simpkin and Marshall.

rheumatism, gout, and cutaneous diseases, where a sedative rather than a stimulating action is required. Professor Miller rightly observes: "It is quite plain that the climate is not the least important element of the Kur in all cases; and Neuenahr would on this account be well suited to many patients with whom the more relaxing climate of Ems, on the one hand, or the too bracing one of more elevated localities, would be likely to disagree."

It appears that the place is about to be considerably enlarged; several improvements are projected, and it will doubtless soon occupy the position among the German baths which its valuable springs entitle it to assume.

HOMBURG.

HOMBURG, in the Landgravate of Hesse-Homburg, lies near the south-eastern base of the Feldberg, the highest of the Taunus range of hills, and is approached from Frankfort by a gradual ascent for a great part of the drive, which occupies about an hour and a half. It may be reached in forty minutes by the railroad from this city; but what with the inconvenience of taking luggage to and from the stations, and the having to adapt oneself to the hours of departure of the trains, many families prefer hiring a carriage for this short distance, which at any appointed hour could take them direct from their hotel to the lodging where they contemplate going to. By means of this railroad Wiesbaden may now be reached in about two hours, and the Rhine at Castel or Biberich in less time. The station is close to the entrance of the modern portion of the town, by the principal street, Louisen-strasse, which is continued in a straight line for nearly half a mile, the first portion consisting of first-class lodging-houses and hotels, the Cassie, the Imperial, the Four Seasons, &c. About half-way up the street, and separated from it by a space bordered with orange trees, stands the Curial, opposite to which are the European, the old established Hessian, and other hotels; beyond these is the old part of the town, consisting for the most part of ordinary houses, and of a street or

series of streets extending in a parallel direction with the Louisen-strasse to the palace garden. Shorter streets diverge from the principal one—those on the right, the Kieselegg, at the entrance of the town, and the Ludwig-strasse, terminating in the Promenade-road, contain some of the best lodging-houses; as does also the Promenade—divided into upper and lower—many of them having gardens attached. Several large and commodious houses have been lately erected in this part.

The resident population amounts to upwards of 6,000 inhabitants. The old town possesses no public edifice of interest, except the residence of the Landgrave, with its lofty white circular tower in the spacious courtyard, which forms a conspicuous object, perceptible from a considerable distance. The palace itself contains nothing very remarkable; over the gateway will be observed some curious *alti relievi* in red sandstone. English Church service is performed twice every Sunday, by the resident chaplain in the adjoining chapel. A church is in progress of erection.

The palace gardens are laid out in the English style, and are open to the public. Shaded paths lead to an extensive piece of water at the lower part, whence others are continued to another public garden with rows of chesnut trees and parterres of flowers, from which a road, three miles long, bordered by an avenue of poplar trees, leads to the pine forest, extending up the hill. To the right of this road is another garden (Elizabeth),

and some little distance up the avenue on the left
 a fourth, with a farm attached; from its higher
 ground a pleasing prospect of a part of Homburg
 and the environs may be enjoyed. Half-way up
 the poplar avenue at the Alleé Haus refreshments
 are supplied. Luther's Oak is one of the most
 frequented resorts. From the end of the avenue
 the ascent is easy to the summit of the Feldberg,
 thence is displayed a magnificent panorama of a
 great extent of beautiful country comprised in the
 valleys of the Rhine and the Maine, and bounded
 on the one side by the distant range of the Vosges,
 and on the other by the Thuringian Mountains.

The environs present several points of interest,
 to which excursions are made. The principal are
 Nauheim, Soden, Kronthal, and the ruined fortress
 Königstein, about two hours distant.

The Cursaal is perhaps the handsomest in Ger-
 many. A splendid newly-erected façade fronts
 the Place, of which one side is formed by the new
 theatre. On entering, a spacious vestibule con-
 nects to the tastily-decorated ball-room, occupying
 the centre of the edifice. On the right are rooms
 for refreshment, and a gorgeous saloon, with
 frescoed ceilings, extending the whole length of
 the side wing, where there is a daily *table d'hôte*
 at five o'clock. On the opposite wing is a cor-
 responding saloon for play, with smaller rooms for
 the same purpose, decorated and furnished in the
 most luxurious style. Within the establishment
 there is a reading-room, plentifully supplied with
 several of the leading English and continental

journals, gratuitously open to the public, and also a card-room, where private games, chess, &c., may be played. The back of the edifice opens out upon a broad terrace, which overlooks the public garden and the wooded hills behind the Waldlust, a conspicuously-placed house of entertainment. Here visitors enjoy their coffee or ice, while listening to the musical band, which is more complete than at any other bath. It plays in the middle of the day, as also in the evening out of doors; in cold or wet weather, and when the days begin to shorten, in the ball-room, and is continued through the winter season. The Cursaal grounds are tastefully disposed, and have been greatly enlarged of late, by the addition of the meadows across the promenade road. They now extend to and around the springs, which are about three-quarters of a mile distant from the town. A great improvement has also been effected by the construction of a Trinkhalle, or light colonnade terminating in a conservatory, where water-drinkers walk in the morning, and find shelter in the event of rain.

Adjacent to the Cursaal is the bath-house, a commodious edifice, containing twenty-four cabinets diverging from a central vestibule, and conveniently fitted up, each being supplied with shower-bath and apparatus for douching and vapour-baths. Baths of common or of saline water are used. There is likewise another bath establishment in the town.

There are five springs, the Elizabethquelle, the

Kaiserquelle, the Ludwigs, and the Stahlquellen, and the recently enclosed Louisenquelle. The Elizabeth is the one principally employed. It rises at the extremity of a long and wide poplar avenue, within an enclosed space, to which drinkers descend, receiving their glass of water from women, who are thus actively employed from six to half-past eight o'clock. A path leading to the meadows diverges from the spring to the left; on the right is a flower garden with orange trees, and a spacious orangerie, which serves as a shelter in the event of rain. Whey is drank here by several of the visitors who do not take the water. Close by is the stand for the musical band, which plays during the hours of drinking. About half way along the avenue and a little distance on the right is the Louisenquelle; at its further extremity is the Kaiserquelle, and a little further on the Ludwigsquelle, surrounded by a circle of lofty poplar trees. The level of this spring rises and falls alternately; the water being emitted every quarter of an hour with bubblings, owing to the disengagement of the carbonic acid gas: after the gas has escaped, the spring remains quiet for a few minutes. The Stahlquelle rises close to the central avenue on the left. The temperature of the water is from 8 to 9 (Reau.).

All these springs are very rich in saline substance, chiefly muriate of soda, as also in carbonic acid gas; though when seen in the wells the water does not bubble so much as at some other springs, which really contain less gas, though it escapes

the more readily, from not being in so complete a state of admixture with the water. The water of the Elizabethquelle is largely exported, and keeps well. The Kaiserquelle is the most strongly mineralised; its water did not rise naturally to the surface, like the others, but was obtained by boring. The taste is strongly salt and piquant; that of the Ludwigsquelle is pleasant—a glass of its water is a very refreshing beverage in hot weather. The Elizabethquelle is not generally considered unpleasant after the first few glasses, the amount of carbonic acid modifying the otherwise too powerful taste of the salt. The first effect experienced on drinking this water is a sensation of warmth and exhilaration; its action is alterative and resolvent, laxative or actively purgative, according to the quantity taken, and the constitution of the person; but owing to the gas and iron which the water contains, its proper use is not followed by debility, as would be the case with a repetition of purgative medicines. When it does not affect the bowels, it generally passes off by the kidneys. This spring contains a much larger quantity of salts, and more gas, but less iron than the Ragozzi at Kissingen, or the Kreuzbrunnen at Marienbad; hence its action is more decidedly aperient, though at the same time exciting; the large amount of gas and iron greatly modifying its operation. Many waters which contain purgative salts have either no iron or gas, or only in very minute quantity, but in the Homburg water the gas has a distinct action, exciting the nervous and

vascular systems. Persons in general in whose cases the water is indicated, after drinking for a few days, feel themselves lighter and more cheerful, the appetite is increased, and acidity in the digestive passages removed. Some patients are recommended to begin by taking the milder Ludwigsquelle. Where a more powerful action is required without increasing the amount of water, the Kaiserquelle is usually recommended. This spring and the Ludwigsquelle supply the baths, the water being received into a common reservoir.

The attempt was for some time made to obtain a thermal saline water by boring in a meadow adjoining the promenade; but though the earth was bored to a considerable depth, the undertaking was unsuccessful.

Homburg is abundantly provided, by the liberality of the management, with recreations of various kinds. Besides the regular musical band, concerts, the admission to which is frequently gratuitous, are given two or three times a-week. Admission to the weekly ball is likewise free to properly-dressed persons. Those who remain in the autumn and winter seasons are allowed to hunt in the extensive woods belonging to the town. Play is in full force at Homburg, players being allowed more chances in their favour than at other places. Many of the visitors who come for this purpose play high, large sums being frequently staked. Play is continued throughout the winter, several persons being induced on this account to remain at this season.

The foregoing sketch may serve to convey a tolerably general idea of the town and of its springs ; the specific adaptation of the water to some disordered conditions of the economy remains to be briefly considered.

The Homburg water is not commonly employed for bathing, though in certain cases baths are indicated. As it is strongly impregnated with salt, the baths have an exciting action on the skin, not unfrequently producing eruptions of a papular nature, and sometimes even boils ; though this result often depends upon the bath being taken at too high a temperature. When, therefore, there exists a deficient degree of vitality, and of circulation through the capillary vessels of the surface, combined with other functional derangement of organs which appears to depend upon this cause, a course of bathing may be advantageously recommended, together with the internal use of the water. As a revulsive measure against a congestive state of the abdominal circulation, evidenced by the occurrence of piles and other symptoms, as also in some cases of chronic eruptions without tendency to inflammation, of chronic rheumatism, in glandular enlargements, and other scrofulous affections, these baths may be advantageously used ; though in many of these cases bathing in thermal water would be preferable. The stimulating action of the water, when taken internally, on the alimentary canal, and on the circulation, producing a corresponding increase in the activity of the absorbent system, has likewise a powerful effect in

removing visceral or glandular obstructions. The concentrated mother-water of Nauheim is sometimes added to the baths, rendering them much more active in the cases hereafter specified.*

A course of the Homburg waters is eminently calculated to render service in several disordered states of the alimentary canal and its associated viscera, marked by deficient or irregular appetite, furred tongue, acidity, flatulence, and torpid action; especially in the form of indigestion, which affects free livers and those who have been accustomed to the use of ardent spirits, and is attended with heartburn, eructations, a tendency to vomiting, and pyrosis; though in some of these cases, where a more tonic action is required, the Kissingen, Marienbad, or Rippoldsau water would be preferable. Persons suffering from the disordered digestion arising from prolonged excess in the pleasures of the table will generally obtain speedy relief from the Homburg waters, which will mostly be of a permanent nature, provided they are careful, on discontinuing the course, not to fall into the same errors which induced the disorder. Those also whose digestion has been impaired by a residence in tropical or unhealthy climates, and who are inconvenienced by an inactive state of the bowels, will generally find these springs suited to their case. Here, however, as in other instances,

* Dr. Gardey, the resident French physician, ascribes but little efficacy to the baths, which he likens to sea-baths, in which the amount of saline principles may be regulated at will.

too active purgation is to be avoided ; the object sought should be rather to obtain the tonic action of the waters, by which means the weakened organs gradually regain their tone. The error is not unfrequently committed of taking too large a quantity ; and though the patients may feel themselves better for the time, yet the amelioration is not lasting when the accustomed stimulus is withdrawn. The secretion from the mucous membrane, which was increased by the over-stimulation, becomes consequently deficient, the flow of bile is diminished from the same cause, and the muscular tunic of the alimentary canal, having had its tone impaired, is unable adequately to contract upon its contents ; hence patients who have used the water improperly are not unfrequently worse afterwards than before.

When the water agrees, a regular but not too active effect on the bowels is produced, the appetite and the spirits are improved, the blood circulates more freely, and there is a greater disposition for muscular exercise. "Even when not followed by sensible effects," remarks Dr. Gardey, "the water modifies the organism at the expiration of a few days, or a week or two ; the digestion and the appetite are improved, and the blood circulates more freely. This change occurring in a person previously in health may become dangerous, and bring on inconveniences attached to a plethoric temperament."* In some persons, however, an

* Notice sur les Eaux Minerales de Hombourg.

appetitive action is not produced, even though a large quantity of the water be taken; in such cases, headache and other inconvenient symptoms are liable to arise from the predominant operation of the iron and the gas not being sufficiently counteracted by the saline constituents. In these cases, where free action on the bowels is indicated, the purgative waters, Pullna, Saidschutz, or Seidlitz, may be employed. These waters, however, like the Homburg, are liable to abuse, where constipation is merely sought to be removed, without sufficient reference to its cause. On this point a late eminent German physician (Kreysig) observed: "Many faults are committed when the physician 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 on which it depends. 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."*

Thus, for instance, constipation may arise from debility and deficient tone of the muscular coat of the alimentary canal, in which case, as already observed, a direct chalybeate, as the Schwalbach water, which generally has rather an astringent effect, may act as a purgative, by remedying the

* Des Eaux Minerales.

condition upon which the inactivity of the bowels depends.

The preceding observations are fully confirmed by those expressed on this subject in a standard Paris class-book on the application of remedies. "The idea," say the authors (with reference to constipation) "which immediately presents itself to the patient's mind, as also to that of the inexperienced physician, is to purge where there is constipation, and, in fact, by this means relief is immediately obtained. The inconvenience disappears so speedily, and with so little trouble, that it is difficult to understand in what manner a similar medication can be injurious; and yet, on considering the mechanism of constipation, one may be convinced that if purgatives are indispensable in certain cases, they are prejudicial in many others.

"Constipation may be occasioned by a mechanical obstacle to the course of the alvine contents. But it most frequently depends upon a state of atony of the large intestine, which arises from various causes; it may only affect the mucous membrane, or it may at the same time affect the muscular coat of the bowel. The muscular atony may arise from several causes, the chief of which is the retention of the efféte matter, which in the first instance is voluntary, especially in females. Two serious inconveniences result from this cause; an insensibility of the bowel, which becomes more and more marked in the lower portion of the rectum; and likewise an abnormal accumulation in the large intestine. In women, it is not always the neglect of the intimation for

evacuating the bowels which produces constipation in the first instance; the development of the uterus during gestation has this effect, by preventing the residue of the food from descending, so as to excite the contraction of the terminal fibres of the intestines.

“The muscular coat of the bowels becomes distended. It is a law of physiological dynamics, that muscles lose their energy in proportion as their fibres are mechanically elongated, so that when they have obtained the extreme point of elongation, they are reduced in a manner to a sort of membrane, and retain but a small degree of contractility. Hence it is seen, on examining the bowels of those who had been for a long time constipated, that the large intestine is flaccid and distended like a pouch, whereas in those accustomed to daily evacuation, the calibre of the intestine is greatly contracted. The rectum itself may likewise be the seat of a similar distension. Thus it will readily be perceived, that inasmuch as all stimulants lose somewhat of their effect by repetition, the frequent use of purgatives will render the mucous membrane more and more insensible to the action of these agents, and still more so to that of the ingesta naturally and continually in contact with the large intestine. Purgatives, therefore, increase the constipation, and will end by making it almost insurmountable.”*

* *Traité de Therapeutique* ; par MM. Trousseau et Pidoux. 4me edition.

I have thought it advisable to quote this long passage on this occasion, from having frequently witnessed the injurious consequences arising from the abuse of purgative medicines and waters by my own countrymen, both when at foreign places of resort and at home; and I regret that I cannot concur in some of the opinions expressed in the work of the late resident English physician, who admits that the active effect of the waters is analogous to "that produced by a large dose of blue pill or calomel." In patients, therefore, who continue so to use the waters, the repeated excitation induces the same consequences as the blue pill and black draught system, which so many have had occasion to deplore.

I do not approve of the practice of mixing two of the waters of different springs together, nor of adding warm water to a cold gaseous one; the immediate activity of the compound may be increased by these means, but its alterative and tonic properties, from which the greatest degree of durable benefit is to be expected, are thereby neutralised.* This practice is not, I believe, adopted by any of the local physicians, whether at Homburg, Carlsbad, Marienbad, or Kissingen; as, for instance, mixing the Sprudel with the Mühlbrunnen, the Kreuzbrunnen with the Ferdinandsbrunnen, or

* To the practice of adding warm water, or an additional quantity of purgative salt to the Cheltenham waters, is attributable much of their deterioration in public estimation.

the Ragozzi with the Pandur water, at the last three mentioned places.

Though the Elizabeth has always enjoyed by far the greatest degree of repute, and is extensively exported, Dr. Prytherch considers that the more strongly saline water, the Kaiser, "is best adapted to the ailments of the greater mass of invalids who come from England. Its operation is quicker and more copious, and the sense of lightness and hilarity consequently produced is pronounced to be most delightful." However, *de tout chose il faut voir la fin*, and the question is, whether the delightful sense of lightness and hilarity—which is also momentarily occasioned by wine or by dram-drinking—will be of a lasting nature after the stimulus is withdrawn, or whether, on the contrary, it is not more likely to be followed by the reaction of increased *malaise* and depression. This spring has been much less used of late.

The reason why an equal amount of bottled and exported water will, "in some instances, exhibit more active purgative qualities than when taken at the spa," is, that while the salt remains in solution, the gas and iron, which modify its active operation, are in a less intimate state of admixture with the water, which is soon decomposed after the bottle is opened; thus, Dr. Gardey has observed, that "a single glass taken by patients in a Paris hospital has sufficed to produce purgation."* In cases where there is a manifestly diseased state of

* Nearly 400,000 bottles are annually exported.

the liver or spleen, with enlargement of these organs, consequent upon a residence in tropical or malarious localities, the employment of one or other of the Carlsbad springs would often be more indicated than those of Homburg. In states of abdominal plethora, and their not unfrequent consequence, piles and obesity, the Homburg water would be generally beneficial, combined or not, according to circumstances, with a course of bathing. Cases of deposit of red sand or gravel of lithic acid, which are mostly connected with a disordered condition of the digestive apparatus, are likewise mostly remediable, provided they be recent or recurrent. When, however, such deposits are more permanent, indicating the existence of the lithic acid diathesis, an abnormal condition of the blood and co-existent disorder of the kidneys, a course of alkaline waters internally and in baths (as Vichy), or the drinking freely of an alkaline gaseous water (Fachingen or Seltzer) would be most suitable.

Hypochondriasis is likely to be removed or greatly relieved in many cases by a temporary sojourn at Homburg. The cases must, however, be discriminated. In the more purely nervous form of the disorder, where the inactive condition of the abdominal organs is mostly dependent upon local debilitation and irregular distribution of the nervous power, the use of a tonic and at the same time mildly aperient water (as Marienbad, or the Homburg Louisenquelle) is indicated, and even in some cases a more direct tonic and chalybeate water, as Schwalbach, might be advantageously

employed; the confinement of the bowels, which is but an effect, being removed in proportion as the general tone of the nervous system—the deficiency of which gives rise to this symptom—is restored. In the more severe forms of this complaint, *cum materia*, where there exists positive disease, or great functional derangement of particular organs, with melancholy or greatly depressed spirits, the Elizabethquelle is calculated, perhaps more than any other, to rectify the disorder. To some cases of this kind the Carlsbad water might be preferable to the Homburg, but it would lead me too far from my present object to enter here upon the consideration of the peculiarities of the different cases which seem to indicate the one in preference to the other. Bathing, by determining to the surface, and equalising the circulation, is usually a beneficial adjunct to the internal use of water in this disorder.

Gouty patients will sometimes derive advantage from a preliminary course of the Homburg waters, which are highly serviceable in removing the states of stomach and liver disorder which so frequently complicate the disease, and induce a recurrence of the attacks. Here, however, much discrimination is likewise required; a too active effect would leave the digestive apparatus in a weakened condition, and thus predispose to a relapse. "Homburg," says Dr. Gardey, "does not cure the gout; its waters possess none of those properties by means of which chemists expect to dissolve the local deposits, or to modify the state of the blood, by

depriving it of the principle which keeps up the disease. In regular gout, recurring at intervals in otherwise healthy persons, the Homburg waters are more likely to be prejudicial, by increasing the plethoric state, and approximating the attacks to each other, instead of diminishing their frequency." The gouty diathesis arises from a faulty condition of the blood, chiefly depending upon an excess of acid; hence, alkaline or saline thermal springs (Vichy, Wiesbaden), in the form of bath, would most effectually remedy this condition. It may likewise be said of chronic rheumatism, that bathing in an appropriate thermal spring is the means best calculated for its removal; but that where, as is frequently the case, there exists a vitiated condition of the gastric and alvine secretions, a preliminary course of a cold gaseous aperient and tonic water, as Homburg or Kissingen, may be advisable. Homburg is, however, not greatly resorted to by this class of patients.

The above-mentioned disorders, and the various deranged states of the system arising from or complicating them, are the principal cases in which benefit may be expected from the Homburg waters. There are, likewise, several other complaints, to which, under certain circumstances, Homburg might be preferable to other waters; as tic and neuralgic affections, some nervous disorders, and (as a revulsive) a relaxed condition of the air passages, attended with copious mucous secretion, especially when any of these complaints co-exist with derangement of the digestive organs.

In several of these cases a course of the Ludwigsquelle will be found very efficacious. A glass or two of this water may often be taken in the evening with advantage, by patients who drink either of the other springs in the morning. The adaptation of the particular water most advisable in these states could, however, only be determined, with any approach to accuracy, by an investigation of the individual cases.

The Homburg waters rarely produce crises like the Carlsbad and some other waters, from which the patient frequently experiences various unpleasant sensations, if not an aggravation of his symptoms, till this has occurred. Patients who do not experience relief during the course are usually told by the resident physicians at baths that they will do so at a subsequent period, and this is truly frequently the case with those waters of which the beneficial operation depends upon the absorption of the water into the economy until the point of saturation, usually indicated by critical symptoms, is attained, as in drinking and bathing in thermal springs. This, however, the less frequently occurs with respect to cold gaseous aperient and tonic waters (as Homburg, Kissingen, Marienbad), which, when they agree, generally produce a certain amount of perceptible amelioration at the time, which is subsequently progressive, if there be no counteracting circumstances.

The English waters which approach nearest to Homburg in their action are Harrogate, Leamington, and Cheltenham. The sulphurous im-

pregnation of the Harrogate somewhat modifies its effects, as compared with the two latter springs, the action of which is likewise tonic and aperient, though they are deficient in the amount of iron, and contain but a small quantity of gas, in which the Homburg water is especially rich.

The springs are all applicable to the same class of disorders; the choice of either in any given case being determined by idiosyncrasy of constitution, or other existing indications.

