

On Marienbad spa and the diseases curable by its waters and baths / by Apollinaris Victor Jagielski.

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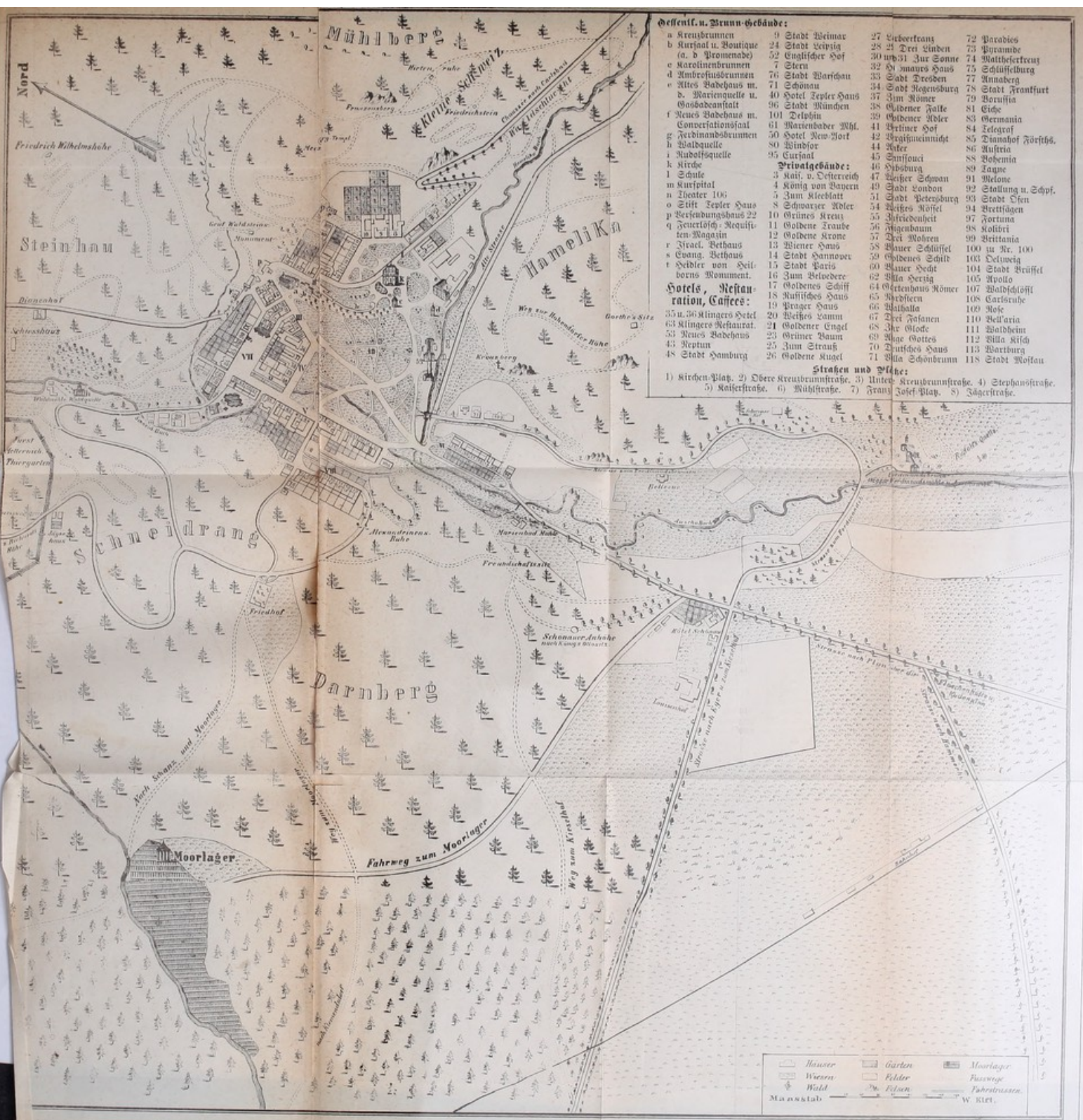
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- Öffentl. u. Brunnen-Gebäude:**
- a Kreuzbrunnen
 - b Kurjaal u. Boutique (a. d. Promenade)
 - c Karolinenbrunnen
 - d Ambrosiusbrunnen
 - e Altes Badehaus m.
 - f Neues Badehaus m.
 - g Conventionsaal
 - h Ferdinandsbrunnen
 - i Karlsquelle
 - k Kirche
 - l Schule
 - m Kurspital
 - n Theater 106
 - o Stift Tepler Haus
 - p Verordnungsbaus 22
 - q Jenczichs; Aequisten Magazin
 - r Israel. Bethaus
 - s Evang. Bethaus
 - t Sebler von Heilborns Monument.
 - u Zum Belvedere
 - v Goldenes Schiff
 - w Russisches Haus
 - x Prager Haus
 - y u. z. Alingers Hotel
 - aa Alingers Restaurat.
 - ab Neues Badehaus
 - ac Neptun
 - ad Stadt Domburg
 - ae Stadt Weimar
 - af Stadt Leipzig
 - ag Englischer Hof
 - ah Stern
 - ai Stadt Warschau
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 - ak Hotel Tepler Haus
 - al Stadt Wänden
 - am Delphin
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 - ao Hotel New York
 - ap Hainfort
 - aq Curiaal
- Privatgebäude:**
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- Hotels, Restauration, Cafes:**
- 1 Kirchen-Platz
 - 2 Obere Kreuzbrunnstraße
 - 3 Untere Kreuzbrunnstraße
 - 4 Stephansstraße
 - 5 Kaiserstraße
 - 6 Mühlstraße
 - 7 Franz Josef-Platz
 - 8 Jägerstraße

Häuser
 Gärten
 Moorlager

Wiesen
 Felder
 Pflanzungen

Wald
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 Pflanzungen

Maßstab: 1:10000



2
ON

MARIENBAD SPA

AND

*THE DISEASES CURABLE BY ITS WATERS
AND BATHS*

BY

APOLLINARIS VICTOR JAGIELSKI, M.D., BERLIN

Late Physician to the Prussian Army

Author of "A Treatise on Koutass, and its Use in Medicine," &c. &c.



LONDON

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1873

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Dedicated

BY PERMISSION, TO MY PRECEPTOR,

PROF. FR. THEODOR FRERICHS, M.D.

DIRECTOR OF THE CLINICAL SCHOOL OF BERLIN UNIVERSITY, ETC., ETC.,

WHOSE LEARNING AND CHARACTER

DISTINGUISH HIM AS A MEDICAL PHILOSOPHER.



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P R E F A C E.



MARIENBAD has in the last ten years acquired such a high reputation amongst the profession and public, that its waters are now extensively exported far and wide, and regularly mentioned in the lists of all importation-houses of natural and artificial waters in London. The increasing use of these waters is principally due to the continued recommendations of physicians who have prescribed them with advantage in numerous instances, and in many places have begun to regard them as indispensable for daily practice. Hundreds of thousands of bottles and jars, filled with Marienbad waters, find their way every year to all parts of the globe; and thousands of sufferers from far and near resort in the spring and summer to this centre of curative influence, whence they return home, relieved from various kinds of ailments, with joyful hearts and grateful memories.

My knowledge and experience of these waters dates from boyhood in Posen (Prussia), when I remember my dear father ordering them for use in the family,

and prescribing them in private practice. Under his careful guidance, and that of my accomplished clinical teachers in the Universities of Breslau and Berlin, especially the Professors Frerichs, Traube, Schoenlein, Romberg, and Martin, I acquired a confidence in the virtues of Marienbad, which has since been increased during my own practice, and my travels and residence in Germany, Austria, Italy, France, and England, where I have always found that the judicious use of the Kreuz and Ferdinandsbrunnen has produced highly satisfactory results. In writing this book, I desire to fill the existing vacancy in English modern Balneological literature, and by that means to be of service to sufferers of all English-speaking nations, who, having these waters brought to their notice, may then be able to order them for use at home when required, or to seek a more effectual cure at Marienbad itself, under the guidance of expert medical advisers.