Some patients, after using the Homburg waters for a few weeks, have repaired to a spring of a totally different character; as, for instance, Schwalbach or to Wiesbaden; and generally, it is perhaps scarcely necessary to say, with detriment to themselves. When any particular water is indicated, and the choice is made with proper discrimination, in the first instance, that water should be adhered to, and the results awaited. The combined use of two springs, as, for instance, bathing in the Wiesbaden, and at the same time drinking the Homburg, or other cold gaseous water, is sometimes desirable, and I not unfrequently recommend it; as is also sometimes a short course of chalybeate bathing, as Schwalbach, and the change to the air of that bath, to repair the relaxation occasioned by the thermal baths, Ems or Wiesbaden, and by breathing the closer air of these localities; but the internal employment of two waters of a totally different nature, the one immediately after the other, in the same case, can

rarely be productive of advantage, but, on the contrary, is mostly prejudicial.

Analysis of the Homburg Springs.—Constituents of Sixteen Ounces of Water.

	ELIZABETH. Liebig.	KAISER. Liebig.	LUDWIGS. Will and Fresenius.	STAHL- BRUNNEN
Muriate of Soda.....	79·1548 ..	117·00481 ..	84·461 ..	79·864
„ Magnesia.....	7·7919 ..	7·86432 ..	6·002 ..	5·229
„ Lime	7·7590 ..	13·22480 ..	9·506 ..	10·667
Carbonate of Lime	10·9905 ..	11·10528 ..	9·796 ..	7·534
„ Magnesia	2·0136 ..	..	0·046 ..	..
„ Iron.....	0·4623 ..	0·80640 ..	0·390 ..	0·936
Sulphate of Soda	0·3813 ..	..	..	..
Silicex	0·3150 ..	0·33792 ..	0·123 ..	0·314
Grains.....	108·8815			
Carbonic Acid Gas, cubic inches..	48·64 ..	55·00 ..	22·50 ..	32

It will be seen, on comparing the above tables (the ingredients being placed on the same line for that purpose), that the Elizabeth, the Ludwigs, and the Stahlquellen, contain about the same proportion of muriate of soda to the pint of water—that of the Kaiserquelle being nearly half as much more; the muriate of lime is likewise in much greater quantity in this spring. The Ludwigsquelle contains, in addition, about two grains of sulphate of potass to the pint, fractional portions of a grain of this salt existing also in the Kaiser and Stahlquellen. This last-named spring contains about an equal amount of saline constituents as the Elizabeth, with twice the proportion of iron; it is therefore relatively chalybeate, but its action is not to be compared to the more positive chalybeate springs, as Schwalbach or Spa. The amount of iron and of lime in the Kaiserquelle being much larger than in the Elizabeth and Ludwigsquellen,

tend somewhat to modify the active effects of the increased quantity of muriate of soda and magnesia. According to the analysis of Fresenius, the Louisenquelle contains in round numbers 24 grains muriate of soda to the pint, 7 grains bi-carbonate of lime, $1\frac{1}{2}$ grain bi-carbonate magnesia, half a grain carbonate of iron, a fraction more than half a grain of the muriate of potass and magnesia, with fractional portions of a grain, of sulphate potass, of barytes, manganese, silex, &c., altogether 35 grains of saline substance, and 38 cubic inches of carbonic acid gas. On comparing the composition of this spring with the others, the smaller amount of muriate of soda will be noticed; hence the properties of the iron become more predominant than even in the Stahlbrunnen, notwithstanding its larger quantity in this spring. It likewise differs from the other springs in the almost total absence of muriate of magnesia, and may therefore be considered as an acidulous chalybeate—pleasant to the taste, with a slightly sulphurous impregnation. It is consequently available in a certain proportion of cases to which chalybeates are applicable, and is preferable to some from its not producing the usual constipating effect of these agents. Having specified these cases under other heads, I need not here recapitulate them.

NAUHEIM.

THIS small town, having a population of 2,000 inhabitants, lies in the valley of the Wetterau, through which flows the Usa, on the south-eastern declivity of the Johannisberg, being at the eastern extremity of the Taunus range, and near to the historical town Friedberg, on the high road from Frankfort to Cassel. It is about an hour and a half distant by rail from Frankfort, and the same from Homburg by road. The lodging-houses for visitors are tolerably commodious, the number having been greatly increased of late years. The surrounding country is pleasing. From the summit of the Johannisberg, which is crowned by an ancient church tower, is displayed a varied prospect, extending over many miles.

After passing Friedberg, the salt works, consisting of lofty open sheds, filled with thorn-bushes through which the salt-water drops, as at Kreuznach, come into view, and in a few minutes the station is reached—whence an avenue leads to the grounds around the Curhaus, which are of considerable extent, and terminate at an extensive piece of water. At the end of the avenue, on the right, is the foaming and bubbling intermittent spring, resembling water in a state of ebullition, and throwing up a central jet, which rises and falls in the reservoir at stated intervals, and the

Frederick-William spring, subsequently obtained by boring, which throws up an immense column of water to the height of fifty or sixty feet. Near to the former of these springs (Great Sprudel) is another, the Little Sprudel, with the old bath-house, and a gas-bath adjacent, for the administration of the carbonic acid gas, abundantly furnished by the spring, in the form of general baths and douches.

On the opposite side of the road is the new bath-house, with neat bathing cabinets, and every requisite apparatus for the external use of the waters, as douches, shower-baths, &c. In the Curhaus there are likewise bathing cabinets; as also apartments and a public saloon for *table d'hote* dinners and restauration. This building is of somewhat primitive construction, having been opened in 1835, when Nauheim was but little known. Opposite is the Cursaal, containing a ball-room, rooms for gaming, and for reading; the French and one or two English journals being received.

In the adjoining hotel, and in the various lodging-houses, the accommodation, though not of first order, is good. Nauheim presents, however, but few resources for recreation beyond the above mentioned, the surrounding country not possessing many objects of interest, so that it would be considered dull by pleasure-seekers. Great alterations and improvements are, nevertheless, contemplated; the enlargement of the grounds, the construction of a new Cursaal, and of houses in the villa style on the

peculiarities of the Johannisberg; and doubtless the place will, ere long, be greatly resorted to on account of the peculiar valuable properties of its waters.

The springs of Nauheim have been used upwards of a century for the extraction of salt. The principal ones, however, which are likewise used medicinally, were not enclosed till of late years. They are the Great Sprudel (1846), the Curbrunnen (1849), the Salzbrunnen (1851), the Little Sprudel, and the Frederick-William (1855). The Curbrunnen and Salzbrunnen are chiefly employed for internal use, and rise near to each other in the part of the grounds adjacent to the town. The others, for external use, are at the extremity of the grounds, nearest the railroad station. These springs were obtained by boring—the Curbrunnen rose when the shaft had penetrated to the depth of 560 feet; its temperature is $17\frac{1}{2}$ deg. (Reau.). The Salzbrunnen rose, after boring, to the depth of 90 feet (temperature $18\frac{1}{2}$). The Great Sprudel yields an abundant supply of water, whence is derived a great amount of common salt. It is enclosed in a large circular basin, several feet across, surrounded by a platform, to which the ascent is by steps. The water is in a state of great agitation from the amount of carbonic gas. In the centre is the jet, or Sprudel, which is propelled in a perfectly white column of water and gas to the height of ten feet. The depth of the well is 218 feet.

Some interesting circumstances are connected

with the appearance and temporary disappearance of this spring. The boring, after several years' perseverance, was discontinued as useless, and the works had been long abandoned. In the night of the 22nd December, 1846, a violent storm came on, the barometer descending extremely low, when an impetuous torrent of salt water, saturated with carbonic acid, suddenly breaking through the base of the shaft, rose in the form of a white and sparkling pyramidal column to a height of six feet above the level of the soil, inundating the neighbouring grounds with warm water. A tube was passed to the depth of 130 feet, and the water was made available for the baths and the extraction of salt. In 1847, however, the jet was found to lose somewhat of its strength, the water was not so warm, and contained less salt. These circumstances were considered by M. Ludwig to depend upon the dissolving action of the saline waters upon the tube, and the consequent admixture of common cold water from the surrounding superficial strata. This supposition was found to be correct. A fresh borage was effected to the depth of 616 feet, and a copper tube introduced. The spring then continued to furnish a sufficient supply of water for the baths and salt works up to the 2nd March, 1855, when the jet suddenly subsided, and soon ceased altogether, the water yielding but a very minute proportion of salt.

The winter had been extremely stormy. Numerous earthquakes had been experienced at Marseilles, Catania, and in Asia Minor. A great

quantity of snow covered the ground; and it was after violent storms that the spring disappeared, as it was thought, for ever. M. Ludwig, however, regarded its disappearance as accidental, and depending on the melting of the snows and the defective state of the tubes. Under his superintendence others were introduced, and on the 16th April, 1855, the spring reappeared.*

The water is perfectly limpid, and is only agitated after several hours of repose. The spring yields about 90,000 cubic inches of water daily: the quantity, however, varies under the influence of dry or rainy weather. The minimum quantity of carbonic acid which escapes daily amounts to 100,000 cubic feet. The temperature is 28 (Reau.); the water is too salt to be drank; a pint contains, according to Bromeis, 28·7000 grammes of saline substance, of which 26·600 are muriate of soda; about 2 muriate of lime; a like amount of bi-carbonate of soda, with small quantities of muriate of magnesia, iron manganese, silex, bromate of magnesia, and traces of iodine.†

The Frederick-William spring did not appear till the boring process had penetrated to the depth of 936 feet; it is propelled upwards, with considerable noise, through an iron tube, to the height of 60 feet, yielding 50,000 cubic feet of

* Etude sur les Eaux de Nauheim. Dr. Rotureau Paris, 1856.

† The gramme contains about fifteen grains.

salt water, and 100,000 of gas per minute. It is more salt than the other springs, containing 40.660 grammes muriate of soda, 2.860 muriate of lime, 2.379 carbonate of lime, with minute proportions of the substances above specified. It has likewise a much higher temperature than the Great Sprudel—viz., 31 Reau. The Little Sprudel jets only two feet above the surface of the water; it has a temperature $22\frac{1}{2}$ Reau., and contains 24 grammes of saline constituents. It supplies the bath for the poor, but especially the gas baths and douches.

The Curbrunnen and Salzbrunnen have a much lower temperature (18), and are less mineralised, the former containing 19 grammes muriate soda, 1 muriate lime, $1\frac{1}{2}$ carb. lime, with fractional portions of bromate of magnesia, carb. iron, sulphate lime, silex, and traces of iodine. The latter is rather more salt, but has much the same composition.

Besides the salt springs, there is near Nauheim the Schwalheim acidulous spring, said to be more gaseous than any other in Germany, and employed, like the Seltzer water, as an agreeable beverage, as well as remedially in certain cases to which waters of this class are applicable. The water is cold (8). Upwards of 150,000 cruches are annually exported. This spring was not obtained by boring.

The Nauheim springs contain a larger proportion of muriate of soda than other waters of the same class. Thus the Sprudel contains (in a pint

(of water) 267 grains; the Kissingen Soolensprudel contains 107; the Salzhausen spring but 78, and those of Kreutznach and Heilbronn are inferior to it in this respect, as also as respects the amount of gas and high temperature, which materially conduce to the powerful operation of the waters. The spring of Munster-am-Stein approximates nearest to the Nauheim springs, which, however, contain but a small proportion of bromates, and only a trace of iodine, for which the Kreutznach waters and the Adelheidsquelle at Heilbronn have acquired celebrity—the former for the bromates, the latter as being the spring containing the largest proportion of iodine.* That the principal remedial effects of salt springs are, however, not dependent on the minute quantities of these substances which some of them contain, is proved by the fact that waters of this class from which they are absent are no less efficacious in the same order of complaints. As respects the nature of the saline constituents, the more slightly impregnated Nauheim springs (Curbrunnen and Salzbrunnen) somewhat resemble those of Wiesbaden and Borcette, though they, and especially the Sprudel, greatly exceed them in the amount of salts and gas. Being of a much higher temperature, the Wiesbaden and Borcette waters have a more penetrating and milder operation, the baths being less directly exciting to the skin and glandular apparatus, so that the sphere of applicability of these different waters is not exactly identical.

* Challes, in Savoy, is said to contain the most iodine.

The more apparent operation of the Nauheim water, internally taken, is purgative and diuretic. Drinking the water is usually combined with the baths, but in some instances it is exclusively recommended, as in cases of atonic dyspepsia, a relaxed condition of the air passages, with copious mucous secretion. The baths are usually taken at a temperature varying between 22 and 26 degs., and are mostly applicable in the cases enumerated under the head of Kreutznach—viz., deficient activity of the skin of the glandular and absorbent system, scrofulous tumours and diseases of the joints, enlargement of the bones, and chronic eruptions. Dr. Bodé states that he has found the baths very advantageous in some cases of Pott's disease.

From the continued use of the baths, and sometimes after a few have been taken, a papular eruption is occasioned, which, however, is usually of short duration. Boils are likewise sometimes produced from the same cause. The baths exert a remarkable influence in promoting menstruation. Dr. Bodé states, that in almost all women they accelerate the appearance of the catamenia by a week or a fortnight. In some chronic forms of rheumatism and rheumatic gout, drinking and baths of the Nauheim water are highly serviceable; the baths, especially of the Frederick-William spring, are likewise very efficacious in cases of paralysis, when not connected with disorganization of the brain or spinal cord, but of a peripheral origin, and where there exists a general torpor of the constitution. Their great advantage

in these cases has been strongly insisted on by a non-resident physician.* The baths are said to be efficacious in some cases of the loss of power of the lower limbs, arising from the exhaustion consequent on sexual excesses known by the name of *tabes dorsalis*. They are also recommended, combined with drinking, in cases of hypertrophy of the liver and spleen, whether connected or not with a previous residence in marshy localities and attacks of ague, or in tropical climates. The enlargement of these organs usually increases in the first instance, from the use of the waters, prior to its diminution. The other cases in which the Nauheim springs are frequently employed with advantage are suppressed habitual hæmorrhoidal flux, which they reproduce, dysmenorrhœa, amenorrhœa, and leucorrhœa; in which complaints the ascending douche is employed simultaneously with the baths. In some intractable cases of amenorrhœa, vaginal douches of carbonic acid gas have been found effectual in restoring the periodical secretion. Habitual constipation is often better relieved by the use of the Carlsbrunnen or Salzbrunnen, than by waters impregnated with purgative salts, the effect of which is mostly temporary. In chlorosis and anemic conditions of the system, where iron is contraindicated, or where it would not be well borne, great benefit would frequently be derived from the Nauheim baths, combined with the internal use of the water.

Dr. Erlenmayer.—Die Soolthermen zu Nauheim, 1855.

Here, as at Kreutznach—though less frequently—the concentrated deposit from the salt waters (mutterlauge) is added to the baths in some cases. Without great precaution, these baths are apt to give rise to considerable constitutional and cutaneous irritation, eruptions and sometimes erysipelas being produced. The latter result is especially likely to occur when there already exists a wound or ulcer on some part of the body. The proportion of mutterlauge added to each bath rarely exceeds eight or ten quarts. The first impression, on going into one of these baths, is a feeling of coolness of the water; this is, however, replaced by an agreeable warmth, and patients are cautioned against adding more warm water on the first feeling, which would be attended with prejudicial consequences. The mutterlauge is likewise employed, undiluted, as a local application, when, after remaining on the skin during twenty-four hours, or longer, it produces an eruption analogous to that occasioned by tartarised antimony. A still further concentration of the mutterlauge is produced by fresh evaporation, by which the remaining water is abstracted, and the strength of the residuum is doubled. The salt thus obtained is exported to other parts of Rhenish Germany, and serves to make an imitation of the Nauheim baths. About 500 grammes are usually added to each bath, this quantity being often gradually increased to a quart or more.

The gas baths at Nauheim were first employed in 1840, under the direction of Dr. Bodé. This

remedy is, however, by no means new. They are used medicinally in cases of torpor of the capillary circulation, of the nerves and absorbents, as occurs in states of general weakness from old age or other causes; paralysis from rheumatism, exposure to wet or cold, or other causes acting on the periphery. The paraplegic form, according to Dr. Rotureau, yields more readily to the remedy than to other kinds. He remarks that all the paralytic patients who come to Nauheim more or less deprived of the power over their lower limbs are subjected, in the first instance, to the application of the gas bath. This remedy is highly efficacious in some obstinate cases of sciatica, and in other local rheumatic affections of the joints or elsewhere; as also in some intractable cutaneous complaints, as prurigo, when the water baths had failed. Sometimes, however, the gas produces too much increase of pain and excitation of the skin, that it is necessary to suspend its employment, and to have recourse to sedative and emollient baths of common water.

Local gas baths and douches are used with advantage in cases of atonic ulcers, local weakness or loss of power, as of a limb, deafness arising from thickening of the *meatus externus*, chronic diarrhoea in children and grown persons of a scrofulous habit, and sometimes, when depending on torpor of the nerves, in functional amaurosis, chronic scrofulous ophthalmia and palpebral inflammation, ozena or fetid discharge from the nostril, amenorrhoea and leucorrhoea, when not

attended with abnormal sensibility. The baths and douches are likewise not unfrequently employed in cases of defective genital power in males. Abuse has, however, often been made of them in these cases.

BADEN-BADEN.

A BRANCH line of about five miles diverging from the Heidelberg and Bale railroad ascends the beautiful valley of the Oos to Baden, which, in point of scenery and *agrement*, rivals, and in the opinion of many surpasses, Wiesbaden, though less than half its size, and having a population of little more than 6,000. The town is built around the *asse* and on the southern acclivity of a steep hill, extending for some distance along the bank of the *oos*. The streets are clean and well paved, presenting altogether a pleasing and cheerful aspect. It is overlooked by the chateau and grounds of the Grand Duke; considerably higher up the pine-clad hill are the interesting ruins of the old castle, from which lead a broad road and paths through the woods. The public grounds are pleasantly laid out, well shaded, and abundantly provided with seats. At their southern extremity is the *salon*, or Conversation-haus, which is fitted up with great taste; it contains, as usual, a ball-room, with smaller rooms for play and *réunions*. The Salle Louis XIV. is especially rich in decoration; the wing in this building contains a restaurant, where (as also at the principal hotels) are two *tables d'hôte*, at one and five o'clock. The space in front is furnished with small tables for refreshment, which are well occupied in the afternoon,

when the band plays in the elegant rotunda opposite. The other wing comprises a library for the sale of books, views, &c., and reading-rooms well supplied with papers, open gratuitously to the public. Close by is a handsome Trinkhalle, or pump-room, erected some years ago, with a portico extending the whole length of the building, decorated with fresco paintings illustrative of the legends of the country. In the lofty and elegant hall, the water of the principal spring, conducted through pipes from its source on the hill, is distributed to drinkers. The artificial Carlsbad, and waters imported from other places, are likewise here obtainable, being drunk by many persons while using the baths. In the smaller rooms are collections of pictures, engravings, &c., for sale.

On and close to the promenade are the principal hotels, d'Angleterre, de Russie, de l'Europe, de France, Victoria, the Badischer and Zahringer Hofs; the two last named being old-established houses, and containing baths, as does also the Darmstadter Hof, in the interior of the town, the bath cabinets being roomy and convenient. The accommodations at Baden are of the best kind, and the mode of living much the same as at Wiesbaden, except that the former, being more of a pleasure bath, there are not seen on the promenades crippled and infirm persons, and the number of drinkers is very limited, whereas at Wiesbaden, in the height of the season, several hundreds assemble in the Trinkhalle every morning.

A handsome and commodious theatre, decorated

With great taste, has been recently erected for the performance of operas and dramas, adjacent to the conversation-haus, whence a broad avenue lined with booths for the sale of fancy articles leads to the eastern extremity of the town, skirted by a promenade bordered with trees, and having on one side shops and lodging-houses. Here is the Hotel de Hollande, which is likewise a first-class house. At the extremity of this promenade is the Hall of Justice, a modern structure, and the ancient Catholic church and cemetery, where the English service is likewise performed. Beyond this the road is continued over the hill to the valley of the Murg. At the eastern outskirt of the town is a small, newly-erected Protestant church; a spacious and commodious hospital, containing 170 beds, likewise recently built, at the expense of the town; and the Stephanienbad, a modern establishment comprising lodgings, a restaurant, and commodious baths and douches for the employment of the mineral water, of common water, and of the adjacent chalybeate. Across the streamlet is the most-frequented afternoon promenade for carriages and pedestrians, a broad road shaded with fifty oaks and other trees, leading to the convent of Lichtenthal, two miles distant. From this road diverge smaller roads and numerous paths on either side, leading to the woods and to picturesque valleys. There is indeed, perhaps, no bath that equals Baden in respect to the variety and beauty of its environs. Among the points of interest to which excursions are most frequently

made may be mentioned the Mercuriusberg, the highest of the hills by which the valley is enclosed, the Jagd-haus, the ruins of Ibourg, three miles distant, and, further off, the castle of Eberstein, overlooking the delightful valley of the Murg. The most interesting objects in the immediate neighbourhood are the Grand-Ducal chateau, with its grounds and subterraneous prisons (respecting which terrible stories of the Vehmgericht are current), and the ruins of the old castle, which constitutes the most prominent feature in the view from the public gardens and the valley. It commands an extensive prospect of the pine-covered mountains of the Black Forest, with intervening vales on the one side, and of the rich plains extending to the Rhine on the other; while immediately beneath is displayed the varied scene of the town and vale of Baden. Though abounding in beautiful walks and rides on the hills and in the valleys, there are at Baden only two level roads for carriage drives; the high road leading to the valley of the Rhine on the one side of the town, and that to Lichtenthal on the other.

The springs were known to the Romans, by whom the place was called *Civitas Aquensis*; a handsome large *piscina*, lined with marble, was found in excavating near the church, together with other remnants of this people. As respects temperature and the nature of their constituent principles, they have some resemblance to those of Wiesbaden, both belonging to the class of saline thermals; yet, as they contain less than half the

amount of saline substance, and scarcely any gas, they can only be regarded as a weak sample of Wiesbaden, and are less efficient in the treatment of some of the more serious complaints, for the removal of which its waters have acquired a high reputation; consequently the number of patients resorting to Baden, exclusively for the use of the waters, is comparatively small, though the aggregate number of visitors is, perhaps, larger than at Wiesbaden, having amounted during the last few years to from 46,000 to 49,000 a-year.

The principal spring (Ursprung) rises near the large church in the upper part of the town; it has a temperature of 63 degrees. Adjacent is an old gallery for drinkers—almost all of whom, however, go to the Trinkhalle—and a vapour bath with inhalation apparatus. The supply of water is abundant, and most of the bath-houses are supplied from this source. The other springs are the Bruhlquelle (60); the Kühlerbrun (two springs, at 44); the Bütte (an aggregation of four springs), of a temperature of 45 to 62; the Juden, or Jew's spring (62); the Murquelle (56); and the Fettquelle (63).

Analysis of the Ursprung, according to Bunsen:—

In a Pint of Water.