May my good wishes be realised by the restoration of all patients who, through my agency, may determine to use the waters of Marienbad.

8 WEYMOUTH STREET, PORTLAND PLACE,
LONDON, W., *June 20, 1873.*

MARIENBAD.



SITUATION AND DESCRIPTION.

NESTLING in a lovely balsamic ravine, 1912 feet above the level of the North Sea or German Ocean, overtopped by mountains capped with beautiful pine-forests, lies Marienbad, in the district of Eger, in the kingdom of Bohemia, which belongs to Austria, twenty-four German miles from Prague (1 mile German = $4\frac{1}{2}$ miles English), five German miles from Eger, Franzensbad, and Karlsbad, and at a distance of ten German miles from Pilsen, Hof, and Plauen.

Mountains covered with dark evergreen forests surround Marienbad on all sides but the south. Magnificent parks, delightful pleasure walks and drives, are interspersed among the gentle slopes and hills. It is the soft mellow character of the scenery, rather than its grandeur, which refreshes and cheers the impressionable and feeling heart. There is a beautiful contrast between the stern dark summits and the lively green plain, through which, from the very foot of the ravine, small rivulets gurgle along, like the Steinhaubach, Schneidbach, and Hamelica-bach, all paying tribute to the waters of the Auschowitzerbach. The well-tended flower-beds, rich in colour and fragrance, the neat snow-white

cottages, harmoniously combine to form a landscape so overpowering with charms, that whoever is enticed within its bewitching circle is thrown into a blissful ecstasy, which banishes for the time all his bodily and mental ailments and troubles;—the first step to a lasting recovery. Whoever sees it for the first time, will exclaim, as others have done before, “Oh, what a delightful situation! how charming! It is more lovely than any other spa I have ever seen,” &c. To the north of this delightful retreat the Steinhauberg raises its broad forehead, to the north-east and east the Muehlberg, to the south-east the Hamelicaberg, and to the west the Schneiderrauberg. Beyond the Franzensbrunnen and the Schöenau the mountains recede towards the south, and open to the eye a view over extensive corn-fields, meadows, and broken, rough country, where are the villages and townships of Neudorf, Dreihacken, Kuttenplan, and Plan.

The Franz Joseph Railway, opened in the year 1872, unites Marienbad with the network of railroads overspreading the whole Continent, and most closely connects it with Eger and Pilsen. The average barometer readings are 26.6 in. ; the average temperature is $+ 6^{\circ}$ R. = 46° Fahr.

The climate of Marienbad is that of Central Germany. The conformation of the mountain bay in which Marienbad is situated is such that the noontide sun has free access to it, whilst north, west, and east winds and violent storms are warded off by the densely-wooded mountains. It is true, however, that in consequence of the high level of the spa, the mornings and evenings are usually cool, and the

development of vegetation is somewhat retarded. In consequence of this elevation, the air of Marienbad is not relaxing in the summer, and is, moreover, richer in ozone, which, with the healthy exhalations of the surrounding coniferous forests, favours increased activity of all the vital forces. The health of the inhabitants is excellent throughout. Epidemics never approach, and cases of severe or dangerous illness usually terminate favourably.

No inhabitant has ever yet been attacked by cholera, and altogether the climate appears singularly suited for curing local complaints, poverty of blood, and nervous diseases; in all which the so-called air-cure produces the most surprising effects, so that mere residence and open-air exercise in Marienbad and its environs is often a sufficient remedy. The territory of Marienbad lies upon the south-west declivity of the middle chain of mountains running towards the Bøehmer Wald, and forms an isosceles triangle, on the points of which are situated the renowned spas of Bohemia: Marienbad being on the south, Karlsbad on the north, and Franzensbad on the north-west—the real subterranean factories of the Glauber's salts, the carbonic acid, and the mineral muds.