Muriate of Soda	. 16.32	Carbonate of Lime	. 0.88
„ Magnesia	. 0.09	Silex	. . . . . 0.91
„ Potass	. 1.25		—
Phosphate of Lime	. 0.02	Grains	. . . . . 21.02
Sulphate of Lime	. 1.55	Crb. Acid Gas (cu.in.)	1.5

With minute fractional portions of the Carbonates of Ammonia and Iron

The same eminent chemist analysed, in 1860, the Murquelle—which contains near 15 grains of muriate of soda, $2\frac{1}{4}$ muriate of lithia, muriate of potass $1\frac{3}{4}$, of magnesia $\frac{3}{4}$, of lime $\frac{1}{2}$, sulphate of lime, $\frac{3}{4}$, &c., with no gas. Its distinguishing feature is the abundance of lithia, which is as much as $9\frac{1}{2}$ per 100 of the mineralising substance; a larger proportion, Dr. Ditterich observes, than is contained in any other known spring. On this account he considers this water to be eminently calculated to remedy the predominance of uric acid in the system, as forming with this acid the most soluble of all waters, and, consequently, especially applicable (in a chemical point of view) in many cases of gout, and in this variety of gravel and stone. On account of the slightly stimulating properties of the Baden baths, they may be taken with little risk by persons in health, and numbers avail themselves of this privilege, the baths being very agreeable. They may also be used with benefit in some of the cases I have enumerated under the head of Wiesbaden, where a milder action is required. Chronic rheumatism in persons of a nervous or excitable disposition would often be better treated by the Baden than by the Wiesbaden baths. Neuralgic pains, accompanied with general irritability, a disordered condition of the skin, or of the alimentary canal, will also be frequently relieved by these baths; combined with the internal use of the water, or of a cold spring of a more aperient nature. Thus, the artificial Carlsbad water is not unfrequently combined with

the baths, when an aperient effect is required; or Carlsbad salt may be added to the Baden water. Nervous affections of a convulsive nature, as hysteria, with congestion of internal organs and irregularity in the performance of periodical functions, will often be removed by a course of the baths, combined, or not, with some other mineral water, according as circumstances may seem to require it. The same may be said of dyspeptic complaints, attended with a vitiated state of the secretions of the stomach and bowels, as indicated by acidity, heartburn, unusual distension of the stomach after eating. In some of these cases I have recommended, conjointly with the baths, the drinking of the Rippoldsau water, of which a large quantity is annually consumed at Baden. An irritable state of the skin, and some eruptions, as lichen, prurigo, &c., which are frequently dependent upon a disordered condition of the digestive organs, will be mostly benefitted by the above treatment. For erethetic scrofulous patients the Baden waters would be advisable, as preparatory to stronger saline springs, or to a more tonic medication, which frequently cannot be borne, unless it be preceded by remedies which have a more sedative action. Many patients with deranged general health, and hypochondriasis, will also be materially benefitted by the Baden waters; especially if they take an interest in the beautiful scenery of the environs, and in the amusements of the place.

It will be seen that, considering the Baden

springs as somewhat analogous to those of Wiesbaden, though much weaker in point of saline and gaseous substance, I have not thought it necessary to recapitulate all the disorders in which they might be applied with advantage. Though in general in the more long-standing and intractable cases Wiesbaden is infinitely preferable, yet certain peculiarities of diseased condition, or of the patient's constitution, may render the Baden springs the more advisable of the two. They may also be used in some cases as a preparatory measure to the employment of stronger springs of the same class.

A few English families pass the winter at Baden, which is well sheltered on the north by the Castle-hill, and on the east by the Mercuriusberg. The valley is open to the west, but is partially protected from cold winds on this side by the Fremersberg. The winter temperature is higher than that of Carlsruhe or other towns in this part of the country; the air is pure, but moister, and fogs are not unfrequent. Lodgings, as may be expected, are abundant, but there are none of the usual watering-place resources for recreation at this season. There is a resident English clergyman.

RIPPOLDSAU.

THIS secluded bath, hitherto but little frequented by English travellers, though it deserves to be more so, lies in a pleasant valley, enclosed by steep hills, and separated from the Renchthal by the Kniebis mountain, which has an elevation of 3,000 feet above the level of the sea. It is in the Grand-duchy of Baden, about six German miles distant from Strasburg, and eight from Baden-Baden.* The village consists of about thirty houses, mostly occupied by the labouring class, and has a neat and cheerful appearance. From the bath-houses a promenade, sheltered by avenues of lime trees, extends some distance along the bank of the rapidly-rolling Wolfe, a tributary stream of the Rhine: among the lower hills numerous paths have been cut, which enable the pedestrian to ascend, without fatigue, from the valley.

Although, from the position of Rippoldsau among the mountains, the weather is variable, yet the air is pure and bracing, and the inhabitants are for the most part long-lived. The great majority of the visitors is composed of the inhabitants of the grand-duchy, the kingdom of Wurtemberg, of Strasburg, and the adjacent country. The exported

* The railroad which passes near the entrance of the Renchthal has greatly facilitated the access to this bath.

water is, however, a good deal used, especially among the visitors at Baden-Baden.

The bath-house contains a public saloon for dining, neatly-furnished rooms for lodging, with about thirty bathing cabinets, and a douche. Considerable improvements have been effected, and several new buildings erected of late years.

The principal spring (Josephsquelle) rises in a large square saloon, around which are galleries raised some feet above the pavement; the water is agreeably saline and piquant; its operation is cooling; mostly aperient, and at the same time tonic; the presence of iron being manifestly perceptible to the taste. It contains no muriate of soda, of which the Kissingen Ragozzi possesses so large a quantity, but has a not inconsiderable portion of the sulphate of soda and of carbonate of lime, and is very rich in carbonic acid gas.* Its temperature is 8 deg. (Reau.). The Leopoldsquelle and the Wenzelsquelle, which rise at a little distance from the Josephsquelle, contain less salts, iron, and gas. In the same building as the Leopoldsquelle, and close to the spring, there is a cabinet for carbonic acid gas baths and douches, into which the gas is directly conducted from the springs by means of leather pipes.

* According to Kolreuter, a pint of water contains $15\frac{1}{2}$ grains of sulphate soda, $9\frac{1}{2}$ carbonate of lime, $\frac{3}{4}$ grain carbonate of iron, $\frac{1}{2}$ grain oxide of manganese, fractional portions of sulphate of lime, magnesia, silex, &c., and 32 cubic inches carbonic acid gas.

The Rippoldsau is one of the most efficient of tonic waters, though, from the quantity of aperient salts, its operation is of a mixed nature, consequently it cannot be regarded as directly chalybeate, as Schwalbach or Spa. In composition it approaches nearest to the Franzquelle, at Franzensbad, to which Osann compares it. In the latter, however, there is a much larger proportion of saline constituents, especially of aperient salt, and less iron; it also contains muriate and carbonate of soda, which the Rippoldsau water does not possess, so that its action would be more solvent and less tonic.

In debility of the system generally, or of the digestive organs in particular, with inactivity of the liver and bowels, the Josephsquelle would in the majority of instances be highly efficacious, as also where a depurative action is required, from a vitiated state of the blood and secretions, as evidenced by a dry, itchy state of the skin, with eruptions, especially about the face, as acne. From its penetrating operation, and its effects on the mucous membranes, it is well calculated to relieve an obstructed state of the abdominal circulation, attended with sense of fulness in the region of the liver or spleen, piles, &c.; sympathetic bronchial affections, with cough, from derangement of the digestive organs; chlorosis, especially when connected with evident visceral congestion; glandular obstructions in children of a torpid habit, with weak digestive powers and a disposition to the formation of worms; nervous irri-

tability, hypochondriasis, and hysteria, where a laxative and tonic operation is indicated, and where direct chalybeates would not be well borne; and in some cases of deficient or irregular menstruation. Baths may generally be advantageously combined with the internal use of the water.

The Leopoldsquelle is more particularly recommended in chronic ailments arising from suppressed eruptions or discharges; long-standing piles; gouty, rheumatic, and scrofulous affections, and where the Josephsquelle produces a too active operation. Both these springs, however, contain iron and a large quantity of gas, and are sometimes found to be too exciting, especially in states of plethora, nervous irritability, tendency to hemoptysis, &c. In such cases, where a more solvent than tonic effect is required, patients are generally recommended the Natroine, which is artificially prepared from the natural springs, by precipitating the greater part of the iron and earthy salts, and by the addition of soda, so as to combine it with the excess of carbonic acid gas. The Josephsquelle - Natroine contains 20 grains bi-carbonate of soda, sulphate of soda and carbonate of lime 4 grains each, one-third of a grain of iron, and 15 cubic inches carbonate acid gas to the pint. The other, or Schwefel-Natroine, is, in addition, impregnated with a portion of sulphuretted hydrogen gas. Its operation resembles that of the lighter sulphurous springs. The use of these preparations is sometimes made to precede that of the natural springs.

Contents of a pint of water of the Josephsquelle, according to the recent analysis of Bunsen :—

Carbonate of Lime	. . . . .	8.93
„ Magnesia	. . . . .	0.35
„ Iron.	. . . . .	0.28
Manganese .	. . . . .	0.02
Sulphate of Soda.	. . . . .	9.31
„ Lime .	. . . . .	0.42
„ Magnesia	. . . . .	1.86
„ Potass	. . . . .	0.46
Muriate of Magnesia	. . . . .	0.65
Silex .	. . . . .	0.43
		22.71
Grains.	. . . . .	22.71
Carbonic Acid Gas (cubic inches)	. . . . .	32.

The baths of Griesbach and Petersthal, consisting of little else than isolated lodging and bath-houses, are situate in this part of the country. The environs are pleasing, and their saline chalybeate waters are efficacious in dyspeptic, rheumatic, and other chronic ailments. A sojourn at either of them might suit some English visitors, who seek seclusion, rather than the positive effects obtainable from the waters of more-frequented localities.

The most recent publication on this bath is that of Dr. Feyertin—“Rippoldsau et ses Sources Minerales.” Strasburg, 1862.

WILDBAD.

A SEVEN hours' drive from Baden by the Murgthal and across the mountain range to Wildbad presents a pleasing variety of scenery. The two hours' drive from the Pforzheim station over a hilly range, and up a winding valley, between well-wooded heights, is also interesting. This bath is situated in a valley of the Black Forest, surrounded by pine-covered hills, varying in height from 1,200 to 1,500 feet, and is 1,335 feet above the sea's level. Though the springs have been employed for nearly four centuries by the inhabitants of the surrounding districts, they were till some thirty years ago but little resorted to by strangers. The town consists for the most part of a long street of poor-looking houses; its population amounts to 2,500, the majority of the inhabitants being occupied in wood-cutting, agriculture, or other labour. At the further extremity of the street is a Place, containing the church, a handsome Cursaal, the Bath hotel, with a saloon capable of dining 150 persons at the *table d'hôte*, the bath-house and drinking spring, the original hotel, the Bear (with more than 100 rooms, and lately enlarged by a supplementary building on the opposite side of the rapidly-flowing rivulet, Eus), the hotel Frey, and some lodging-houses. Several new houses occupy the left bank of the

stream, where also is the newer large hotel, Bellevue, a detached house at the beginning of the promenade, which is well shaded with trees, and extends for a considerable distance along the bank. The rising ground behind the Curhaus is also laid out as a promenade, and there are several pleasant paths on the acclivities of the hills for pedestrians and donkey riders, but there is only one carriage road. The principal points of excursion are up the valley to the village of Kalmbach. The Enz cloister, the Jagerhaus, the small baths Liebenzell and Teinach, are a few miles distant. Wildbad offers no particular inducements to persons not requiring its baths to select it as a temporary residence. As at all other baths, the band plays at stated hours, but there are no resources for recreation. Occasional *réunions* take place in the public room, but they are mostly indifferently attended. A reading-room is attached to the Curhaus, where one or two English papers are taken in. The climate is agreeable in summer, but unpleasant in early spring, late autumn, and winter, at which time the mountains are often covered with snow. From the elevation of the place, the mornings and evenings are often cold, even in summer, requiring precautions as to clothing on the part of invalids; at other times fogs are not of unfrequent occurrence. Wetzlar states that during the greater part of the year the climate is raw and cold, snow not unfrequently remaining on the neighbouring mountains till late in spring; whilst, from the deficiency of free venti-

lation to which narrow valleys between wood-covered mountains are subject, the atmosphere must be considerably charged with moisture for some time after the falling of rain or heavy dew. Hence it will be perceived that the months during which a sojourn at Wildbad would be advisable are June, July, August, and more or less of September, according as the weather is fine or not.

The water rises, emitting bubbles, through a layer of fine sand, to a height of two or three feet, into piscinæ, in which several persons bathe at the same time; of these there are seven in the large bath-house, two large ones for men, and two for women, each capable of containing from thirty to forty persons, and five smaller ones, of which the most select is the Fürstenbad, or Prince's bath. There are also in this building forty-three commodious bathing cabinets for the use of those who prefer private baths. In the adjacent new bath-house there are twelve private baths, six for men, six for women, a piscina appropriated to the townspeople of either sex, in which collectively seventy persons can bathe at the same time. It is estimated that in the ten piscinæ and fifty-seven separate baths 250 persons can bathe in an hour. There is also a hospital for poor patients requiring the waters. Dr. Burckhardt is the inspector. Dr. Hausmann, another of the physicians, has a large house on the Place where lodgers are accommodated.

The temperature of the different springs ranges from 27 to 30 Reau., being that best adapted for

bathing. Their chemical composition is the same, the amount of saline and gaseous substance being exceedingly small; the solid residuum, after an analysis of a pint of the water, scarcely exceeding three grains, so that the medicinal properties of the water may be considered as in great measure depending upon its temperature, in which respect it differs from most of the other German waters, which require to be either warmed, or cooled down to the proper degree of heat for bathing. At some of the French baths, however, where the water has great analogy with that of Wildbad, as Luxeuil, Plombières, and Neris, it is also used at the natural temperature; though, as the springs are more numerous at these places, and the range of temperature is more extensive, they can be better made to fulfil a larger number of the indications of diseased states. Thus, at the two first-mentioned places, cases which are unrelieved by baths at from 27 to 29 degrees, are not unfrequently greatly benefitted by the use of one of the hotter springs, or by the vapour, which is in great abundance in the *étuves*, whereas several of these patients would probably have to return from Wildbad no better than they came.

Waters of this kind are tasteless, feel soft and unctuous to the touch, are exceedingly agreeable and refreshing as baths, producing generally a tranquillising and sedative effect upon the nervous system; hence they are highly serviceable in most of those cases where a high degree of irritability exists, which would render the em-

ployment of strongly-mineralised springs unsuitable.

Of this nature are some gouty, and particularly rheumatic and paralytic cases, occurring in young or middle-aged persons; or in those of a nervous temperament, and unable to bear the action of a powerfully stimulating water.* In local paralysis, arising from accidents, or from diminished nervous energy of the spinal cord, or of particular nerves, they are also calculated to be of service; though, in many instances, a more strongly-mineralised spring, if well borne, would be more likely to be productive of benefit, and in a shorter space of time. Certain cases, however, now and then occur which appear to indicate the use of a strong saline, or sulphurous water, but which are not benefitted by it, and are relieved by the employment of one of the simple thermal springs. The same may be said of neuralgic pains or *tic* in various parts, without our being able to offer any other explanation of the circumstance, in the present state of our knowledge, than that of the peculiar idiosyncrasies of individuals; as is frequently seen in the practice of medicine, that remedies which are generally efficacious in certain diseases, are occasionally powerless, though the patient be to all appearance

* The cases adduced in the work of Dr. Heim (Wildbad et ses Eaux Minerales), in proof of the efficiency of these waters, almost all refer to youngish persons, or to those of a nervous temperament, which corroborates my opinion, as expressed in a former edition, before I had read his work.

under similar circumstances as others who have been benefitted by these remedies.

In several nervous complaints, and in convulsive affections of an hysterical nature, with irregular distribution of blood to particular organs, occurring in delicate females, or those possessed of a high degree of susceptibility, a course of baths of this kind would be likely to be attended with considerable advantage, both from the tranquillising effects, and by their restoring the equilibrium of the circulation and of the nervous power between different parts. Those painful affections depending upon morbid sensibility, and often connected with irregular muscular action, which I have described in my work on Nervous Disorders, and some of those paralyzes of a purely functional nature, occurring for the most part in young females, would also be very likely to be relieved by the Wildbad baths, combined with, or succeeded by, the internal use of tonic remedies, if the patient's condition allows of their employment. Waters of this class would also be applicable with advantage in some dyspeptic cases, with the character of irritation, and attended with painful digestion, or cramp; and in those cutaneous affections marked by increased vascularity and irritability of the skin, as some papular eruptions—lichen, prurigo, &c. The pains from old wounds are often relieved by these baths. Occasionally persons who go through a course of baths experience a degree of feverish irritation, which subsides on the baths being discontinued a few days; as also an increase of former pains for a

time. This, however, occurs but seldom, as compared with its frequency under the use of some more strongly impregnated springs.

The greater elevation of some springs of this class, as Gastein, exercises a material influence on their operation—rendering them better adapted to certain cases. The diminished atmospheric pressure, and the action of a rarefied air, are doubtless conducive in no small degree to the results obtained from these baths. Wildbad is, however, as we have seen, situate at a considerable elevation above the sea.

BATHS OF GERMANY.

PART II.

CENTRAL GERMANY.

FIRST DIVISION.

BATHS OF BOHEMIA AND AUSTRIA.

CARLSBAD.

THE position of Carlsbad is in the highest degree picturesque, and agreeably impresses the stranger on a first view. It lies along the banks of the little river Tepel, in a narrow winding valley enclosed between lofty hills, clothed to their summits with the pine, beech, and ash, on the acclivities of which numerous paths, easy of ascent and well supplied with seats, have been made, leading to points which command extensive views of the surrounding country. The town principally consists of the Old and New Wiese—the former occupying the left, the latter the right bank of the river, which is crossed by numerous foot-bridges—and of short divergent streets ascending the hills. The Old Wiese is bordered by rows of chesnut trees, beneath which are booths, terminating in a Place—containing the Salle de Saxe (a public room and

restaurant), in which the band plays twice a week. The Wiese is the chief point of *réunion*, and here are the best shops. A well-shaded path beyond the Place is continued for half a mile, joining the Marienbad road, and extends up the hill to the right to the Schweitzerhof. Another agreeable path extends on the hill's side behind the Salle de Saxe and the Wiese to the Hirschsprung, a rock so named from the tradition that a stag, being pursued by the Emperor Charles (who gave his name to the baths), leaped from this point into the valley, and thus led to the discovery of the spring.

The New Wiese contains some of the best hotels and lodging-houses, and a small theatre; continuous with it is a street leading to the Sprudel and covered promenade. This spring exhibits the phenomenon of a perpetual *jet d'eau* of considerable thickness, varying from three to five feet in height. The immediate neighbourhood of its basin is enveloped in vapour, and an odour is emitted resembling that of boiled meat. The other springs principally used—the Mühlbrunnen, Neubrunnen, and Theresienbrunnen—rise on the opposite side of the river, and are connected by a covered gallery, which is much thronged by water-drinkers. On this side is also a large edifice, the military hospital recently erected for the accommodation of Austrian soldiers and officers requiring treatment by the waters. On an elevation behind the hospital, at the entrance of the Gartenthal, a small English church has lately been built. The market-place will attract the

attention of the visitor from its mediæval aspect, the gables of the houses fronting it, and its centre being embellished with a monument of considerable antiquity. A steep ascent leads up to the Schlossbrunnen, near which are some hotels and lodging-houses. Several of these in various parts of the town have English names. In this part are the King of England and the English Fleet. At the other end of the Wiese, opposite the Salle de Saxe, on an eminence, the large hotel, Windsor Castle; elsewhere, the Walter Scott, &c. Among the largest and most-frequented hotels may be specified the Deutschen Hof, on the New Wiese, the Hof von Hannover, and the Goldnen Schild. There are no *tables d'hôte*, as at the Rhenish baths, dinners being served separately, *a la carte*, consisting of plain dishes; articles of diet which would be likely to interfere with the action of the waters being prohibited by the medical censors, whose authority is tacitly admitted by hotel keepers and *traiteurs*. Neither is there any Cursaal for *réunions*, though a new public room was opened last season, for occasional balls and entertainments, a short distance beyond the Salle de Saxe.

Carlsbad, however, except in the beauty of the surrounding country, offers but little resource for the idler, being mostly resorted to by invalids. Games of hazard are not allowed in the Austrian empire. There is not that indiscriminate mixture of visitors which is met with at baths where the Goddess of Pleasure has numerous votaries. Many persons consequently find Carlsbad dull,

from there being no place wherein to pass the evenings or to congregate in bad weather.

Among the most interesting spots in the immediate environs, may be mentioned Lord Findlater's Mound and Temple, commanding fine views, and accessible by broad paths through the pine-woods, the hamlet of Hammer, and the Jâgersaal. The view from the Panorama-hill, on the opposite side of the valley, is likewise most interesting, embracing a bird's-eye view of the town and a considerable extent of surrounding country.

The population amounts to 8,000 souls, almost all Catholics. The church is a large, handsome building exteriorly, and of high antiquity; there is no other edifice interesting in an architectural or artistic point of view. The town presents a bustling aspect in the season, from its being mostly limited to the river's banks, and the shops and booths make a goodly display of wares to tempt the purchaser. One of the most thriving businesses is the money-changer's. Anything in the shape of solid coin is a rarity in this territory, paper being in general circulation, and the notes (some being of the value of twopence) bearing a fictitious value, in which accounts are made.

There are two establishments for baths of the mineral water—one close to the Sprudel, containing twenty-five cabinets, with douche and vapour apparatus; the other, opposite the Mühlbrunnen, containing eighteen cabinets. Bathing, however, constitutes at the present day a very subordinate part of the treatment, in comparison with its em-

ployment at other thermal springs. Mud baths are occasionally taken, but the mud is derived from a common turf, and in the opinion of Dr. Seegen, has no medicinal efficacy. Over the Mühlbrunnen baths is a public subscription reading-room, where one or two English papers are taken.

The springs are of high temperature. That of the Sprudel is 58 Reau., the Mühlbrunnen 49, the Neubrunnen and Theresienbrunnen 43, the Market spring 39, the Schlossbrunnen 42. Besides the above mentioned, there are the Hygea spring, rising close to the Sprudel, and supplying the baths, and the Bernardsbrunnen, which is comparatively little used. The surplus Sprudel water flows into the river, and the stones in its bed at this point are thickly encrusted with its ochrey deposit. The incrustation deposited by the springs is worked into various figures, ornaments, &c., for sale.

There are, perhaps, no mineral springs that have stood higher in general estimation than those of Carlsbad, none which, since their first discovery, have better sustained their reputation through successive generations, nor are there any on which so much has been written.* The first account of any importance was published by Dr.

* It appears by a statement lying before me that the number of families visiting Carlsbad in 1756 amounted to 134; in 1800, to 744; in 1820, 1,461; 1840, 2,882; 1850, 4,227; and in 1860, to 6,366. In 1850 there were exported 101,114 large and small bottles of the water; in 1861, 240,000 bottles.

Payer, in 1522 (*Tractatus de Thermis Caroli IV.*). The work of Sumner appeared about fifty years later, when the waters were chiefly used for bathing; he describes the two large piscinæ—one for men and the other for women, who bathed in common. He was the first who made known the composition of the waters. Among the other works published anterior to the present century may be mentioned those of Schackern, who wrote three dissertations on the internal use of the waters in gout, and on diseases of the stomach and bowels; the voluminous account of Dr. Springsfeld; and the valuable scientific one of Dr. Becher (*Neu Abhandlung von Karlsbade*), which appeared in 1772.

There is so much truth and point in what Becher states to be the general origin of most of the diseases in which the Carlsbad springs are calculated to be of service, that I shall take the liberty of transcribing his remarks: "When a man follows an indolent mode of living, and enjoys himself a good deal in regard to eating and drinking, the food which, in a 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 juice, which does not form with healthy blood an homogeneous mixture. It is not immediately, nor even in the first years, that the depraved state of the juices causes any particular inconvenience to the individual, which might warn him of the ap-

proaching evil. He still finds himself tolerably well, although 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 individual will not fail to experience the effects, as the acridity stimulates the sensible 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 juices, which stagnate in the obstructed vessels, fall at last into corruption. They become decomposed, corrode the solid parts, and occasion irremediable changes in the organs. The glands become hardened almost without hope of their again becoming resolved. The obstructed bile hardens in the gall-bladder into gall-stone. The urine, which remains a long time in the excretory vessels, lays the foundation for stone in the kidneys," &c.

Becher considers the action of the Carlsbad waters under five heads: 1st, As the means of remedying weakness in the primæ viæ, and freeing them from long-accumulated impurities. 2nd, As remedial means well suited to persons leading a sedentary life, who eat and drink a great deal, and labour under symptoms of derangement of the digestive organs, with habitual constipation. 3rd, As a means of resolving and removing abdominal obstructions, especially of the liver; and

jaundice, and hypochondriasis resulting from this cause ; as also swellings in the lymphatic glands ; piles from obstructed circulation through the liver ; deranged menstruation from the same cause, or from inactivity of the capillaries of the uterine system. 4th, As a means of freeing the blood from its acrid parts, which it causes to be thrown off on the extremities, or by the surface of the body (a mild attack of gout being consequently in some cases induced by them, the person remaining free from subsequent attacks for a long period) ; and as a means of clearing the urinary passages from stone and gravel, though he acknowledged that the water is not capable of dissolving large calculi, but he stated that it is of great service in carrying off small calculi and gravel, and in remedying the calculous diathesis. 5th, As an efficacious remedial measure in several other diseases, the origin of which is obscure.

Becher warned patients against the habit of too copiously drinking the waters, which are then apt to cause unpleasant distension and weakness of stomach ; he says : “ It is a mistake to think that the beneficial action of the Carlsbad water consists principally in the increased excretion from the bowels.” Kreysig, De Carro, and more recently Dr. Seegen, and others, also add their testimony, that various diseases are not unfrequently cured by the Carlsbad water without its inducing increased action of the bowels. Among the writers of eminence who have more recently treated of the

Carlsbad waters may be enumerated Hufeland, Kreysig, Clarus, Osann, and Vetter; and of the local practitioners, De Carro, Ryba, Hlawczek, Fleckles, and Seegen. Innumerable articles have also been published in the medical periodicals respecting the virtues of these springs.

Kreysig, speaking of the solvent effects of the Carlsbad waters, states that he has frequently observed them to induce constipation which did not previously exist; he further says: "A phenomenon which I have constantly remarked, is that the disposition to obstructions which takes place during the use of the waters is always accompanied with a swelling of the abdomen, and I cannot doubt that this is the effect of the water, which, after having penetrated into the economy, begins by softening and tumefying the organs which are often previously shrunk up, and as if hardened; it arouses from their torpor the humours which are almost concreted in their vessels, or in the parenchyma, and reduces them to a fluid state. Many patients have to pass through this process; it begins sooner or later, at the end of a week or a fortnight, and lasts a longer or shorter period, according to the resistance which the waters experience. This course of nature, and this action of its *vis medicatrix*, may be observed in some external parts; in cases of glandular indurations in the interior of the body they may be recognised by means of examinations frequently repeated. The diseased organs, particularly the glands, gradually increase in size, become sensible, and even painful to the touch, and afterwards

gradually soften and diminish, until they altogether disappear. The abdominal organs seem at this period to be in a state of softness like wool. The act of evolution, and of softening with swelling, appears to be opposed to the evacuating function of the bowels, and the physician ought to understand the voice of Nature, and to know her wants, in order to direct the contest to the advantage of his patient. A great number of patients scarcely notice this period, others pass through it in from three to seven days, in others it may last for weeks, until the end of the course, which even then may be without result. Many patients consequently allow themselves to be intimidated, and are afraid to continue the waters, believing that they are not suited to their condition, because they lose their appetite, and their digestion is badly performed : it is thus that the state which should necessarily accompany the evolution of the evil, and which is only a degree of transition from the disease to the cure, is often mistaken for a debility of the stomach. It is not, however, a weakening of the stomach from the effect of the waters, but consists in a temporary diminution of the functions of the bowels and of the excretions ; and the re-establishment of the internal conditions of these functions is preparing during this interval. When the evolution has attained its maximum, abundant evacuations take place without difficulty, and a general amelioration is the consequence ; the patient feels his strength increase, the head becomes free, his good-humour returns, his

appetite is restored, and with it his digestive powers.”*

These critical effects do not take place in many cases; in some instances they occur some weeks or months after the patient has discontinued the use of the waters, many experiencing no marked effects during the course; and several, who leave the place no better, are often disappointed in their action, until they experience a crisis, and the amelioration which succeeds it. Dr. De Carro says: “Whoever has experienced at Carlsbad a regular crisis, will never more question the power of its waters, the revolution they cause in the whole system, nor the artificial disease excited by such perturbation—the Germans call it very properly a bath-storm (Bad-Strum).”†

As further proofs of the solvent powers of the Carlsbad waters, it is stated that during their use encysted tumours have disappeared, nasal polypi have spontaneously fallen off, that bony prominences diminish, and that previously fractured bones become softened at the point of fracture. Some similar effects have also been observed from the use of the artificial Carlsbad waters in Struve’s establishments.

The supply of water yielded by the different springs is very abundant; the Sprudel alone yields 330 pints a minute; the taste of the water is slightly saline, and is not unlike that of Wies-

* De l’Usage des Eaux Minérales.

† Essay on the Waters of Carlsbad.

baden ; though generally acting upon the bowels, its action, under proper management, does not produce debility, even when the course is long continued ; but, on the contrary, an increase of appetite and strength are a frequent result. It also promotes the urinary and cutaneous secretions, more especially when it does not affect the bowels. In some persons, when first taken, it occasions constipation, and tendency to cerebral congestion ; even a single glass occasionally produces vertigo and other unpleasant symptoms. As the system becomes saturated with the water, symptoms peculiar to a state of plethora are often induced, such as feverishness, fulness of the pulse, agitated sleep, heaviness of the head, pains in the abdomen, or in the region of the sacrum, with hæmorrhoidal tumours or bleedings, a sense of oppression of the chest, epistaxis, &c. These effects are, however, now less frequently observed than formerly, when the waters were exhibited in larger quantity.

There is not much difference between the springs, with respect to the amount of their constituent parts, the chief difference being in their temperature. The Sprudel has even a higher temperature than the Kochbrunnen at Wiesbaden, and is the hottest spring in Germany. On this account the opinion is generally entertained, both among practitioners and patients, that its operation is more exciting than the other springs, which are considered more aperient, and are not unfrequently recommended previous to its employment ; but

this more powerful action of the Sprudel is sometimes a matter of individual idiosyncrasy, as some delicate and excitable patients bear it very well when the other springs disagree. The late Dr. De Carro was of opinion that one spring is not more exciting or stronger in its action than another; he says on this point: "If we appeal to practical experience, free from prejudice, we shall perceive that the difference in the effects produced by the different springs is peculiar to the individual; that the same water which purges one may constipate another; that frequently the spring which causes congestion and vertigo in one individual, establishes the most perfect equilibrium in the functions of another; that, notwithstanding the invariability of the physical and chemical qualities in our springs, their effects often vary from one year to another in the same person."*

Most of the resident practitioners consider the action of the Sprudel to differ somewhat from that of the other springs. The Marktbrunnen, Mühlbrunnen, and the Schlossbrunnen are very analogous in their operation.

The use of the Carlsbad waters is counter-indicated in very plethoric individuals, and those disposed to active inflammations, hæmorrhages, and discharges; in states of great debility of the muscular and nervous systems, diarrhœa, profuse sweatings, hæmoptysis, indurations so far advanced

* "Du Choix des Sources," in the "Almanach de Carlsbad" (1832).

as likely to terminate in suppuration, or which are of a scirrhus nature; in the tendency to consumption or dropsy; and also in scorbutic and syphilitic diseases, which they generally aggravate.

The cases in which these waters are most applicable, may be inferred from the preceding observations to be chiefly certain diseased states of the abdominal and pelvic viscera, especially *engorgement* and obstructions of the liver, the system of the vena-portæ, the spleen, mesenteric glands, and uterus; and the consequences which these morbid conditions frequently entail, as gouty affections, urinary and biliary calculi, hæmorrhoids, hypochondriasis; but as several other mineral springs, very different in their nature from those of Carlsbad, are also recommended in these diseases, it may be as well to say a few words respecting some particular conditions which more especially indicate the preference to be given to the Carlsbad waters over others.

It does not follow because a person labours under an obstructed and indurated state of the liver, or is afflicted with gout, that he should necessarily be sent to Carlsbad, which in some of these cases would do more harm than good; hence may be seen the danger of recommending empirically any particular class of remedies for diseases abstractedly considered, without an inquiry into the peculiarities of individual cases; and also of invalids acting on their own responsibility, or on the advice of other sufferers and non-professional persons, who are not qualified for investi-

gating these individual peculiarities. Of this misapplication numerous examples are every year seen at the different baths. Such persons, whether acting from a want of confidence in their medical advisers; from a mistaken supposition that, if mineral springs do no good, they cannot do harm; or from a misplaced economy—frequently lose all the time that might have been well employed, and do their health great injury. They may not unaptly be compared to the bear in the fable, who, in attempting to play on the harpsichord—by the roughness of his touch—soon broke all the strings, instead of eliciting harmonious sounds. It is by such persons, also, that particular mineral springs are often abused, as having been of no service, or as having done them more harm than good, when in point of fact it is not the springs that are to blame, but the individuals themselves, for employing them *mal-à-propos*, and in an improper manner. There is no class of remedies calculated to do so much good in most chronic diseases as a well-directed course of mineral waters, and none more likely to be prejudicial when improperly used; especially if the springs be energetic in their action, as those of Carlsbad.

A person of full habit, ruddy complexion, and active circulation, in whom there exists a disordered state of the digestive powers, with hepatic *engorgement*, requiring for its removal a course of mineral waters, would, in general, be a case less suited to Carlsbad than for the use of one of the

cold saline aperient springs, as Homburg, Rippoldsau, or Kissingen; or where the quantity of gas contained in these springs would be likely to disagree, and a more active aperient effect is required to reduce the general plethoric state of the system, the waters of Pullna or Seidlitz might be substituted. With many persons, also, especially of the female sex, of considerable *embonpoint*, leading an inactive life, who are liable to become flurried on slight occasions, and are subject to irregular determinations of blood to particular organs (marked by flushings, headaches, and coldness of the extremities), the Carlsbad waters, though they might be indicated for existing disease of the digestive organs, would often disagree, and a course of tepid bathing in an alkaline or saline spring, with the occasional use of the douche, and the internal exhibition of a water like Marienbad, or one of those which I have named, would be more likely to be productive of good effects. On the other hand, Carlsbad would, in my opinion, be best adapted to those cases where the person is of spare habit, with languid circulation, sallow complexion—following sedentary occupations, or those requiring much mental application; as is the case with many residents of capital cities engaged in commercial, political, or literary avocations, and who at the same time often indulge freely in the pleasures of the table, by which derangement of the digestive organs and obstruction of the circulation through the abdomen are induced, with their consequences,

liver disease, inactivity of the functions of the bowels, piles, &c. Such persons have very often rendered their complaints more intractable by the quantities of medicine they have been accustomed to take, which, affording them temporary relief, enables them to continue for some time longer their prejudicial habits. The same may be said of those individuals whose digestion has become impaired, who have liver induration, and other local complaints arising from a residence in tropical climates. In such cases, the solvent and alterative action of the Carlsbad waters is often productive of the best effects in dispersing the visceral enlargement, and in improving the general health. When there exists in such persons much irritability of the system, baths and douches of the Wiesbaden water, either combined or not with its internal use, or drinking cold aperient water, according to circumstances, will often be preferable; and also when active effects upon the bowels are not required.

But it is difficult to specify in a definite manner in any work the particular states of diseases to which Carlsbad, or any other active mineral water, would or would not be suited. So much depends on the peculiarities in individual cases, that only general indications can be laid down, liable to many exceptions. As an experienced author I have before quoted observes, "In order to determine with exactness the cases in which the Carlsbad waters may be used, the physician should be familiar with the art of well examining the dis-

eased individual, to be able to ascertain with precision the degree of importance which attaches to the morbid condition of internal parts. He must, in the second place, be able to appreciate with certainty and precision the special relation of the waters with the living body, and their mode of action, such as constant experience has taught us."

The author of one of the most esteemed recent standard works on mineral waters, who occupies the professor's chair on the subject in Vienna (the only university where mineral waters form part of the course of study), and who resides at Carlsbad during the season, observes—with respect to the use of the waters in liver and other diseases of the abdominal viscera—"Carlsbad is often looked upon as the last remedy in long-standing liver disease; but experience proves that the number of cases of this kind cured there is not so great. Some other forms of abdominal lesion, and obstructed circulation through the lungs from extensive emphysema, are as little curable by Carlsbad as by any other water."

With regard to the dangerous effects ascribed to the operation of the waters in some cases, he further observes: "In cases where Carlsbad is indicated, the careful employment of its waters need occasion no apprehension. The great disturbance of the circulation, and the consequent congestion of the brain, or apoplexy, which sometimes occur, usually arise from drinking too copiously of the water, and might be produced by a

like amount of hot beverages in persons predisposed to congestion. Such a predisposition need not exclude the waters when indicated by the nature of the case; for a careful use of the cooler springs will remove it."

"The Carlsbad water is not a purgative. A special relaxed state of the bowels seldom ensues from its use, and mostly occurs on the first days of drinking in individuals whose alimentary canal is very susceptible. In the majority of cases its action is, by the proper employment of the water, moderately increased. We have, however, often to treat in Carlsbad the most obstinate constipation, and correct observation teaches us that these cases are not to be remedied by large quantities of water. The bowels must then be relieved by other means; their normal action only returns gradually, frequently after several weeks' use of the water. The *critical* diarrhœa, so much spoken of, mostly arises from errors in diet, catching cold, or an immoderate employment of the waters. By the slow operation of the water on the alimentary canal, its activity is rendered more lasting than it would be by taking purgative waters. The warmth of the water seems also to co-operate by gradually raising the depressed energy of the muscular tunic of the alimentary canal."*

In the forms of atonic gout which affect individuals of a bilious temperament and sedentary

* Dr. Seegen.—Handbuch der Heilquellenlehre. Second Edition. 1862.

habits, combined with much stomach and liver derangement, the Carlsbad springs will often be better calculated than any others to remedy the disease, and prevents its recurrence. In this opinion, expressed in the former editions, I find Dr. Seegen concurs. "Gout, when a consequence of abdominal congestion," he says, "is often most favourably acted upon by Carlsbad, especially when stomach catarrh, hyperemia of the liver, are its accompanying symptoms." They would, however, not be so applicable to the generality of cases of gout in persons of full habit, addicted to free living, whose pulse is full, in whom the attacks take place regularly, and are succeeded by an immediate return to health; neither would they be so well adapted to the kind of gout termed nervous, occurring in irritable subjects, when the attacks are irregular, shifting suddenly from one part to another. In the gout of elderly people, who are in other respects in tolerable health, whose digestion is not materially impaired, in whom the disease is hereditary, and often accompanied with the deposition of calcareous concretions in the joints, Carlsbad would be less applicable than Wiesbaden, which in similar cases is productive of the most marked beneficial results. In young persons, also, where, in consequence of hereditary tendency, the disease has developed itself at an early period, I should consider the Carlsbad waters inapplicable, and the Wiesbaden baths as a means better calculated to procure a permanent cure.

Hypochondriasis in its more material form is a complaint in which Carlsbad is often productive of the best effects, especially when connected with obvious disease of the digestive apparatus, hepatic obstruction, and constipation, and when it is of long duration. Sometimes, as also in chronic, abdominal, and other diseases, little or no benefit is experienced the first season, but by subsequent attention to the mode of living, and by returning to Carlsbad a second season, the complaint will generally be overcome. The same may be said of decided melancholia, in several cases of which the waters have been highly serviceable. Dr. Fleckles, in a brochure on the subject, speaks highly of these effects in mental disorders connected with derangement of the abdominal viscera or of the uterus, quoting several cases illustrative of their efficacy.* Dr. Fleckles has also published a separate account of the beneficial operation of the Schlossbrunnen in chronic catarrh of various organs, especially when connected with a congestive state of the liver or other abdomino-pelvic viscera.† He particularly recommends it in cases of chronic laryngitis, with abdominal complication, occurring in

* Die Thermen von Carlsbad bei einigen Psychosen. 1857.

† This spring rises at a height of forty feet above the Sprudel; its temperature is 41 degs.; amount of saline substance 44 grains. It is richer in carbonic acid, and its action is milder than that of the other hot springs. On the night of the 2nd September, 1809, on the sudden

middle-aged persons, in hoarseness and granular throat, in catarrhal dyspepsia, and vesical and uterine catarrh.

In cases of gravel and stone occurring in persons about the middle period or in advanced life, who have been addicted to the pleasures of the table, and whose digestive organs are a good deal disordered, a course of these waters, by correcting the disposition upon which the calcareous concretion depends, would be the most likely means of cure and of preventing recurrence. Their action, though not having a lithontriptic property, yet frequently causes the expulsion of small calculi from the bladder. The case is related in one of the Carlsbad almanacks of Dr. Bigel, from whose bladder fragments of stone, remaining after the operation of lithotrity, were expelled by the use of the waters. In the majority of such complaints, however, when not complicated with much derangement of digestion, the Carlsbad waters would, perhaps, not be so recommendable as Vichy, or a cold, alkaline, gaseous water, combined with bathing in a thermal saline one.

Dr. Seegen, comparing the action of Carlsbad with that of the Vichy waters in these cases, observes that, as respects the alkalisation of the

outbreak of the Hygea, this spring disappeared. One morning in 1823, however, vapour was perceived to issue from a crevice in the soil, new borings were made, which were successful in causing the spring to reappear. Its composition was the same as before, but its temperature was lower.

urine (which at Vichy often arises after a bath, and is tolerably permanent from the use of the waters), it is only that passed in the morning, immediately after drinking the Carlsbad water, which is alkaline, and that it again becomes neutral, or acid, in the after part of the day. Even after several weeks' use of the water, that passed during the night was acid. "Carlsbad," he says, "has been placed in the same category of waters, as regards its effects, as Vichy. They have both, indeed, much action in common, especially as respects lithic acid formations in the kidneys and catarrhal affections of the gall-ducts, but their composition is in two important respects very different, and, consequently, their mode of operation must be different. Carlsbad possesses no (little?) carbonic acid, and would, therefore, excite the stomach much less than Vichy, and is better calculated to subacute cases of stomach and bowel catarrh. Carlsbad contains, moreover, sulphate of soda, besides the chief element that characterises saline springs, and which so greatly promotes its beneficial operation in congestive states of the abdomen."*

Both Dr. Fleckles and Dr. Seegen adduce cases of diabetes in which the waters have been of essential service, though a cure was not effected. "In more than twenty cases," says the last-named physician, "I found that, after a longer or shorter period of treatment, not only were the

* I have referred to this subject under the head of Vichy, in "The Baths of France."

symptoms relieved, the amount of urine and the thirst diminished, but that the formation of saccharine substance became less every week, and was often, after a four or six weeks' course, reduced to a minimum. This result did not occur merely in the slighter forms of the disease. The cure was, however, not lasting; the saccharine secretion recurred after a longer or shorter time, but its quantity was less than before, and the patients remained in a relatively tolerable condition for some years."*

The consequences of intermittent fevers contracted in malarious districts, as enlargement of the liver or spleen, and a generally deteriorated state of health, are often cured by the internal and external use of the waters. Several of the patients in the Military Hospital are thus afflicted. Periodical complaints of a nervous character, as hysteria, neuralgia, and tic, especially if connected with a disordered state of the digestion, or with visceral congestion, may often be cured by a course at Carlsbad. Other mineral waters may be equally efficacious in these complaints—as also in some of the others in which Carlsbad is recommended. As, however, I have before observed, it requires a proper inquiry into the existing peculiarities and circumstances, to enable the physician to form a judgment as to the kind of spring likely to be most applicable to any given case. The oldest-established resident physician is Dr. Hochberger.

* *Op. cit.*

Analysis of the Sprudel by Berzelius.

	In 16 of water.
Carbonate of Soda	9·69500
Muriate	7·97583
Sulphate	19·86916
Carbonate of Lime	10·05005
Fluate	0·02458
Phosphate	0·00169
Carb. Strontian	0·00737
Earthy Phosphate	0·00246
Silex	0·57715
Carbonate of Iron	0·02780
Carbonate of Magnesia	0·00645
	<hr/>
Grains	41·92
Carbonic Acid (cubic inches)	7·8

About a two hours' drive through a pleasing country leads to Geissshubel, a cold, acidulous spring, not unlike in composition and taste the Fachingen, and a good deal drunk at Carlsbad, being not unfrequently mixed with wine; it is exported to Prague, Vienna, and other large towns in the empire. A pint of water contains seventeen grains of saline substance, of which ten are bicarbonate of soda, and three bicarbonate of lime, with twenty cubic inches of carbonic acid gas. Its efficacy in the cases to which waters of this class are applicable has been recorded by Professor Löschner, of Prague, in a pamphlet which has gone through several editions.

From the narrowness of the valley of Carlsbad, the heat is frequently oppressive in the middle of the day, while the mornings and evenings are cool, especially late in the season.

TEPLITZ.