The basis of these mountains is granite, which rises at the west and south-west out of crystalline slates, such as mica, hornblende, and gneiss. The plateau of this granitic elevation and mica is, however, broken by serpentine veins in the neighbourhood of Einsiedel; eastward from Marienbad and near Karlsbad it is broken and intersected by more or less considerable veins of compact felspar, quartz, and hornstone; and, finally, basaltic excrescences are frequent, the nearest

of which is the well-known Mount Podhorn, between Marienbad and Tepl.

There are within the present limits of Marienbad two squares and fourteen streets—namely, the Church and Kirchen-Platz, and the Franz-Joseph-Platz; the Kaiser-Strasse, Stephan-Strasse, the Lower and Upper Kreuzbrunnen-Strasse, the Jaeger-Strasse, the Mühlgasse, the Reitenberger, and the Nehr-Strasse, the Karlsbader-Strasse, the Prager, the Wildbrunnen-Strasse, the Theatregasse, and the Ferdinandsbrunnen-Strasse. Each of them affords excellent country views, such as Waldes-green, Wiesenschmuck, and the like.

The number of permanent inhabitants amounts to 1800. The prevailing religion is Roman Catholic. The language spoken is German; the country-people use the Eger dialect. The number of dwelling-houses amounts now to 120; they mostly contain airy, lofty, and well-furnished rooms, admirably clean. The housekeepers and attendants behave with prepossessing politeness and civility towards their lodgers; and Goethe's opinion, expressed in a letter to his friend Zelter in 1821, is applicable to the present times: "Excellent lodgings, courteous landlords, good company, pretty girls, people fond of music, pleasant evening entertainment, delicious dishes, new-made important acquaintances, old ones met with again, light air, and so forth. Everything aids the three weeks' uninterrupted fine weather, in enabling one to enjoy himself thoroughly, and to prepare for the next unpleasant change; so much so, that I spent the 'flying time' in Marienbad without any harm, nay, cheerfully, and as if entering life anew."

Klinger's Hotel, the Neptune, Stadt Weimar, Hamburg, Leipsic, zum Englishen Hof; Stadt Warschau, and the Stern (Star), are the hotels within Marienbad. The only one without the town is the Hotel Schöenau. In most of these dinners are served *à table d'hôte*, or *à la carte*. Israelitic restaurants with *Koscher* (pure meat) are found at the Auge Gottes, the Steinberg, and the Dolphin.

Klinger's Hotel, of 4 floors, with 170 rooms, and 2 large saloons for *tables d'hôte*, is reckoned amongst the best and most comfortable hotels in Germany; it is elegantly furnished, and managed to perfection. The board in all the hotels is subject to medical control. The roomy Cursaal is fitted up with taste, and used for concerts and dancing assemblies.

There is every day a concert from 6 to 7.30 A.M., and from 6 to 7 P.M., in the centre of the promenade, under the cover of a lately-erected cupola.

At the Waldquelle there is music from 11 A.M. to 1 P.M., where the excellent Marienbad band performs under the direction of its clever conductor, Mr Kruettner. During wet weather the band plays either at the Cursaal or at Bellevue.

There is a restaurant and a coffee-room in the Cursaal, and dining and coffee-rooms at Bellevue, Schöenau, Hammershof, Ferdinandsmühle, Jägerhaus, Brettsäge, Schweizerhof; at the Dolphin, the Waldmühle, Dianahof, Kieselhof, Stadt München, Hohendorfer Höhe, Waldschlucht, Schloss Windsor, and Café Panorama.

The newspaper reading-room contains about forty of the best newspapers, in seven distinct languages; the lists of visitors at the best-known watering-places

of the Vaterland; and a small library of spa-books, encyclopædias, and books of reference.