THIS town, containing 7,000 inhabitants, is now very accessible by the railroad from Prague or Dresden ; the nearest station being Aussig, from which it is about two hours distant, and about five hours across the country by road from Carlsbad. It lies at the base of the Wacholderberg, in an open and agreeable valley, bounded on the north and east by the Erzgebirge chain.

Wacholderberg lies in an open and agreeable valley, bounded on the north and east by the chain of the Erzgebirge hills. At each extremity of the principal street is an open Place ; in one of these stands the Town-house ; in the other the Schloss, or château of the Prince de Clary, to whom the territory belongs. The grounds behind the château are extensive, laid out *à l'Anglaise*, and are open to the public. The principal alley, being the usual promenade of the Teplitz society, presents an animated scene during the season, and a musical band is in attendance at stated hours ; adjoining are public rooms for restauration, occasional balls and concerts, and the *table d'hôte*, which, with that at the Poste, are the only ones in the town ; it being the custom, as at Carlsbad, to dine *en famille*, or *à la carte*. The other public grounds are the Turner-park, and the Probstauer garden. Being a great place of resort for princes, diploma-

tists, and the *haut ton* of Germany, there is but little general association: Teplitz would not, consequently, offer much resource for the amusement of a stranger, unless he had previously acquaintances among the Germans. It is but seldom resorted to by the English. There is little to interest in the town itself, except the baths, which are handsome, and are better arranged than in most of the watering-places which I have visited. Among the places of interest in the environs may be mentioned Konigshohe, and Stephanshohe.

The principal bathing-house, the Herrenhaus, where the late King of Prussia was in the habit of residing during the summer season, belongs to the Prince de Clary. The ground floor of the edifice is disposed in several elegant and spacious baths, formed of porcelain tiles of various colours; part of each cabinet being separated from the bath by a curtain, serves as a dressing-room. At the end of the garden, behind the house, there is a semicircular colonnade, with a portico, beneath which rise three or four springs; the one being the Trinkquelle, or drinking-spring; the other, the Augenquelle (eye-spring). Under the colonnade several imported waters are sold.

The Stadtbad, or Town-bath, is likewise a handsome building, containing twenty-two commodious bathing cabinets, and two or three large marble ones, around a central reservoir in which the water is cooled. On the first floor is a spacious promenade room. These baths are supplied by the chief spring, as is also the adjoining piscina,

or public bath for men, which is a lofty and spacious *local*, in which fifty persons could bathe at the same time. This is a common practice with many patients of the poorer classes, who also frequently remain a long time in the water, which in the public baths is of its natural temperature. Another of these baths is the Furstenbad (Prince's bath), so-called, not from its being exclusively appropriated to the higher classes, but because it also belongs to Prince Clary. The bathing cabinets are equally elegant and convenient as in the other establishments. Here, likewise, is a public bath for women, which is more dark and confined than the men's. These two baths are supplied by the same spring. There is also in the town a Jews' bath.

The adjacent suburb, Schönau, possesses baths, equal, if not superior in elegance to the town baths. They are—1st, The Steinbad, consisting of a central vestibule where the spring rises into a large oval basin, and on either side bathing-cabinets: the water also rises directly into some of the baths through a fine layer of sand, as at Wildbad, and remains constantly flowing during the bath, which is taken at the natural temperature. 2nd, The Stephansbad, a circular edifice, close to the former, with six baths of a triangular form. 3rd, The Schlangenbad, with handsome façade, portico, and a colonnade; the baths being constructed (as at other new establishments) of tiles of various colours, which impart to them a light and cheerful appearance. But the hand-

somest of the new erections is the Neubad, which has superseded the old Schwefelbad. This edifice is three stories in height, has a considerable extent of façade, and is divided into two equal parts, with a central hall or vestibule supported by beautiful composition columns, in imitation of marble, whence wide staircases conduct to the apartments, which are handsomely fitted up for accommodating either families or single persons. The roof of the building forms a terrace, commanding a delightful view of the town and environs, with the whole range of the Erzgebirge, and of the Schlossberg, with the ruin on its summit. The baths on the ground floor are as convenient and well arranged as those at the Herrenhaus. Tastily-arranged terraced walks lead from this suburb to the summit of the Mont de Ligne, which likewise commands a pleasing view.

Teplitz contains more public institutions for military men needing a course of mineralised baths than any other place. There is—1st, The Austrian Military bath-house for officers and soldiers, capable of accommodating 300 men at once. In 1861, 433, besides officers, were treated in this establishment. 2nd, The Prussian Military bath institution, enlarged in 1854, and capable of accommodating forty at the same time. The course of baths lasts, on an average, a month, and the inmates are changed four times during the season. 3rd, The Frederick-William hospital, founded by the late King of Prussia, with thirty-four beds. In 1861, 161 patients were here treated. 4th, The

Royal Saxony Military bath institution, to which was added, a few years ago, a supplementary building capable of containing twenty soldiers, and having separate rooms for officers and subalterns, patients being changed three times during the season. There are also a Town hospital; a Civil hospital, containing about fifty beds, for poor persons, of any country, requiring the baths; a small hospital, founded and supported by Prince Clary; and a Jews' hospital, for natives of the empire and foreigners of this religion.

The repute of the Teplitz springs has gone on steadily increasing, as may be seen by the following statement of the number of parties who have frequented them within the last hundred years: In 1768 there were 269 parties; in 1800, 1,814; in 1825, 2,360; in 1850, 4,254; in 1860, 6,423.*

A remarkable phenomenon in the history of mineral springs occurred at the time of the earthquake of Lisbon, when the principal spring at Teplitz ceased to flow for about a minute, and then burst out with such violence, as to overflow the basin, the water being in a state of fermentation, of a higher temperature than usual, and of a deep red colour. When it had again become clear, a quantity of red oxide of iron was found deposited at the bottom of the basin. Neither the springs of Schonau nor those of Carlsbad were in the least affected.

* Geschichte der Teplitzer Thermen.—Von Dr. E. Kratzmann. 1862.

In all the springs of Teplitz the constituent parts are the same. They may, in fact, be considered as so many outlets of the principal spring, the farthest removed from which is the coolest. The Hauptquelle itself yields eight hundred and four cubic feet of water in an hour, its temperature at the source is 39·5 deg., that of the other springs in the town is 38 and 36 degs. Those of Schonau have a lower temperature—viz., from 30 to 32 degs.

The water has no marked taste; its composition somewhat resembles that of Schlangenbad, in Nassau, though it has not the oily feel of the latter. According to the analysis of Ficinus, it contains not more than $4\frac{1}{2}$ grains (chiefly carbonate of soda) of saline constituents in the pint, which approximates it to the water of St. Nectaire, in France. The springs are therefore, perhaps with reason, placed by Dr. Seegen and Dr. Schmelkes in the class of chemically-indifferent thermals. The last-named physician considers that of the German baths it has the greatest analogy with Gastein, which, however, as we shall see, is much more slightly mineralised, but which the hotter springs resemble in point of temperature.* I have ranked them, in the preceding editions, among the slightly alkaline springs, having some resemblance to those of Ems, though much poorer in constituents.

The number of drinkers has greatly increased

* Die Thermal-Bæder zu Teplitz.

of late years ; but bathing constitutes the essential part of the treatment. It commences at a very early hour, and goes on without intermission (except partially at dinner-time) till the evening. In the town and suburbs there are altogether fifty-two special baths and three public baths, or piscinæ ; and it is computed that 4,083 persons can bathe daily ; yet Dr. Kratzmann observes there is sometimes a deficiency of baths for the numbers requiring them.

The mode of action of the baths varies according to their higher or lower temperature. The hotter springs excite powerfully the skin, the vascular and nervous systems, while the cooler ones of Schönau have a sedative operation, allaying morbid irritability, and promoting the cutaneous and renal secretions. Some of them have acquired a special reputation for the relief of particular complaints. Thus, the Schlangenbad spring is deemed more efficacious in nervous disorders ; the Neubad in skin diseases, &c. Mud-baths and cataplasms are likewise employed in many cases of contraction, impaired power over the limbs, from rheumatism or other causes, and in other instances where these remedies are indicated. The mud consists, in great measure, of turf, containing the remains of plants and a not inconsiderable proportion of the salts of soda, lime, and magnesia.

Gout is one of the diseases in which the reputation of the Teplitz springs stands high ; but the cases for their use require discrimination. Dr.

Seegen considers them only recommendable as "promoting the resorption of the exudations produced by the disease ; but that they have no effect upon the alteration of the blood which constitutes the essence of gout, nor on the accompanying disorder of the abdominal circulation, in which the internal use of an alkaline or an alkaline saline water can alone be of use." Dr. Schmelkes says on this point: "The waters will do harm in regular gout, where the powers of nature suffice to induce the specific gouty inflammation ; in those cases of anomalous gout where regular paroxysms do not take place, from an excess or oppression of the vital powers, as in the acquired gout of robust individuals, and also in that atonic form of the disease connected with great debility." I consider, however, the cooler Teplitz springs likely to be most useful in the kind of gout termed nervous, with a degree of general irritability, the pain and swellings suddenly shifting from one part to another. Such a patient would not, in many instances, so well bear strongly - impregnated baths like those of Wiesbaden, while others, slightly mineralised, like those of Teplitz, Plombières, or Buxton, might be used with advantage. When there is much derangement of the digestive functions, the Teplitz baths would be likely to disagree till such disordered condition was rectified by Carlsbad, Pullna, Marienbad, or by other means suited to the circumstances. In cases of long standing, where there are depositions in the joints, contrac-

tions and stiffness of the limbs, especially in persons of an irritable habit, the cooler springs would also be likely to be of service in procuring at least some alleviation, if not a long exemption from the attacks. As at other thermal springs, an attack of gout is occasionally induced on commencing the use of the baths; it is, however, in general but slight, and is in most cases succeeded by an improved state of the health.

A great many paralytic patients annually resort to Teplitz, though, as Dr. Schmelkes observes, "Many leave their crutches behind, yet many are also disappointed. Like other thermal baths, advantage will often be derived from those of Teplitz in those cases of paralysis which originate in suppressed perspiration, cold, repelled cutaneous eruptions, gout, or rheumatism. When the paralysis depends upon apoplexy or other lesion of the brain, they will generally produce little or no effect."* Some of the poor patients afflicted with paralysis remain for a long time in the public bath, which has a very high temperature, and this practice is not unfrequently attended with unexpected beneficial results. The same circumstance has been observed at Mont Dore, which, as we shall see, is also a slightly-mineralised water of a high temperature, and where the baths are taken hotter than elsewhere,

Rheumatic cases form also a large proportion of those which derive advantage at Teplitz, and

* Teplitz gegen Lähmungen. 1858.

there is no doubt that many are cured, and that almost all may be benefitted, at least for a time, but that, as at other slightly-mineralised springs, many would relapse. The late Dr. Reuss considered the Teplitz baths as best suited to the kind of rheumatism occurring in cachectic habits, combined with more or less irritability, and a high degree of sensibility. This doctor, who, like some of his *confrères* at German watering places, strongly advocated the peculiar vitality of thermal springs, stated, with Bischoff and other local physicians, with regard to the Town and Schönau baths, that even when the former are reduced to the same temperature as the latter, their action is nevertheless more exciting, and consequently, that in all deep-seated and inveterate complaints which require an energetic treatment by mineral baths (*heroischen Badekur*), the town baths should be employed, but in those cases where a less *heroic* and stimulating medication is required, the Schönau baths are preferable.* Of this latter kind are several nervous complaints, occurring in females, attended by spasmodic and hysterical symptoms.

A state of general irritability, painful and disordered menstruation, and universal debility, scrofulous cases where there is no material local disease, occurring in delicate children, would also be benefitted by these baths, with which the drinking of the Bilin water might be advantageously com-

* Die Bäder von Tœplitz. 1855. •

bined. Elderly people, and those approaching to or past the grand climacteric, who experience a general breaking up of the health, with a disordered state of the digestion, and of the skin, would frequently feel the renovating influence of a course of bathing in the cooler springs. Dr. Reuss states that the Teplitz baths are highly serviceable in rectifying fœtor of the perspiration, especially of the feet or hands, and also in cases of ulcers from a bad habit of body, stiffness of the joints, or susceptibility of the cicatrices of wounds to atmospheric changes. Hufeland likewise adds his testimony to their advantage in these latter cases, of which there must have been numerous examples among the patients in the military hospitals.

Drinking the Teplitz water may be recommended in cases of stomach disorder, with acidity and want of tone, where an aperient action is not required, which is often the case in those whose nervous powers are impaired, as elderly people and delicate females: it usually acts upon the kidneys, and, combined with the baths, is useful, both from its diuretic and alkaline qualities, in cases of gravel. It is also recommended in chronic affections of the air passages and some other complaints, to which, however, other mineral waters would be equally, if not more applicable. The Town-bath and the Garden springs are the most used internally, sometimes with the addition of a little Carlsbad salt. The Marienbad, Carlsbad, and other imported waters, are often taken with the baths.

The later analysis, by Dr. Wolff, of Prague, exhibits about the same quantity of constituents as that of Ficinus—viz., 48 grains in 10lbs. of water, with 8,924 cubic inches of gases, of which five-eighths are azote, and the rest carbonic acid. As respects the predominance of azote, the Teplitz water is not unlike that of Buxton.

One of the most recent publications on Teplitz is the work of Dr. Rheinhardt (1858).

BILIN.

THE springs of Bilin rise a short distance from the town, and about an hour's drive from Teplitz. They are not resorted to for the purpose of using the water on the spot; the only building there being for the purpose of packing and exporting it. A large quantity is drunk in Teplitz and the other Bohemian baths, as well as in other parts of the Austrian territories. The principal spring is the Josephsquelle, the water of which is so clear, that the smallest object can be seen at the bottom of the well, which is some feet in depth. Although it contains a large portion of carbonic acid, this gas is in so intimate a state of combination, that the water sparkles very little, emits but few bubbles, and may remain for some time exposed to the action of the air without losing its properties. The taste is piquant, but is not very alkaline, as the carbonic acid is in excess. It forms a pleasant and refreshing summer beverage, and, like the Seltzer water in the Rhenish countries, is in very general use mixed with sugar or wine. The Carolinenbrunnen is close to the Josephsquelle, but is not much used.

The Bilin water is very analogous in composition to that of Vichy, from which it differs in being cold, and in containing less bi-carbonate of soda, though it possesses more of this salt than

any other German mineral spring. Fachingen approaches nearest to it in this respect, but has less gas and a not inconsiderable quantity of iron. The temperature of the Josephsquelle is 9 degs.

The operation of this water is cooling, moderately exciting the nervous system, removing acidity, improving the state of the secretions of the stomach and liver, and the quality of the blood; preventing and removing enlargement of the lymphatic glands. It may be employed medicinally, in relaxed states of the mucous membranes, as stomach derangement, with acidity; chronic bronchial affections, with increased secretion. In gouty habits, during the intervals of the disease, the copious use of this water, combined with attention to diet, would go far to prevent the recurrence of the attacks, or to mitigate their severity. In gravel and stone a water of this kind would be of great service, not only in preventing the re-formation, but also, by its resolvent properties. In some nervous complaints, when direct tonics could not be borne, a water of this kind, joined to a course of sedative baths at Teplitz, would be likely to render great benefit. It might be used with advantage in incipient consumption, either mixed or not with milk, and likewise in passive hæmorrhages.

Great advantage is often derived from a water of this kind in scrofulous complaints, and especially in swellings of the neck or mesenteric glands. Dr. Reuss says that the inhabitants of Bilin, who use the water habitually, are not liable

to scrofula or goître, though the former of these diseases is extremely prevalent in most parts of Germany. He further says, that he has only had occasion to treat scrofula in two families at Bilin during a practice of forty years, and these families were not in the habit of using the water—neither are there any cases of stone or gravel in the neighbourhood. Dr. Reuss likewise speaks highly of the water in cases of disordered menstruation in persons of torpid habit and languid circulation.*

Analysis according to Redtenbacher :—

Carbonate of Soda	23·106
„ Lime	3·089
„ Magnesia	1·098
„ Iron	0·080
„ Lithia	0·110
Sulphate of Potass	0·985
„ Soda	6·350
Muriate of Soda.	2·935
Earthy Matter	0·065
Silex	0·244
	<hr/>
Grains	38·063
Carbonic Acid Gas (cubic inches).	33·05

Dr. Seegen remarks that this is the best representative of alkaline acidulous springs. He prescribes it to diabetic patients after a course of Carlsbad waters (a bottle daily for several months, with intervals of a week or two), and has seen in several cases benefit result from its use. Pro-

* Die Mineralquellen zu Bilin.

fessor Löschner recommends the water in diseases of the urinary organs, gout and lithiasis, Bright's disease, and in chronic catarrh of the stomach and bowels. These remarks, made by distinguished physicians practising near the place, corroborate my preceding observations, which remain as they were expressed in the former editions.

PÜLLNA.

THE village lies a little distance from the road between Carlsbad and Teplitz, but is only resorted to by poor persons from the neighbourhood, for whose use a few baths have been fitted up. The wells are near the village; their number is about twenty. They are from six to nine feet deep, about six feet in diameter, and have been dug at various periods, the water flowing into them after percolating through a soil abounding in the salts with which the waters are impregnated, so that they can scarcely be termed mineral springs. In summer and autumn, and when the weather is dry, as there is less water in the soil, that in the wells is more strongly saturated, and at these times it is bottled for exportation. After wet weather the water is weaker. It contains but a minute portion of gas, and, as might be supposed from the large quantity of soda, tastes intensely bitter and disagreeable. It has been stated in the "Spas of Germany," that the peasantry habitually make use of it instead of common water. This, as I was informed on the spot, is an error, and even the persons engaged in the building for packing the water procure from the village fresh water for drinking and for culinary purposes. When employed medicinally, it has but little effect on the inhabitants as a pur-

gative, unless it be previously warmed, or a large quantity be taken.

A glass of the water would produce some action on the bowels in most people; two or three are generally taken in the morning by those who go through a course; its use could not, however, be long continued without weakening the alimentary canal and the constitution. Taken regularly for a short period, it is a very useful means of overcoming habitual constipation; when the desired effect is not produced by a moderate quantity, it would be better to warm the water, and use some of it in an enema, instead of increasing the dose. It generally acts without griping or inconvenience, and may be employed with advantage in some inflammatory and febrile diseases, in which a cooling purgative is required, as also in chronic disorder of the digestive organs induced by too full living, and attended with a plethoric condition of the system, a tendency to local congestions, as of the brain, thoracic and abdominal viscera, and hæmorrhoidal vessels. In the tendency to gout and to the formation of calculous concretions, painful and difficult menstruation in persons of a full habit, and who frequently require aperient medicine, it may be exhibited with advantage, and likewise to children with a full and tumid abdomen; mixed with a little syrup or warm whey.

The Pullna water is not unfrequently employed preparatory to a course of the saline tonic springs, as Marienbad, Franzensbad, &c.,

and in combination with thermal baths. The analysis by Ficinus differs very materially from the older one of Struve, presenting some remarkable discrepancies; but, as already observed, the strength of the water varies at times, according to the amount of rain.

Analysis by Struve:—

Sulphate of Soda	.	.	.	.	123·80
„ Potass	.	.	.	.	4·80
„ Lime	.	.	.	.	2·40
„ Magnesia	.	.	.	.	93·08
Muriate of Soda	.	.	.	.	16·66
Carbonate of Magnesia	.	.	.	.	6·40
„ Lime	.	.	.	.	0·77
Silex	.	.	.	.	0·17
					<hr/>
Grains	.	.	.	.	248·28
Carbonic acid in 100 cubic inches of					
water (cubic inches)	.	.	.	.	6·09

SEIDLITZ AND SAIDSCHUTZ.

THESE waters lie near to each other, and only a short distance from Pullna. The manner of their formation is similar, and their composition and action are very analogous to the Pullna water, except that the latter contains a much larger proportion of aperient salt, and its action could not be so long continued as either of the others without inducing debility. The Seidlitz water is not much exported; that of Saidschutz is taken in casks to Bilin, where it is bottled for exportation, a large quantity being annually sent to Paris. It is also used for the manufacture of magnesia and sulphate of soda, by the decompositions and affinities which ensue from the admixture of a concentrated solution with the Bilin water.

According to Dr. Reuss, the Saidschutz water in small doses improves the digestion and appetite, and excites the absorbents of the alimentary canal, the iron and soda preventing its action from causing debility. In larger doses, it proves purgative, and increases the flow of bile, without too much irritation of the mucous membrane; hence it is highly useful in torpid states of the abdominal circulation and absorption, as a revulsive means, and in diminishing an abnormal plasticity of the blood.*

* Das Saidschutzer Wasser, chemische untersucht von J. Berzelius, mit Bemerkungen ueber seine Heilkrafte, von Dr. Reuss.

By its excessive or too prolonged use, the stomach becomes debilitated, loss of appetite ensues, and diarrhœa, sometimes with an inflammatory condition of the bowels, supervenes. It is applicable to the same kind of cases as the Pullna water, and is often advantageously combined with a course of bathing at one of the thermal springs, especially in cutaneous eruptions, acné, &c., combined with disordered digestion in young and middle-aged persons of full habit.

According to the analysis of Berzelius, a pint of water contains 178 grains, of which 84 are sulphate of magnesia, and 47 sulphate of soda—thus making 113 grains of purgative salts; the action of which is, in some measure, modified by a small portion of sulphate of lime (10 grains), and by fractions of other substances.

MARIENBAD.

MARIENBAD is about a ten hours' drive from the Hof station on the Frankfort and Leipsic line, four hours' from Franzensbad, and five from Carlsbad, the roads passing through a beautiful country. It lies in an open valley, surrounded by hills well wooded with pine trees and other plantations, through which flows the Steinhaubach, 2,000 feet above the sea's level, and is surpassed by few places as respects the beauty of its environs. The fixed population amounts to about 1,500 souls. On entering from the Carlsbad side, the valley expands into a broad space laid out as a garden, and enclosed on three sides by lodging-houses, hotels, and the baths. In the centre stands an elegant structure, the new church, interiorly decorated with taste. On the left is a range of handsome buildings, with the mansion belonging to Prince Metternich in the centre. In front, and turning at a right angle with this range, is another row of larger houses, including at one end the Tepl-Haus, belonging to the Abbey of Tepl, but let to strangers in the season, and at the other Klinger's hotel, a large establishment, with clean and handsomely-furnished apartments, and two public rooms where *tables d'hôte* are held at different hours—upwards of 100 persons sitting

down to the larger one daily in the height of the season. The other principal hotels are the Neptune, which has likewise a *table d'hôte*, the Englishen Hof, and the Stadts Hamburg. The Telegraph, where Dr. Krattzmänn resides, is one of the best lodging-houses. Dr. Herzig likewise resides in one of the largest lodging-houses. On the further side are the old and new bath-houses, and the Cursaal. Part of the central space is occupied by rows of booths for the sale of fancy articles. The old bath-house contains 100 commodious bath-cabinets, 63 of which are appropriated to the saline mineral water baths, and 30 to the mud baths. There are also a Russian vapour bath and four gas baths, with suitable apparatus for gas douches. The new bath-house is likewise conveniently fitted up; it is restricted to the employment of baths of the Carolinen and Ambroisus chalybeate springs, and contains sixteen cabinets, with some douche and shower-baths.

The Cursaal is in the eastern wing of this building; it is a handsome room, where there is a daily *table d'hôte* and weekly evening *réunion*, concerts and other diversions being also not unfrequently given. A reading-room and circulating library are attached to the bath-house.

Contiguous to Klinger's hotel are a colonnade and promenade-room, leading to the principal spring, the Kreuzbrunnen, which rises at the foot of a hill, into an enclosed basin, surmounted by a cupola with large

gilt cross.* From it another range of houses is continued up the hill. This spring was freshly enclosed some years ago, since which the amount of water yielded, and its composition (which at various times formerly underwent some change) has remained invariable. Such is the afflux of drinkers in the height of the season, that, in order to prevent crowding and confusion, barriers have latterly been erected, so that (as at the entrance to Parisian theatres) a *queue* is formed, and each must wait till his turn comes.† Whey is likewise dispensed at the spring by a Swiss.

An agreeable, well-shaded path leads up the valley to the Ferdinandsbrunnen, beyond which, on a slight elevation near the Franzensbad road, is a large establishment, the Bellevue, comprising lodgings, a *café*, a large public room for *tables d'hôte* and *réunions*. The paths on the surrounding hills are easy and well supplied with seats, at convenient distances; the one leading to the miniature Switzerland is the most frequented. Among

* The cross on the summit of the hill (from which the spring takes its name) was erected as a memorial of thankfulness for the preservation of the locality from cholera.

† That the number of frequenters at Marienbad has, however, not greatly increased of late years, may be seen by the following account: In 1851 there were 3,087 parties; in 1858, 3,051 (of which 179 were British); in 1859, 2,087; in 1860, 3,042 (4,289 persons); in 1861, 3,134, or 4,388 persons, of which number 1,451 were from the Austrian and other German states, 1,220 from Prussia, 293 from Russia, 260 from Saxony, 82 from England, 28 from France, and 7 from North America.

the objects of interest most visited may be mentioned Schönau, commanding a fine view, the village of Auschowitz, the Jägerhaus, the Waldmühle, Hohendorf, whence is likewise obtained a beautiful view of the country, Richardshöhe, the Podhorn, the Pfauenberg, crowned with the ruins of a castle, and Königswarth, a castle of Prince Metternich's, a few miles distant.

The Ambrosius and Carolinenbrunnen rise in the grounds near to the new bath-house which they supply. The Marienbrunnen rises into a large reservoir behind the old bath-house which it supplies. This spring is very rich in gas. A large quantity of carbonic acid is thus always collected to the height of two feet above the water. As the waters are all cold, they are warmed by suitable means to the temperature required for bathing. An acidulous spring, employed for drinking, rises on an adjacent hill in the wood, as its name (Waldquelle) implies.

The springs of Marienbad belong to the Abbey of Tepl, and though used previously for two and a-half centuries by the people of the neighbouring districts, they were not brought into general notice till 1813, when Dr. Nehr, physician to the Abbey, published a description of the place. Before this epoch it was a wild, sombre valley, surrounded by dark pine forests, with no other building than a dilapidated cottage, and a wooden gallery around the Kreuzbrunnen, which was in the centre of a marsh, into which stepping stones were placed to enable the drinkers to reach the

spring. In 1810 the bath-house was erected, the baths and mud baths being then principally in request, and Marienbad has ever since been annually increasing in reputation and in the number of its visitors; though even at the time when the second edition of Nehr's work appeared, in 1817, the accommodation was so bad, that parties were recommended to bring their beds with them.* Subsequent to this period, the works of Scheu, Heidler, and others, as well as the writings of non-resident practitioners of celebrity, Clarus, Kreysig, Rust, &c., have tended still farther to make known the virtues of the waters; Dr. Herzig, one of the resident practitioners who speaks English, has likewise published a practical work on the Kreuzbrunnen. The latest full account is given by another resident physician, Dr. Kratzmann (brother to the physician at Tep-litz)—“Marienbad und seine Umgebungen.”

The neighbourhood abounds in mineral springs; at Kœnigswarth there are several chalybeate ones. Those of Marienbad may be divided into three classes—viz., the saline aperient springs, the Kreuzbrunnen, and the Ferdinandsbrunnen; the chalybeate ones, the Carolinen and Ambrosius; and the acidulous, the Marienbrunnen and the Waldquelle.

The supply of water from the different springs is abundant. The taste of the Kreuzbrunnen is

* Heidler—Marienbad et ses Différens Moyens Curatifs dans les Maladies Chroniques.

saline, piquant, with an *après-gout* of iron, and is not disagreeable. As a proof of the estimation in which this water is held, it may be mentioned, that little less than half a million of *cruches* are exported annually. The number of large and small *krugs* exported in 1861 amounted to 571,000.

When drank, the water is easy of digestion, and does not generally disagree, unless there be some offending matter in the intestinal canal, when its use should be preceded by a purgative. Great attention is required during the course not to take improper articles of diet, which, however, is pretty well guarded against by the simplicity of the dinners. It generally increases the appetite, and produces active effects on the bowels, though this is not always the case, and the water is not on that account the less efficacious, and after taking it for a certain time, patients sometimes pass large quantities of matter from the alimentary canal, which is considered as a critical evacuation, and does not induce debility.*

The use of the Kreutzbrunnen is most applicable in those cases where there is a deranged state of the mucous membrane of the alimentary canal, with collection of mucosities, in cases of obesity, abdominal engorgement, and congestion of various organs from repletion and fulness of

* As at Carlsbad, the drinking from four to six glasses not unfrequently produces alkalinity of the urine, which, however, disappears in the course of twelve hours.

the veins; in some nervous affections of both sexes, when connected with a full habit, and in persons accustomed to free living who lead a sedentary life. In such persons some degree of acceleration of pulse, feverishness, and a determination of blood towards the head, are sometimes occasioned; which effects may often be prevented by allowing the water to be exposed for some time to the air before drinking, or by warming it, which allows the escape of the gas; though by these means the tonic properties are impaired, and the operation is rendered more laxative.

This water is also well adapted to procure the evacuation of gall-stones, and to prevent their formation, as well as that of gravel or stone in the bladder, which so frequently depends upon the above-mentioned causes; here also the diuretic property of the water has a beneficial effect, in causing the expulsion of these concretions when formed; though, when a diuretic effect is more especially sought for, the Ferdinandsbrunnen is to be preferred.

The opinion of Vetter on these waters coincides with that of Heidler in most respects. He considers that it is only by the excretion of effete matters by the bowels that they are beneficial, though he also deprecates their being taken so as to produce active purgation at the time; and observes: "The principal complaints in which this water is beneficial are dyspeptic affections, with the character of irritation and disordered innervation of the alimentary canal, from too much eating, from

the quantity of the food being too exciting or too heavy; and also from too freely drinking of fluids which are not water, combined with deficient muscular exercise; especially when the patient has been in the habit of having recourse to drastics, which produce only temporary relief, impair the nervous energy of the stomach, and, by their exciting property, tend to induce a high degree of derangement of the nervous system.”*

In some gouty cases, in persons of full habit and addicted to the pleasures of the table, the Marienbad waters will be found very efficient; indeed, it was from their effects in this disease that these springs formerly acquired so high a reputation. To certain forms of gout they would not, however, be so applicable as to others, to which I have alluded under the head of Carlsbad. The Kreuzbrunnen has been termed the cold Carlsbad; Hufeland says: “I have convinced myself that the Marienbad water is analogous to the Carlsbad cooled, and that it is indicated in similar cases as Carlsbad, but it is to be preferred when the latter would be too exciting.” Its action is, however, more tonic than that of Carlsbad.

On the other hand, Dr. Seegen considers the Marienbad water to be more exciting than the Carlsbad, owing to the large quantity of gas. “In many cases,” he observes, “it is indifferent whether Carlsbad or Marienbad be recommended;

* *Op. cit.*

in the simple forms of abdominal congestion, the same benefit may often be obtained from the one as from the other. The latter deserves the preference—1st. Where a loaded state of the bowels is the undoubted cause of the disorder, and where the indication is to relieve this state as soon as possible. 2. For persons of full habit, in whom, by means of active purgation, an immediate loss of fluids is produced, and thereby the obstructive or congestive state is removed; in all the forms of disorder in which carbonic acid gas is not well borne, as in subacute catarrhal states of the stomach and bowels, or where we must be careful to avoid the congestions occasioned by carbonic acid; as also in delicate patients of a less full habit, and with lowered powers and defective production of heat, Carlsbad deserves the preference. In serious but curable liver disease, in icterus, as its consequence, in diabetes and concretions of the kidneys, and in extensive enlargement of the spleen, Carlsbad must undoubtedly assume the first place.”*

The Kreutzbrunnen has also been compared to the Ragockzi of Kissingen, the Salzquelle, and the cold Sprudel of Franzensbad, and there is no doubt that their action is in some respects similar, and that in certain cases the one or the other of these springs might be used with equal probability of success. Some material differences will, however, be found in their composition; thus, the

* Op cit.

Ragockzi is more gaseous, and contains principally the muriate of soda, while the predominating salt of the Kreutzbrunnen is the sulphate. The quantity of iron is also greater in the Ragockzi, which, on the other hand, scarcely contains any carbonate of soda, of which there is a not insignificant portion in the Kreutzbrunnen. The Ragockzi is, therefore, on the whole, more tonic, acts less on the bowels, and would be better adapted than the Kreutzbrunnen to some cases and constitutions, and *vice versa*. Neither of these springs, moreover, are apt to produce the after effects and the crises which sometimes occur at Carlsbad.

The Salzquelle of Franzensbad has less sulphate of soda than the Kreutzbrunnen, and approaches nearer, in the amount and nature of its saline and gaseous contents, to the Ferdinandsbrunnen.

The last-named spring lies about a mile distant from the others; a handsome promenade-room and portico have been constructed on the spot for the accommodation of drinkers. It has more gas, but less salts than the Kreutzbrunnen; it is, consequently, less aperient and solvent, and acts more on the kidneys. It suits some persons with whom the Kreutzbrunnen disagrees, though in general it excites the circulation more, and disposes more to congestion. On this account, and also on account of the iron being in larger proportion compared with the aperient salts, it would be less suited to persons of a full or inflammatory habit; and would be better adapted to those of phlegmatic temperament, and to

nervous patients, where a tonic rather than an aperient action is required. A short course of this water, or of one of the chalybeate springs, is not unfrequently recommended after the use of the Kreuzbrunnen.

The Carolinen and Ambrosiusbrunnen belong to the class of chalybeate waters; the former is principally employed for drinking; the latter is chiefly used to supply the new bath-house. The temperature of both, like that of the other springs, is about 8 degs. (Reau.). The Carolinen contains very little saline substance as compared with the Kreuzbrunnen; the action of the iron, which is in larger quantity, is consequently more predominant. These springs may be used in most cases I have enumerated when treating of the chalybeate ones in a special treatise on mineral waters.

The Marienbrunnen scarcely contains a grain of solid substance, but it has nine cubic inches of carbonic acid to the pint; it is used exclusively for the water and gas baths.

The Waldquelle contains (according to Steinmann) about six grains of sulphate, and as much muriate of soda to the pint, with minute portions of carbonate of lime and magnesia, and eighteen cubic inches of gas.

Baths are combined with the internal use of one of the springs in a large proportion of cases, especially rheumatic, gouty, and scrofulous affections. The mud baths are also a good deal used. In its composition, the mineralised mud of Mari-

enbad is not dissimilar to that of Franzensbad, being the product of earthy and vegetable matter decomposed by the passage of mineral water through it. Some mud contains a good deal of sulphur; Heidler says that lumps of sulphur of several pounds weight are sometimes discovered in it, and that carbonic acid and sulphuretted hydrogen gases are evolved in large quantities. It contains, likewise, the muriate and sulphate of soda, lime, and magnesia, silex, and a bituminous substance. Another contains more iron. Its colour is a dark brown; it is friable when dry, and has an oily feel when moistened. A sufficient quantity of the Marienbrunnen water is added to a certain portion of mud, to reduce it to the proper consistence of a bath, on leaving which the patient steps into a water bath in the same cabinet, for the purpose of clearing the mud from the skin.

As mud is a bad conductor of caloric, these baths may be used at a higher temperature than water baths. The fluid in contact with the skin is soon reduced to the temperature of the body, and is therefore lower than the rest, which causes a sensation of coolness, even when the temperature of the bath is high; patients are consequently advised to move their limbs freely, in order to agitate the liquid.

The effects of these baths vary according to the degree of their temperature; when only a few degrees below blood heat, they are emollient, sedative, and discutient, diminishing the fre-

quency of the pulse fourteen or fifteen beats; when hotter, they are very exciting, causing redness of the surface and eruptions; their revulsive effects are consequently more powerful, and they are more especially indicated in the more torpid or atonic constitutions, in abdominal obstructed circulation, in cases of long-standing gouty and rheumatic affection, provided they be not accompanied with great debility. Several chronic cutaneous complaints, as impetigo and herpes, and the relaxed state of the skin giving rise to frequent perspirations upon slight occasions; some cases of induration and engorgement of the liver and other viscera; scrofula, when the patient is not of a very irritable habit, and paralysis, will be often more effectually treated by the mud than by water baths. The mud is likewise frequently employed as a local application against stiffness and contractions of the joints, tumours, ulcers, and pains of various parts.

A new mineral mud has lately (1857) been enclosed, which has the advantage of being nearer the springs, and free from woody and extraneous matter. It is considered preferable to the muds previously in use. Its analysis by Ragsky shows that 100 parts of fresh mud contain—water, 81.4; dry substance and insoluble constituents, 7.; insoluble constituents, 1.79; the oxide of iron being relatively in large proportion. By exposure to the atmosphere, decomposition takes place to a certain extent, by which the insoluble parts are rendered more soluble.* A bath contains as much

as 10 or 12lbs. of sulphate of iron, besides other organised substances.

The gas baths were first brought into notice by Struve, the well-known inventor of the artificial mineral waters, who cured himself, after the failure of other means, of a painful affection, with swelling of the thigh, by keeping it in the gas of the Marienbrunnen.

Here, as at Franzensbad, Soden, Nauheim, Kissingen, and other springs rich in carbonic acid, the gas baths are taken in a covered *baignoire*, into which the gas is introduced by means of tubes and stop-cocks; in other instances it rises through the bottom. An aperture is left for the head, to prevent the gas being inspired. In a few seconds a genial sensation of heat is experienced over the whole body, especially the parts affected with any local disease, and the reproductive organs, which is accompanied with a tingling or pricking, and is followed by perspiration, either at the time or after the bath. The menstrual discharge is induced by the use of these baths before the usual period, as also the bleeding from piles in those labouring under this disease. They may be advantageously employed in cases of general torpor of the nervous system, suppressed or scanty menstruation, checked piles, scrofulous tumours and ulcers, in which there is a deficiency of action; debility

* Heidler—Die neu Mineral-moor-bäder zu Marienbad. Prague, 1860.

of the sexual organs, and some affections of the sight and hearing dependent upon torpor of their nerves. In these latter cases the gas douche is principally employed.

Analysis of the Kreuzbrunnen by Ragsky :—

Sulphate of Soda	.	.	.	.	38·040
„ Potass	.	.	.	.	0·401
Muriate of Soda.	.	.	.	.	13·065
Carbonate of Soda	.	.	.	.	9·024
„ Lime	.	.	.	.	3·996
„ Lithia	.	.	.	.	0·036
„ Strontian	.	.	.	.	0·006
„ Talkein	.	.	.	.	3·332
„ Iron	.	.	.	.	0·270
„ Manganese	.	.	.	.	0·024
Earthy Phospates.	.	.	.	.	0·054
Silex.	.	.	.	.	0·630
Organic Matter, &c.	.	.	.	.	0·056
					<hr/>
Grains	.	.	.	.	68·926
Free and partially combined Carbonic Acid (cubic inches)	.	.	.	.	15·117

The Ferdinandsquelle contains more iron and manganese, and $73\frac{1}{2}$ grains of saline substance, with 22 cubic inches of gas to the pint. The Waldquelle has a like amount of gas, but only 22 grains of fixed substance. The Carolinen and Ambrosius contain, the one 11, the other 8 grains, and less iron than the Ferdinandsquelle, but the chalybeate property is more decided, owing to the comparative small amount of saline constituents. They contain about the same proportion of

gas as the Kreuzbrunnen. The Marienquelle is exclusively a gaseous spring, containing little more than 1 grain of salts to the pint. Dr. Opitz has succeeded Heidler as bath-inspector. Dr. Herzig and his son speak English.

FRANZENSBAD.

THIS bath is situate on a turfy plain 1,300 feet above the sea, and consists for the most part of a street of good houses bordered by rows of chesnut-trees along the high road from Marienbad to Eger, which is about a league distant, and of other divergent streets of more recent formation. The principal hotels are the Empereur d'Autriche, the Stadt London, and the Aigle Noir. The accommodation is good, and in the season the place presents an animated appearance, though possessing little in the way of resources whereby to amuse or engage the attention of visitors, and the environs being relatively deficient in scenic beauty, so that Franzensbad is exclusively frequented by those requiring a course of its waters, its gas, or mud baths, on which latter account it is a good deal resorted to. Though of comparatively modern origin as a bath for the superior classes, the water (known as the Eger water) has long been extensively exported. Adjoining the Kaiser-strasse are the promenade-ground (latterly enlarged), with its colonnades, rows of booths, and the public rooms. The principal spring (Franzquelle) rises beneath a small temple; near it is the bath-house, containing thirty-five bathing cabinets, supplied with the requisite apparatus for drinking, &c. Another bath-house has been more recently erected by Dr. Loimann, who

likewise gives his name to the park, which is agreeably laid out. The most interesting spots lying within a short distance are the Kammerhöhle, an extinct volcano, whence there is an extensive prospect of the country, bounded by the Fichtelberge, the castles of Hochberg, Seeburg, Liebenstein, Waldstein, the Ludwighöhe, and further off the celebrated convent of Maria-Kulm, the Anna-Kapelle, &c.

There is a small hospital for poor persons, to whose cases the baths are applicable.

The Louisenquelle rises in an extensive reservoir close to the bath-house. The cold Sprudel likewise rises in the same locality. About a quarter of a mile distant is the Salzquelle, to which a covered gallery leads from the Franzquelle, serving as a promenade in wet weather. Near it rises the Wiesenquelle; the Neuquelle (enclosed in 1849) rises in the centre of the public garden, between the Franzquelle and the Louisenquelle. Another spring has been lately discovered.

The springs differ but slightly in their composition and effects. The Franzquelle is a saline chalybeate, very gaseous and sparkling, with a piquant taste, leaving an astringent impression upon the tongue. Its temperature, like that of the other springs, is about 8 R. The Louisenquelle has an analogous composition, but it is less gaseous, and is mostly used for baths. The Salzquelle contains less iron, and, as its name would indicate, has a more salt taste; it may be regarded as a saline aperient, and, like the Franzquelle, it is a good

deal exported. The cold Sprudel is very analogous to the Salzquelle, but is more gaseous, and consequently better adapted to individuals of a torpid habit, to whom the exciting action of the gas would be more beneficial. The Wiesenquelle contains even more saline substance than the Franzquelle (47 grains to the pint, of which 25 are sulphate of soda). Dr. Clarus, of Leipsic, and Dr. Conrath, a resident physician, speak highly of this spring as a mild aperient, very useful in derangement of the abdominal vinous circulation, and in plethora, with a torpid state of the absorbent and nervous systems. Osann places it in the class of Glauber-salt waters, and says its operation is intermediate between the springs of Carlsbad on the one hand, and the Franzquelle on the other, being less aperient than the former, and more so than the latter.*

I have already pointed out some of the differences between the Franzquelle and the Kreuzbrunnen. The former, containing more iron and gas, is a more decided chalybeate water, with sufficient aperient salt to prevent the binding effects of the iron, which in the more pure chalybeates, as Schwalbach, Bocklet, or Spa, sometimes prevents their exhibition, though their action is more directly strengthening. The Salzquelle is very analogous to the Ferdinandsbrunnen, both with regard to the amount of salts and gas, and also to their relative proportions. The Ferdi-

* Die Wiesenquelle zu Eger Franzbad.

nandsbrunnen contains somewhat more iron, but the difference is so slight, that one or the other spring might be indifferently recommended in the same cases. Thus, both at Marienbad and at Franzbad, there is a choice of springs of different kinds, which may be applicable to various conditions. The Franzquelle is more especially adapted to rectify those states of debility, with slight abdominal engorgement, which so frequently occur in literary persons, and others whose health is deranged by a sedentary mode of living; the baths may also be used conjointly with the drinking in these cases, and in others to which I have already referred under the preceding head. Those cases of weakness from diminution of the fibrine of the blood, induced by hæmorrhages, discharges, &c., or from depressing moral impressions, would also be greatly benefitted by a course of the Franzquelle, as would those chlorotic patients who are unable to bear the action of a more direct tonic. Kreysig enumerates among the cases to which this water is applicable, the arthritic affections of weakly people, the disposition to hæmorrhoids, to hæmorrhages, or to abortion, and nervous disorders when not attended with a high degree of irritability. Dr. Cartellieri, a resident physician, remarks that the amount of water yielded by the springs—and especially by the Franzquelle—within a given time, depends upon the atmospheric pressure. The higher the barometer rises, so much the smaller is the quantity; the lower it descends, so much more abundant is the flow of water.

The Salzquelle is more particularly indicated where a more aperient and less tonic action is required in stomach disorder, torpor of the liver, with defective flow of bile, hæmorrhoidal affections, enlargement of the spleen, as a consequence of intermittent fevers.

Analysis of the Franzquelle by Berzelius:—

Sulphate of Soda	. . . . .	24·50
Muriate of Soda	. . . . .	9·23
Carbonate of Soda	. . . . .	5·18
„ Lithia	. . . . .	0·03
„ Magnesia	. . . . .	0·67
„ Lime	. . . . .	1·89
„ Iron	. . . . .	0·23
„ Manganese	. . . . .	0·04
Phosphate of Lime	. . . . .	0·02
Silex	. . . . .	0·47
		<hr/>
Grains	. . . . .	42·26
Carbonic Acid Gas (cubic inches)	. . . . .	40·

The newly-discovered spring, analysed in 1861 by Göttl, yielded—

(In a Pint of Water.)