The reading-room is open from 9 A.M. to 6 P.M. The subscription for the whole bathing season is 2 florins 8 kreuzers. There are two booksellers' shops and depositories of art in Marienbad. That of Mr Goetz has a circulating library, lately considerably enlarged by the addition of new books and music, containing the latest novelties in English, German, French, Russian, and Polish literature, besides the most important German and foreign periodicals. Mr Goetz published in August 1858 a commemorative album, with very interesting notes on Goethe's sojourn in Marienbad.

The bookseller Gschihay, at the Stadt Dresden, also keeps a circulating library, a printing office, and a lithographic establishment. The new theatre in Marienbad is well arranged and ornamental.

Marienbad affords comfort and cheerful society in quiet retirement. The character and simplicity of country life have been preserved in Marienbad, notwithstanding its progress and elegance. It is a welcome and delightful retreat for all who wish to escape the confusing turmoil of populous towns.

THE ENVIRONS OF MARIENBAD.

Marienbad offers a varied choice of beautiful localities, which can be visited by walking or driving through the most pleasant meadows and forests.

I shall consider the immediate environs first, but only briefly, as I may probably publish a separate work on the beauties of Marienbad hereafter.

The shortest excursion *per pedes apostolorum* takes you to the cross on the Hamelicaberg, latterly also called Kreuzberg, and reached by following the foot-path behind the new bath-house. From the foot of the cross you look down on pleasant Marienbad, with its handsome cupolas and colonnades, appearing as if it were a beautiful natural growth of the circular valley where it lies embosomed. The cross itself bears the following inscription, "Choleram a finibus nostris arcuit verus Dei Filius," referring to Marienbad's absolute immunity from cholera in 1832, when that epidemic raged all round its valley.

Following the smooth ascent which leads eastward from the Kreuzberg, through a fir-forest, and over the Hamelicaberg, we reach the Goethesitz, so called as having been the favourite resort of the poet in 1823. Near the bank which has received the appellation of Goethesitz is an obelisk in red sandstone.

Passing on towards the summit, we see a large plateau, the Hohendorfer Hoehe, Hohendorf being the name of the next village, the view around which would amply repay us for the trouble of the ascent.

To the southward the wide plain is bordered by the Bøhmer Wald, a group of mountains enveloped in a blue vapour. Towards the south-west, the Stachelberg is seen, with the Church of Eisenstein, the Kuhberg, and the See-Wand. Northward and eastward the Erzgebirge are the confines of the landscape. In the direction of the Podhorn are seen the Kladran, Wilkowitz, Milistan, Abaschin Rojan, Einsiedel, and the mountain-group of Schlackenwald-Schoenfeld with the Gudrun. On the south of Habacladrau Pistau,

and farther to the left, the Castles of Plan and Kutenplan; the Annaquelle, near Plan, and the ruins of Czernoschin on the Wolfsberg: on the right, Duerrmaul, the Schmeltzthal of Tachau and Plan, and the mountain Dreihacken, the Pfrauenberg, and the Dillenberg. A cup of coffee in this place will prove a welcome refreshment.

The Ferdinandsbrunnen.—This is a favourite walk with visitors at Marienbad. On your way you pass along the tasteful Bellevue, a great embellishment of this spa. This establishment being comfortable and roomy, serves as a luxurious café or restaurant for morning and afternoon visitors, who gather here in considerable numbers either to drink coffee or dine, or read the German and foreign newspapers.

The Ferdinandsmuehle, farther south of the Ferdinandsbrunnen, is another place admirably suited for open-air enjoyment, where also you may be served with excellent coffee.

Auschowitz lies towards the south-east of the latter place, and offers from its hills a picturesque view. Beyond this village there is a marshy meadow which possesses mineral springs, possibly to be accounted valuable by future generations. Within an area of 7 miles, 124 acidulous springs rise from coarse-grained granite and mica-slate.