Sulphate of Potass	. . . . .	0·8743
„ Soda	. . . . .	10·9094
Muriate of Soda	. . . . .	4·4590
Carbonate of Soda	. . . . .	2·8508
„ Lime	. . . . .	0·4155
„ Magnesia	. . . . .	0·2219
„ Iron	. . . . .	0·1766
Earthy matter	. . . . .	0·1306
Silex	. . . . .	0·3080
Organic Substance	. . . . .	0·0768
		<hr/>
Grains	. . . . .	20·4229
Carbonic Acid Gas (cubic inches)	. . . . .	20·

Gas baths and douches are a good deal used at Franzensbad in the class of cases that have been already specified; but it is the mud bath that induces a large proportion of the visitors to repair to this spot. The mineralised mud is extremely abundant in the immediate environs, especially about the Wiesenquelle. It is covered with a soft turf, and a stratum of sand thinly covered with grass and moss, and is in some places ten or twelve feet deep; but in others, on removing the turf to the depth of about a foot, a strong smell of sulphuretted hydrogen is perceived.

“The mud becomes mineralised by the permeation of the soil with mineral water—the salts of which, acting upon the vegetable matter in a state of decomposition, give rise to new chemical combinations. The mud, by contact with the atmosphere throughout the winter—the sulphate of iron, which is the most remarkable of these combinations, becoming oxidised—there result the sulphates of soda, oxide of iron, and free carbonic acid gas, which, together with the admixture of organic acids, constitute the most active constituents of the mud-earth.

“That which is employed for baths is a saline iron mud, being richer in iron than any other mineralised mud.* The baths act by means of warmth, pressure, and friction, by the considerable amount of iron, in the first instance, directly

* The newly-discovered mud at Marienbad is said to be even more rich in this substance.

upon the skin, on which they produce a constringent action; the torpid cellular texture is excited and constricted; passive congestions in it and their consequences, as excessive perspiration or follicular secretions, are removed. By their prolonged employment the mud baths act specially in improving the condition of the blood.”*

The exact proportions of the substances contained in a given quantity of mud have been shown by the analysis published by Dr. Cartellieri, who has likewise published a work on the action of the waters.†

Dr. Boschau, who has written a special account of the mud baths, speaks highly of their effects in persons of torpid constitution, or, when there is not a high degree of nervous susceptibility, in scrofulous and rheumatic cases, neuralgia, sciatica, anemia, and paralysis, which have resisted other means of treatment.‡

The packing and exportation of the water takes place in a large building close to the Franzquelle. The corking is effected with a machine, by means of which the contact of the air is effectually prevented.

From the exposed position of Franzensbad, its climate is rather cool, and sometimes raw late in the season, especially in the mornings and evenings.

* Dr. Seegen. Op. cit.

† Die Heilkrafte Kaiser Franzensbad.

‡ Essai sur les Bains de boue de Franzbad. Leipsic, 1852.

GASTEIN.

CALLED also Wildbad-Gastein, is situated a few hours' drive from the Salzburg station, in a romantically-secluded position, among snow-tipped, pine-covered Alps, on the edge of the mountain torrent Ache, which forms at this point a fine waterfall. It is one of the highest baths in Europe, being 3,000 feet above the level of the Mediterranean: the climate is consequently unsettled. Even on the longest days the sun's influence is felt only in the middle of the day, at which time the heat is often oppressive, as it rises late above, and sets early behind the adjacent mountains, which late in the season are not unfrequently enveloped in clouds. From these causes, and from the spray of the waterfall, the mornings and evenings are often cold and raw. The high reputation, however, which the springs have acquired renders the place thronged during the season, and persons are not unfrequently obliged to leave for want of accommodation, which, however, may be obtained at Hof-Gastein, a village about three quarters of a mile lower down the mountain, in a more open and agreeable position, sheltered from the north and east winds, enjoying a milder and drier atmosphere, and less liable to sudden transitions than Wildbad. The water of the principal spring descends through pipes of pine and larch wood to

Hof-Gastein, by which it loses somewhat of its heat ; though this cannot render its action different from what it is at the source ; as, being too hot for bathing, it is allowed to remain all night in the reservoirs to cool down to the proper temperature.

The scenery around Gastein is highly picturesque, vegetation is luxuriant, wild flowers are abundant, and the air in summer is light and exhilarating.

There are several establishments of public and private baths. Straubinger's hotel, in the Place, is the largest. Its baths are divided into the Fürsten and the Capuciner piscinæ, where baths are taken in common, part of the latter being appropriated to the use of ladies. At the Schloss belonging to the Archduke, where visitors can lodge, there is also a piscina, in which about twelve persons can bathe. "The common bath," says Dr. Streintz, "in which ladies and gentlemen assemble together, contains 365 cubic feet of water ; nearly four hours are required to fill it. It will accommodate fifteen persons, who can walk about in the water, or rest themselves upon the seats. At each side is a large dressing-room, one for men, the other for women. Around the bath is a gallery, where the friends of the bathers may assemble and converse with them."*

At Straubinger's there are 73 rooms and 20 baths. The hotels Grabenwerth and Hirschenwerth have each 11 baths and forty or fifty rooms ;

* Les Bains de Gastein.

the Royal bath-house has 30 rooms and 9 baths; Gruber's lodging-house 50 rooms, 7 baths; the Solitude, 24 rooms, 4 baths; the Schwaezer-haus, 27 rooms, 5 baths. There are the Bellevue and other hotels, as also numerous lodging-houses, not having baths attached, and an hospital for poor patients requiring the baths.

Numerous springs rise on the bank and in the river. Those most employed are the Furstenquelle (temperature 37 degrees R.), the Doctorsquelle (38 degrees), the Hauptquelle (38 degrees), and the Straubingerquelle (36 degrees). A spring rising in the Ache supplies the horse bath. The quantity of solid substance and gas in the water is very small; scarcely two grains of the former and a cubic inch of the latter to the pint. Gastein is in this respect very similar to other thermal springs in mountainous regions, as Leuk, Pfeffers, &c., which have, nevertheless, a high reputation for their curative efficacy in certain diseases, and which are generally cited as a proof that the activity of a mineral spring in the form of bath frequently does not depend upon the quantity of its constituent principles; and also as a proof of the vitality of thermal springs, the difference of their caloric from artificial heat, &c., on which subject Schwartz observes: "As the Gastein springs differ so little in their physical and chemical properties from pure spring water, and yet are so exceedingly powerful in their operation, so some have endeavoured to explain the circumstance, partly by their geographical position, the character

of their environs, and partly by the supposition of magnetic, galvanic, electric, and other hidden powers. As far as the latter supposition is concerned, it appears from the most recent and careful investigations, that it must be considered as an untenable hypothesis; while with regard to the first, it is so far valid, that these circumstances are calculated to exert the most powerful and penetrating influence both on body and mind—only when there exists a certain degree of susceptibility and power of reaction.”*

Half-faded flowers, by being immersed in the water, are restored to their pristine colour and brilliancy, which is said not to be the case when the experiment is made with common water artificially heated. According to Baumgartner, this water is a much stronger conductor of electricity, and contains a larger quantity of hydrogen than common water (viz., in the proportion of three to two, which is more than in any other kind of water); at the temperature of 14 degrees R. its specific gravity is less than that of distilled water; while at a lower temperature, as 11 degrees, it is greater. If this be the case, we may find in the circumstance some solution of the problem of their action. I have elsewhere quoted the opinion of Vetter, with respect to the operation of these slightly-mineralised waters.† The same author remarks in another work: “It will be evident to

* Allgemeine Heilquellenlehre.

† Mineral Waters and their Curative Agency.

every one who has paid attention to the subject, that so elevated a position must act by arterialising the blood of those persons accustomed to live in lower localities, and that under the influence of the increased activity of the lungs from the pure mountain air the operation of the baths must be promoted. Internally taken, this water has no other effect than common water." Werneck says of persons bathing in the water, "Whether he be a townsman or a countryman, a mountaineer or a lowlander, who bathes for half an hour two or three times at a temperature of 29 degs., he will experience no difference between the Gastein and common warm water." Nevertheless, in some cases the baths are found to produce excitation, and it is usual to commence with baths of a quarter of an hour. Some patients bathe twice a day.

"The particular operation of these baths becomes manifested during the course, and frequently long afterwards. In several patients, after seven or eight baths have been taken, a slight indisposition, determination of blood to the head, loss of appetite, &c., are observed, which, however, soon subside, and seldom continue more than twenty-four hours. In some patients redness of the face occurs, and small vesicles arise; in these cases it is remarked that the patients soon afterwards become better, and their strength increases. But in those cases where no feverish action takes place, a longer time elapses before any amelioration is evident."*

* Ueber den Gebrauch und die Wirkungen natürlichen

These, like other thermal baths, increase the activity of the skin and the amount of perspiration, which, however, is not copious. Crises, chiefly evidenced by an increase of the quantity of urine, were formerly not uncommon, a reddish sediment being often deposited towards the termination of the course, and gravel and calculi being not unfrequently expelled from the bladder. Their general operation on the system is under different conditions mildly exciting, revivifying, strengthening, or sedative; it often tends to rectify a depressed state of the vital powers; hence many old people feel themselves younger after a course of baths: the pulse improves in fulness, the muscles in firmness, the limbs lose their stiffness. These waters are also said to have a special relation to the generative system, the powers of which they increase, but it is in all probability by improving the general health. Eruptions are occasionally produced by them on the skin, and even sometimes appear after the baths have been discontinued. Of late years eruptions and crises are of much less frequent occurrence, owing to the improved mode of using the baths. They are likewise especially applicable in those cases of diminution of the nervous energies, from excesses, or from too close mental application; such as nervous disorders with loss of power and muscular relaxation, tremblings of the limbs and paralysis

und kunstlichen Heilwasser.—Eble, die Bæder zu Gastein. Wien, 1834.

(especially when from incipient disease of the spinal chord, induced by dissipation, excess in drinking, or premature old age). "The more purely nervous the debility is, and the less it depends upon material or organic affections, so much the more certain and effectual is the power of these baths."* In debility of the generative organs and in sterility from the above-mentioned causes, in tedious and fixed rheumatic or gouty diseases, tic douloureux, general irritability of the nervous system, with spasmodic and hysterical symptoms, and in chronic cutaneous diseases, old wounds and ulcers, the Gastein baths may frequently be employed with advantage.

We have here the enumeration of several complaints to which many mineral springs are said to be applicable; but though some might derive equal advantage from different springs, yet the particular circumstances in individual cases may often guide us as to the preference to be accorded to one or the other. Thus, take paralysis for instance; though this disease may often be remedied by Wiesbaden, Wildbad, Teplitz, or Gastein, yet there frequently occur circumstances which would lead us to expect more benefit from one of these springs than another. Considering the situation of these baths, particularly of Wiesbaden and Gastein, no two places can be more opposed, both in regard to their climate and the nature of their waters, the only point which they

* Eble, op. cit.

have in common being their elevated temperature. No medical man, therefore, who is acquainted with these circumstances would, because he had heard that Wiesbaden and Gastein were beneficial in paralytic cases, deem it a matter of indifference to which of these places his patient was sent. He would not send a young or middle-aged subject, in whom the disease was caused by a course of dissipation, or by an accident, and of recent duration, to the stimulating baths and relaxing climate of Wiesbaden—from which, in all probability, he would not derive benefit; whereas by the milder excitation of Gastein, and the more invigorating nature of its atmosphere, the disease would very likely be removed. Or, on the other hand, if the disease existed in an individual of a different habit or constitution, or originated from different causes, such as a chronic affection of the spinal cord or its membranes, visceral obstruction, from rheumatism, or from exposure to damp and cold (as is often the case in military men who have seen hard service), and if it were of long duration, the more exciting and penetrating operation of the Wiesbaden or Aix-la-Chapelle baths, in which both the temperature and the absorption of a water strongly impregnated with saline and gaseous substances are active agents, combined with the warmth of the localities, by which the effect of the bath is promoted, would be a more likely means of affording effectual relief than Gastein, Wildbad, or any similar springs, which in many of these cases would not be sufficiently active to

resolve exciting obstructions, or to arouse the nervous energy of the system or of the affected parts, from its torpid condition. There are unquestionably many cases to which both kinds of springs might be applicable with advantage, but it does not follow from this that the advantage would not be the greater from one than from the other; and though in these doubtful cases a slight mineralised thermal spring might render great service, yet in the majority of the instances specified the benefit from a spring like Wiesbaden would be more real, of a more permanent nature, and more likely to effect a complete removal of the disease. In certain cases, again, though one kind of bath might appear to be more particularly indicated, yet its use might not be attended with the anticipated advantage which might subsequently be derived from the other. This may depend upon the individual idiosyncrasies, or upon the obscurity in which the causes of this disease are often enveloped.

The same remarks will apply to rheumatic, neuralgic, and other complaints. In the greater number of instances of rheumatism and neuralgia which admit of relief from mineral waters, if accurate statistical data could be obtained, and the results of the treatment known after a definite length of time, I have little doubt that the permanent cures would be in a much greater proportion from a strongly-mineralised saline or sulphurous spring, than from Gastein, Leuk, Pfeffers, Buxton, or any other naturally warm spring, con-

taining but a minute proportion of solid and gaseous substance; but at the same time, that these latter kind of springs would be more suited than the former to certain cases, to the peculiarities of which I have alluded, under the heads of Wildbad, Wiesbaden, the springs of the Pyrenees, &c.

In some persons of irritable habit, the duration of the bath, at first, should not be longer than a quarter of an hour, the time being subsequently prolonged till perspiration, or an increased flow of urine, takes place, which frequently happens about the fifteenth or eighteenth bath. Towards the end of the course the time the patient remains in the bath is gradually lessened.

Gastein, like some other baths in elevated situations, as Barèges, has a reputation for causing the expulsion of balls, splinters of bone or other foreign substances lodged in the body. Hæmorrhage also occasionally takes place, especially in cases of suppressed menstrual or hæmorrhoidal discharge; which circumstance may be ascribed to the combined influence of the rarity of the atmosphere and of the baths on the vascular and absorbent systems. Baths are allowed only to persons who have a ticket from the inspector or one of the physicians.

In some cases drinking of the water is combined with the use of the baths, as in diseases of the air passages, stomach and bowel derangement, gout, tendency to the formation of gravel and stone, &c.

There is but little in the way of public amusements at Gastein, which is exclusively frequented for its waters. Dinners are at the primitive German hour of one o'clock, and plain in quality, nothing being given that is likely to neutralise the efficacy of the course. At Straubinger's, however, there is a second *table d'hôte*, at the fashionable hour of three, at a higher price. There is a reading-room, where little else than German journals are received, and a ladies' room, provided with a piano, to which the entrance is free. Bathers going through the course are required to pay a slight tax for the music and the public accommodation provided for them.

The places most resorted to in the environs are the Belvedere, in the Schwartzenberg-park grounds, Vergissmeinnicht, Wallner, Schillerhöhe, Patriarchenhöhe, the Swiss Cottage, the English Coffeehouse, Bochstein, Patschker, Rudolphshöhe.

The Mülkenkur (goats' whey) is in some cases added with advantage to the bath course.

Hof-Gastein lies three quarters of a post distant from Wildbad-Gastein, in an open, sunny valley. It contains two hotels (the Golden Eagle is the first) and ten lodging-houses, comprising altogether 103 rooms; and twenty-five baths—as also the military bath-hospital, for soldiers in the Austrian service, and for common baths for the poorer classes. The grounds are agreeably laid out. In the environs are Pirkershöhe, the Castle of Hundsdorf, Gadanneu, &c.

It appears by the table given in a local guide,

that the number of visitors did not materially increase, since the beginning of the present century, till 1850, in which year the number of persons amounted to 1,538, having been, in 1804, 1,345. In 1855, however, it reached 2,750; and in 1861, 3,200. This, together with the great proportionate increase which I have shown to have taken place at some other baths, is a convincing proof that the treatment of chronic diseases by mineral waters is more and more highly appreciated.

The latest publication on the waters is the work of Dr. Pröll (who speaks English), which treats fully of the subject.*

* Gastein-Erfahrungen und Studien. Wien, 1862.

ISCHL.

THIS bath is situated 1,500 feet above the sea's level, in one of the most beautiful valleys of the mountainous and romantic region termed the Salz-Kammergut, seven German miles from Salzburg. It may be reached from the Danube, at Linz, by a primitive railway extending to the lake of Traum, which is navigated by a small steamer till within a short distance of the bath.

Ischl has been considerably enlarged, and the accommodation greatly improved, of late years. Like Gastein, lying out of the route usually taken by tourists, and being moreover at the farther extremity of Germany, it is little frequented by English visitors, except the few who repair thither to use its waters. The principal hotel (Elizabeth) is commodiously fitted up, and contains a spacious saloon, where upwards of 100 people sit down daily in the season to the *table d'hôte*. There is a small casino, but the chief recreative resource is derived from the beauty of the environs. The Curhaus and its large covered gallery serve as a point of *réunion*, and for walking exercise in wet weather. There are several objects of interest in the neighbourhood, duly described in "Murray" and other guide-books; the salt-mine is the one most frequently visited.

Whey and goats' milk are often taken by

patients using the baths. In some cases, whey baths are administered, with the addition of pine leaves. In the Trinkhalle, erected a few years ago, several of the waters imported from other baths are dispensed. For those who do not require the watering-place amusements of larger places, Ischl would be found an agreeable place of sojourn for a few weeks. It is much frequented by the Emperor, and by many Austrian families of distinction. Two commodious establishments serve for the administration of the water in the form of baths and douches, and for baths and inhalations of the saline vapour of the boiling water in the reservoirs.

The springs belong to the cold saline class (Soolquellen), and resemble those of Salzhausen, Hallein, Kreutznach, and Kissingen. A pint of the water contains 236 grains of salts, of which muriate of soda 222·10, muriate of magnesia 7·11, sulphate of magnesia 4·85, constitute the bulk. There is likewise a minute fraction of iodine.

Like others of this kind, these waters, used in the form of bath, have a powerfully penetrating, exciting, and solvent action upon the skin and glandular apparatus, determining from internal organs to the surface, and relieving congestion of the large vessels and viscera by causing a freer action of the capillaries. They are principally employed in scrofulous affections in persons of a lymphatic temperament, swellings and indurations of the glandular system, chronic diseases of the skin where a strong stimulus is required, old

syphilitic cases, and those in which mercury has been too freely used; as also in debility of the osseous system, as rickety affections, &c.

The mountain air, together with the use of the springs, of the vapour inhalation, and of the whey-cure, combine to render Ischl a suitable bath for many persons affected with catarrhal complaints, or threatened with pulmonary consumption.

The so-called saline sulphur spring (Salzbergquelle) is mostly used for drinking; it contains only 44 grains of muriate of soda, and 12 of sulphate of soda, to the pint, and is more aperient than the others. The mud found near this spring is impregnated with sulphur, and is used for baths and local applications in cases for which this remedy is indicated.

The Maria-Louisenquelle has a less amount of salts, and is mostly used for drinking.

Having, under other heads, specified the chief complaints in which this class of waters is indicated, I need not here recapitulate them.

“Considering the altitude of Ischl, the climate is mild, though the evenings and mornings are cool; the air is fresh and pure—its moisture, however, is not inconsiderable, and rainy days even in the height of summer are tolerably frequent.”*

Dr. Polluk and Dr. Helft (who published a work on Ischl in 1857) are resident physicians.

* Seegen. Op. cit.

BATHS OF GERMANY.

PART III.

CENTRAL GERMANY.

SECOND DIVISION.

BATHS OF BAVARIA AND OTHER DISTRICTS.

KISSINGEN.

KISSINGEN is a two hours' drive from the Schwimfurt, and five from the Gmunden station. It is situate 100 feet above the sea, in the fertile valley of the Saale, which is open to the east and north-east, and is sheltered from cold winds by tolerably high hills. The summer is relatively cool, and the heat seldom oppressive; but rain more frequently falls at this season than at many other baths; the air of the valley is consequently somewhat moist. The town is clean; the principal streets are wide, the houses large and well built. The number of inhabitants exceeds 2,000. On entering by the Curhaus-strasse, and passing the Hotel de Russie, Sanner's large boarding-house, one arrives at the Curhaus, on the right, having in front the public promenade, with the principal

springs and the Cursaal. The street is continued, under the name of Markt-strasse, through the market-place to the more primitive portion of the town. Diverging at a right angle from the Markt-strasse is the Ludwig-strasse, which, with the Max-strasse and the Theresien-strasse, contain some of the best houses, including Schlatter's hotel and Hailmann's large lodging-house, at the corner of the promenade. Some of the physicians likewise receive lodgers in their houses. The late Dr. Maas' house is now a lodging-house, belonging to his son-in-law, Dr. Balling, who occupies a large detached house near the new Protestant Church. On the opposite side of the river, at a short distance from the town, is the Bellevue hotel; Dr. Welsch has also a large house on this side. The Curhaus has about 170 rooms, including a large dining-room for the *table d'hôte*, a state room, and several private sitting-rooms; on the ground floor are a *café*, billiard and reading-room free to the public; the back part being taken up with the baths, which are convenient, and supplied with all necessary apparatus for douching, &c. A neat English church, built by subscription, was opened last season. The Cursaal comprises a spacious saloon, tastily decorated with fresco paintings, and smaller apartments. The band plays in the evening, and occasional *réunions dansantes* are given, but they are not well attended; most of the visitors being at Kissingen for the purpose of using the waters, retire early to bed, and rise early. The small theatre, built in

the style of a Swiss cottage, is, however, well attended; the performance begins at four o'clock, and terminates about six. On the promenade are booths for the sale of articles of taste, and M. Jugel, of Frankfort, has a branch library during the season.

A handsome iron colonnade connects the Cur-saal with the gallery beneath which rise the Ragockzy and the Pandur springs, the water of which is dispensed to drinkers by men in livery. At a little distance the Maxbrunnen likewise rises on the promenade.

Neither *flaneurs* nor *bon vivants* would be likely to find Kissingen suited to them, unless for the restoration of their health. It is not a pleasure bath; there are no gaming-tables, and balls are few and far between. The dinners, moreover, are extremely plain; the *tables d'hôte* being under surveillance of the authorities, nothing is served up that is likely to interfere with the action of the waters, and in the dining-room of the Curhaus is suspended a list of articles of diet allowed and prohibited. The woody hills enclosing the valley are, however, intersected with well-kept paths, supplied with seats; in the environs are several pleasing spots to which excursions may be made; the highest points are the summits of the Altenberg and the Stationsberg, whence extensive views may be obtained of the surrounding country.

Kissingen is generally healthy, fevers being of rare occurrence, though not uncommon in the

neighbouring villages. The most ordinary complaints among the inhabitants are rheumatic and catarrhal affections. A slight tax is levied on Kurgäste, the number of whom seems to have been pretty stationary of late years; in 1850 there were 4,643, in 1859 only 3,430. This may have been an exceptionally thin season, but it must be recorded that only those using the waters and their families are inscribed on the list, and not casual visitors for a few days, as is done at most other baths. Drs. Granville and Travis have been in the habit of passing the season at Kissingen. Dr. Diruf, who speaks English, is a resident practitioner.

The Ragockzy is most commonly employed for drinking. It bubbles in the well, and its taste—which is sometimes more piquant than at others—is not disagreeable after the first day or two. “A glass taken fasting,” says Dr. Balling, “produces a sensation of warmth in the stomach, with some distension and eructation of gas, and at times slight headache, or a feeling of oppression over the forehead. Increased appetite and activity of the functions of the alimentary canal, with elasticity of the spirits, generally ensue during the first days of drinking. In the second week some degree of reaction frequently takes place; the patient becomes capricious and irritable, the tongue furred, the bowels are more irregular. Owing to the quantity of gas and iron, the water is frequently not well borne, without some

preparatory treatment, by patients of an irritable habit, or whose pulse is quick.*”

The combination of solvent, stimulating, and tonic properties of this water render it well suited to relieve states of disease connected with plethora of the abdominal venous system and liver congestion, which so frequently occur in persons about or past the middle period of life—as deranged digestion, a feeling of uneasiness after eating, constipation, piles, a disordered state of the skin, indicated by various eruptions, especially about the face, painful and irregular menstruation, hypochondriasis. The same means would generally be efficacious in many cases of dyspepsia, with want of tone in the alimentary canal, arising from over-indulgence in the pleasures of the table, or the abuse of ardent spirits, attended with heartburn, acrid eructations, or pyrosis. Gout, when comparatively recent, not occurring in persons of debilitated constitutions, and accompanied with much derangement of the digestion, would likewise mostly be relieved by a course of the Ragoekzy, combined with baths. A mild attack is not unfrequently induced by their use, which is mostly

* *Kissingen et ses Eaux Minerales.*—Dr. Balling remarks that, after ten or fourteen days’ drinking, the action of the iron is evidenced by the appearance of the alvine secretions, and that, after a month’s course, the blood has been found to contain more iron than previously. After a certain number of baths taken by a young man who drank no water, the presence of iron in the excretions was manifested by their dark colour.

followed by a long exemption. Dr. Wendt remarks, with respect to the action of the waters in this disease: "As long as the gout, in its various forms, is combined with increased sensibility, or much susceptibility to external impressions, Wiesbaden is calculated to render more service; but when it arises from obstruction or torpidity of the circulation in the abdominal viscera and the skin, the Pandur baths are preferable."* I do not, however, consider Wiesbaden to be so applicable as some other baths to cases of gout in persons of much nervous susceptibility as it is to those of long standing, and of hereditary origin, in persons more advanced in life. Dr. Balling recommends the Ragockzy with baths of the salt springs, but does not consider these means so well adapted to remedy gouty anchylois, paralysis, and neuralgia, as Wiesbaden. The combination of the above-mentioned means is also well calculated to remove the evident consequences of the scrofulous diathesis; they also eradicate or weaken the predisposition. Where there is serious concomitant disease of the skin and bones, Dr. Balling thinks that Kreutznach would be preferable in most cases. As respects gout, stomach and liver disorder, hypochondriasis having a material foundation, and certain other complaints, other cold, gaseous, saline waters—as Marienbad or Homburg—would often produce a no less beneficial effect than those of Kissingen, which Dr. Seegen

* Die Heilquellen zu Kissingen.

remarks is often compared with Marienbad: "In many of the forms of disease which depend upon abdominal congestion, the choice between these places is a matter of indifference. Where the object is to relieve the abdominal vessels by means of copious alvine secretions, and also in persons of full habit of body, who are subject to abdominal plethora, Marienbad deserves the preference. If, however, the existing disease is of a scrofulous origin, or where the effect of a too copious action of the bowels is to be apprehended, as also in persons of a torpid and indolent habit, Kissingen would be most applicable."*

The Pandur spring contains somewhat less salts and iron, but more gas, than the Ragockzy. Its action, when drunk, is rather more solvent and exciting. It is, however, chiefly used in the form of bath, which produces an analogous action (though less in degree) to the internal use in rectifying an abnormal condition of the blood. "The absorption of the constituents of the Pandur and Soolensprudel, in the form of bath, and their exciting property on the skin," says Dr. Balling, "produces the same result in improving the state of the blood as does their internal use. When, however, both means are combined, a quicker and more favourable result ensues. The baths, moreover, considerably augment the respiratory faculty of the skin, and promote the absorption of the gas, which effect is

* *Op. cit.*

not momentary, but permanent. The skin, as an organ of respiration, deserves more consideration than is generally accorded to it.”*

As with respect to other mineral baths, an increase of previously-existing pains is not unfrequently occasioned by these, or even eruptions on the skin. Besides the above-mentioned complaints, the baths are often very serviceable in certain disordered states of the health in young females, depending upon irregular circulation of the blood, or vascular fulness of the uterine system, as hysteria and some cases of sterility. When, however, these complaints, as well as hypochondriasis and other nervous disorders, are connected with high nervous irritability, without undue determination of blood to particular organs, a spring of a different kind would be mostly indicated.

On the other hand, Dr. Seegen denies that the iron can exert any decided effect on the action of the waters. “The therapeutical efficacy of Kissingen,” he observes, “depends upon the amount of common salt and the large proportion of carbonic acid gas contained in the springs. The iron—upon which so much stress has been laid by some of the local practitioners, contrary to the opinion of Osann and of Vetter—is seen by the recent analysis of Liebig to be in inconsiderable proportion. It is much smaller than in the Marienbad water, and can consequently have

* Briefe über die Wirkung der Mineralquellen zu Kissingen. 1859.

scarcely any effect, when the large amount of salts in the water is taken into consideration.* We may likewise perceive from the same analysis that the artificial difference which some have sought to establish between the Ragockzy and the Pandur cannot be maintained; they are analogous waters, and have the same mode of action."

The water of the Ragockzy is largely exported, but it loses thereby somewhat of its properties; it is often turbid when poured from bottles into the glass, and its taste is different from what it is on the spot. In many of the cases where I have prescribed it, I have found that it acts more upon the kidneys, and less frequently on the bowels.

The Maxbrunnen is a saline-acidulous spring, rising on the promenade, at a little distance from the others. Its taste is very analogous to that of the Selters water drank on the spot, though it contains less salts, and is more gaseous. It is not unfrequently taken as a cooling drink in summer, or mixed with wine at dinner, and may be used medicinally in the cases already specified, to which waters of this class are applicable.

The saline springs are on the left bank of the Saale, about a mile distant from the town. A large quantity of salt has been derived from them from a distant date, but they have only been in ex-

* The Marienbad water contains, however, a large proportion of sulphate of soda, which renders its action more aperient, and which would be more likely to neutralise the action of the iron than the muriate of soda.

tensive use medicinally of late years. The handsome bath-house erected on the spot is replete with every convenience for the administration of baths and douches. On the first floor are rooms for gas baths and douches, as also a gallery for inhaling the saline vapour emanating from the heated water. In the vestibule the Soolensprudel rises in a large circular well, the water being in continual violent agitation. This spring presents the curious phenomenon (of which I have elsewhere given the explanation) of ebbing and flowing at stated intervals. After the water has been at the same level for some hours, a deep rumbling noise is heard, and it descends in the well twelve or sixteen feet, whence it gradually reascends to its former high level. Nearly an hour is required for its ascent, and as much for its descent; the rise and fall occurs six or eight times in the twenty-four hours. The temperature is 16 degrees R. On either side of the vestibule are eleven convenient bath-cabinets, one side being appropriated to men, the other to women. On the first floor are the inhaling room and the vapour baths. There are two gas baths, provided with apparatus for partial baths, as of single limb, and also the application of gas douches to various parts.

According to Kastner's analysis, a pint of the Soolensprudel contains 107 grains of muriate of soda, 24 muriate of magnesia, 25 sulphate of soda, 6 carbonate of magnesia, and 3 muriate of lime, with fractional portions of potass, iron, &c. This water is used exclusively for baths, which

are highly efficacious in scrofulous affections, glandular enlargements, in obstinate rheumatic affections, some long-standing cutaneous diseases, and in most of the cases which have been specified under the heads of Kreutznach and Soden. The mother-water is sometimes added to the baths. They are sometimes taken at the natural temperature of the water.

Another of the salt springs is the Schönbornbrunnen, from which a large quantity of salt is extracted. For the amusement of visitors, this spring is projected at certain times, as a magnificent *jet d'eau*, to the height of eighty feet. It yields per minute 100 cubic feet of salt water, and 200 of carbonic acid gas. Goat's whey is drunk by some patients, being sometimes added to the waters.

Liebig's more recent analysis of the Ragoekzy (1856) shows $65\frac{1}{2}$ grains to be the amount of solid constituents in a pint of water—viz. :—

	Grains.
Muriate of Potass	2 $\frac{1}{4}$
" Soda	44 $\frac{3}{4}$
" Magnesia	2 $\frac{1}{3}$
Sulphate of Magnesia	4 $\frac{1}{2}$
Carbonate and Sulphate of Lime	11
" " Iron	0 $\frac{1}{4}$

With 41 cubic inches of Carbonic Acid Gas.

Kastner's previous analysis showed 82 grains of saline substance and only 26 cubic inches of gas to the pint. The springs are, however, liable to vary somewhat in point of strength at different times.

The Pandur, according to Liebig, contains 61 grains to the pint, of which 42 are muriate of soda, $11\frac{1}{2}$ sulphate of magnesia, $10\frac{1}{4}$ carbonate and sulphate of lime, iron $\frac{1}{4}$ grain, and 48 cubic inches of gas. Thus, with the exception of its containing more sulphate of magnesia and carbonic acid, it is very analogous to the Ragockzy. The Maxbrunnen contains $27\frac{1}{2}$ grains, of which $17\frac{1}{2}$ are muriate of soda, no iron, and 41 inches of gas.

Besides the above-mentioned springs, Kissingen possesses since 1858 a bitter water, obtained from the Soolensprudel, which is a good deal employed alone, or added to the Ragockzy, when more active effects on the bowels are required. Its composition, as shown by Liebig's analysis, is not unlike that of Friedrichshall. It is a good deal exported. The following is the proportion of salts contained in a pint of water:—

	Grains.
Sulphate of Soda	46.59
„ Magnesia	39.05
Muriate of Soda	61.01
„ Magnesia	31.02

With minute portions of Muriate of Ammonia and Lithia, traces of Bromate of Magnesia, &c., and 5.9 cubic inches of Carbonic Acid.

BOCKLET AND BRUCKENAU.

BOCKLET is distant about a German mile from Kissingen. At one end of the avenues of poplars and other trees, forming the promenade, are two buildings, the Badbau, or Bath-house, and the Saalbau, or Pump-room; the upper parts of both are disposed in apartments for strangers. Between these two buildings are a portico and terrace, whence there is a descent by a flight of steps to the springs. The best accommodation, however, is in the buildings at the other end of the avenue, the Furstenbau and Neubau. The bathing cabinets in the Badbau are sixteen in number, and not the most convenient. There are also separate cabinets for the douche. Most persons, however, drink the water, of which a large quantity is sent to Kissingen, between which place and Bocklet there is a daily communication by public conveyance.

The principal spring, the Ludwigsquelle, has a sharp, piquant, and chalybeate taste. It contains a very large quantity of carbonic acid; according to Kastner's analysis, as much as 39 cubic inches to the pint, which differs materially from Vogel's former analysis. In the same quantity of water is contained about the following amount of solid substance: Muriate of soda $6\frac{1}{2}$ grains, mur. magnesia $4\frac{1}{2}$, carbonates of magnesia and lime $3\frac{1}{2}$,

sulphate of soda $2\frac{1}{2}$, sulphate of magnesia $3\frac{1}{2}$, iron nearly $\frac{3}{4}$ grain. The Friedrichs and Carlsquelle are less rich in carbonic acid, muriate and sulphate of magnesia. The Schwefelquelle or Stahlquelle contains very little saline substance, about half a grain of carbonate of iron, and 20 cubic inches carbonic acid gas to the pint. Its temperature is 12 degrees R.

Compared with other springs of the same class, the Ludwigsquelle most resembles the Trinkquelle of Kronthal. The Carolinenbrunnen at Marienbad contains less salts and iron, and scarcely half the quantity of gas; the Schwalbach springs also contain less salt and gas, though nearly the same proportion of iron, and hence would have a more decided tonic action; the Pouhon at Spa has still less gas, saline substance, and iron; while the Bruckenau, which very nearly approaches the Ludwigsquelle in amount of gas, scarcely contains half the quantity of iron; though from the comparative absence of salts its action would in many cases be more decided. Dr. Kirchgessner speaks highly of its effect in cases of general and local debility, especially of the digestive organs and the uterine system; as also in the purely nervous kind of hypochondriasis and hysteria, not dependent upon visceral congestion.* As, however, I have already enumerated most of the cases to which waters of this class are applicable, I shall not recapitulate them; but would premise that the Lud-

* Der Kurort Bocklet.

wigsquelle, from the large quantity of salts and gas which it contains, would be best suited to those cases where a more solvent and aperient action is required; and that where a purely tonic effect is sought, the Stahlquelle waters would best answer the purpose.

Bruckenau is situate in a verdant and extremely picturesque valley, through which flows the little river Sinn, about two miles distant from the small town of the same name, and consists of a few lodging-houses, the residence of King Louis, who formerly passed here some weeks of the summer; a large bath-house containing seventeen cabinets and an elegant Kursaal, second only to that of Wiesbaden, and built in the same style as the modern public edifices at Munich, the interior being richly decorated with fresco paintings. Some of the lodging-houses, as the Saalbau and Kellerbau, can accommodate a good many visitors; altogether about 300 might be lodged in the place.

There are three springs, the Bruckenauer, the Sinnberger, and the Wernarz, within a few paces of each other. The latter is a purely acidulous spring, containing a considerable quantity of gas, but a very minute portion of solid ingredients. The Bruckenauer might indeed likewise be classed among the acidulous springs, as, according to the following recent analysis by Scheerer, a pint of water contains a very small proportion of saline substance and a fraction of iron, while

there is as much as 30 cubic inches of carbonic acid gas :—

Sulphate of Potash	0·14
Sulphates of Magnesia and Soda	0·55
Carbonate and Muriate of Magnesia	0·18
Carbonate of Lime	1·20
„ Iron	0·06
„ Manganese	0·02
Silex	0·10
Extractive Matter	0·48
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Grains	2·73

The water has, nevertheless, a chalybeate taste, though not strongly marked, which would be completely overpowered if the salts existed in larger quantity.

Many patients bathe: the majority both drink and bathe. A course of the water is most applicable to cases where a tonic and vivifying action is required in persons of a torpid habit, to whom the stimulus of the gas would be beneficial. On those of an opposite temperament, or where the object is to procure the absorption of iron into the system, more decided chalybeate springs would be preferable.

Bocklet and Bruckenau are scarcely frequented by any but Germans, mostly inhabitants of Bavaria, or of the neighbouring countries.

HEILBRUNN.

THE village of Heilbrunn lies about 2,400 feet above the sea, in Upper Bavaria—eight German miles from Munich, and half a mile from Benedictbeuren. Its spring, the Adelheidsquelle, presents the peculiarity over other saline springs in being richer in iodine and bromates. The following analysis by Poltenhofer shows the following proportions of its constituent parts:—

Muriate of Soda	38·0684
„ Potass	0·0200
Bromate of Soda	0·3678
Iodate of Soda	0·2199
Sulphate of Soda	0·0480
Carbonate of Soda	6·2168
„ Lime	0·5840
„ Magnesia	0·1440
„ Iron	0·0720
Earthy Matter	0·1424
Silex	0·1472
Organic Matter	0·1648
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Grains	46·1953
Carbonic Acid Gas (cubic inches)	13·18

There is scant accommodation in the village, as the place itself is but little frequented. The water, however, has been largely exported for a long period. In the neighbouring village, Bichel, there is an inn, with two bath cabinets; but the spring does not yield sufficient water for more than ten baths daily. It is consequently almost

exclusively used for drinking, and occasionally for lotions, cataplasms, and injections. The course lasts from three to six weeks, beginning with nine ounces of water daily, gradually increasing the quantity to three or four times as much.*

The Adelheidsquelle is employed in the same class of cases as the Kreutznach water, but it is considered better adapted (in so far as the internal use alone is concerned) to procure the resolution of glandular enlargements, and has been used with good effect in some cases of recent prostatic enlargement, arising from inflammation or a congested state of the vessels.

* Seegen. *Op. cit.*

SALZBRUNN

Is a large village in a beautiful valley of Prussian Silesia, 1,200 feet above the sea's level. There are ten springs, of which two are chiefly used for drinking—the Obersalzbrunn and the Mühlbrunnen—which are nearly identical as regards the amount and respective proportion of their constituent parts. The climate is bracing, sudden changes of weather are not uncommon, and from the high position, winds are often experienced. Salzbrunn is a good deal frequented in the season by visitors from the north and north-western parts of Germany, a great portion of whom labour under diseases of the respiratory apparatus and incipient consumption, or a tendency to this complaint, in which the waters have acquired a high reputation. Many likewise drink goats' whey, which is here abundantly provided, alone or mixed with the water. The place is unknown to English visitors; but, as the water of the Oberbrunnen is largely exported, an account of its composition, as shown by the analysis of Fischer, may be

acceptable. It belongs to the alkaline saline acidulous class:—

Carbonate of Soda	. . . . .	8·81
" Lime	2·02
" Magnesia	1·00
" Iron	0·07
Sulphate of Soda	3·98
Muriate of Soda	1·12
Silex	0·24
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Grains	17·24
Carbonic Acid Gas (cubic inches)	36·

FRIEDRICHSHALL.

THIS water, like the bitter water of Kissingen, is derived from a strong saline spring which was formerly much used for the extraction of salt. It rises in the duchy of Saxe-Meiningen, about four German miles from Cobourg, and has not been used medicinally for more than fifteen years ; it is now extensively exported, and does not undergo much change by being kept. It is applicable in all cases where a purgative water is indicated, and is milder in its operation than the Pullna and Saidschutz waters.

Analysis by Liebig :—

Sulphate of Soda	46·51
„ Potass	1·52
„ Magnesia	39·55
„ Lime	10·34
Muriate of Soda	61·10
„ Magnesia	30·25
Bromate of Magnesia	0·37
Carbonate of Lime	0·11
„ Magnesia	3·99
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Grains	193·74
Carbonic Acid Gas (cubic inches)	5·32

PYRMONT.

THIS bath lies in the principality of Waldeck, in an open valley enclosed between two ranges of well-wooded hills. The nearest town of importance is Hanover. It has been resorted to for centuries, and its springs rank high at the present day as being among the most efficient of their class. There are six chalybeate springs. The Trinkquelle, the Brodelbrunnen, and the Neubrunnen, do not greatly vary from each other as regards the amount and the relative proportions of their constituents; the last two named are mostly used for baths. There are likewise two acidulous springs.

Analysis of the Trinkquelle, according to Wiggers:—

Carbonate of Iron	.	.	.	0.418
„	Manganese	.	.	0.031
„	Lime	.	.	7.271
„	Magnesia	.	.	0.113
„	Ammonia	.	.	0.002
Sulphate of Potass	.	.	.	0.233
„	Magnesia	.	.	3.880
„	Lime	.	.	9.054
Muriate of Soda	.	.	.	0.515
„	Magnesia	.	.	0.696
„	Lithia	.	.	0.026
Silex	.	.	.	0.026
Earthy Matter	.	.	.	0.011
				<hr/>
	Grains	.	.	22.276
	Carbonic Acid Gas (cubic inches)	.	.	26.

Owing to the comparatively large amount of salts, this water has not so marked a chalybeate action as Schwalbach or Spa; but on that account it would be better suited to some cases where these waters would disagree.

“In many places in and around Pyrmont carbonic acid gas is emitted from the sandstone caves; the largest of them, the Duns-thöhle, is ten feet high and six broad; the stratum of gas is generally two feet high. About a mile from Pyrmont are likewise three saline springs used for the extraction of salts, and employed medicinally as baths. The Soolquelle contains, according to Brandes and Krüger, 85 grains to the pint (of which 61 are muriate of soda and 11 sulphate of lime), and 17 of carbonic acid.”*

Bathing in the Brodelbrunnen or in the Soolquelle, combined with the internal administration of the Trinkquelle, is calculated to remedy many disordered states of the system, where an alterative and tonic medication is required. The waters are found to be particularly efficacious in want of tone of the digestive apparatus, in scrofula, anemia and chlorosis, abdominal congestion, and in chronic catarrhal affections of the air passages.

The accommodation is good, and the environs pleasing. The visitors at Pyrmont are, however,

* Seegen. Op. cit.

for the most part, from Northern Germany, and the adjacent countries; the English being only occasionally met with, though the numbers will doubtless increase with the increased facilities of access, considering the valuable nature of the waters

KREUTH.

THIS small bath is a good deal frequented in the season by Bavarians, especially from Munich. It stands on an elevated plateau, among the Bavarian Alps, surrounded by lofty, pine-covered mountains, and consists, for the most part, of two large lodging-houses, joined together by a covered gallery, a bath-house, and three or four detached buildings. It has also its Cursaal, where about 200 persons (being the whole population) sit down to the *table-d'hôte* in the season. The walks in the environs and among the hills are varied and attractive, and the lake of Tegernsee, with its beautiful scenery, is within an easy drive.

The springs possess but little saline or gaseous substance. In the so-called sulphur springs there are $5\frac{3}{11}$ grains to a pint, principally carbonate and sulphate of lime. A good deal of water for the baths is brought from the salt spring at Rosenheim, some little distance from Kreuth, which, however, is less frequented on account of its waters than for the beauty of its environs, the elevation of its position, and the bracing mountain air—as also for the whey cure, which is here established, as at several other localities in Alpine districts. Most persons begin with two or three glasses of the whey, gradually increase the quantity to six or eight glasses, and bathe in the Ro-

senheim water ; some also use whey baths. This treatment is more particularly indicated in cases of irritability of the nervous and vascular system, where a cooling and laxative regimen is required ; as hæmorrhoidal affections, tendency to congestions of the thoracic viscera, and menorrhagia. In bronchial affections and incipient consumption it is said to have a peculiarly soothing influence ; the greater number of the invalids at Kreuth being those who labour under diseases of the respiratory organs ; these persons should be careful to guard against the atmospherical transitions to which so elevated a region is exposed. Dr. Kramer states that Kreuth is prejudicial in cases of pulmonary disease in persons of florid habit and active circulation, but that it is most advantageous in disease of the lungs of a scrofulous origin. The lightness of the air, and the solvent property of the whey, are of great service in passive hæmoptysis and in irritability of the nervous system. In a large proportion of scrofulous cases a summer residence in this elevated locality, together with baths of the Rosenheim water, would be productive of material benefit.





TIGHT
GUTTERS.