The Marienbader Muehle (Mill), situated on the way to Eger, contains a beautiful saloon and pavilion under the colonnade, where coffee, &c., is to be obtained; not far from it, and on the border of the forest, is the so-called Freundschaftsitz.

Schoenau is the next place lying in this direction, frequently visited on account of its garden and the

restaurant belonging to this great inn. There is a wonderful view from Otto's Hoehe.

The Hammerhof, the Kieselhof, and Kieselmuehle, are other places worthy of an occasional visit. At all these places refreshments may be obtained.

Forest excursions are preferred during hot summer days, when a walk under the umbrageous trees will prove a delightful change. The forests are within easy distance of Marienbad. Such a walk is to be found leading through the Waldschlucht and the Kleine Schweitz, over the Karlsbad Street to the Frederickstein, a group of rocks called after King Frederick of Saxony, and bearing the inscription, "Najades salutare, restituere, flora opulenta oblectavit Saxoniae regem."

The continuation of the walk will lead to the Hirtenruhe, the Mecsèry Tempel, and the Frederick Wilhelm's Hoehe, which are provided with pavilions, where we may rest and enjoy the grand view of the valley towards the south.

North-west of the Waldquelle we find the Waldmuehle with a restaurant, and on its right the Schiess-staette and the Forsthaus Dianahof; an even footpath leads from this to the Brettersäge. Everywhere coffee!

On the left of the Waldquelle a promenade brings us to the Koenigswater Jaegerhaus, situated at the entrance of the Metternich's Wildpark. In this latter there are several points of interest, on account of their distant prospect—namely, the Richard's Hoehe, the Jagdlaube, above the mud-beds, and the Paulinenruhe, called also Marialoh. A third forest-walk to be recommended, starts from the Jaegerstrasse,

separating into three paths, the left of which leads along the Alexandrinen Ruhe and the King Otto's Hoehe, the central through a pine-nursery to the Kieselmuehle, and the last to the interesting mud-beds.

DISTANT EXCURSIONS.

I shall mention under this heading a few places which can be visited by driving.

1. KÖENIGSWART AND ITS CASTLE.

The castle may be reached in an hour and a quarter's drive through the Thiergarten or the Schanzthal, or by the highroad to Eger, from which it is a half-hour's walk distant, in a northerly direction, near the village of Altwasser. The trip by rail occupies ten minutes. It merits a visit from every cure-guest in Marienbad on account of its many peculiar attractions. If a party were to start after dinner, they could return in the evening; but the trip might also be made in the morning, and the dinner ordered in Koenigswart. The carriage is preferable to the train, as the route is pleasanter by road, and the railway station at some considerable distance from Spa Koenigswart. The walk leads past the Richardshoehe, straight on through Metternich's Thiergarten, in a sinuous path up an acclivity. The walk takes about fifteen minutes. You cross the highroad and advance until you pass a stone, a few steps beyond which a footpath deviates to the left to Koenigswart, which lies in a deep valley basin embayed by surrounding well-wooded mountains. This also encloses the castle and the new and beautiful spa establishment.

So far back as 1630 the castle was the property of the Metternich family, who rebuilt it throughout in 1839. Notice the Prince's escutcheon over the inscription on the principal wing, and in the right wing the small tower clock; the well-kept park, ornamented with clumps of flowering bushes, the marble statue of Clio, and a copy of the Diana of Versailles; in the upper part an open chapel with a crucifix, and a monument, in the shape of an obelisk, surmounted by an eagle. Visit also the castle chapel, erected in 1839, with an altar of the rarest marble, a present from Pope Gregory XVI. to the late Prince Metternich. A sarcophagus, in Rosso antico, holds the remains of the holy boy Bonifacius. Do not pass by the museum, for it is worthy your closest attention.

On the first floor are: Byzantine sculptures of the twelfth and thirteenth centuries, distinguished by precision of form, life, and individualisation, as well as by the delicate sentiment of religious expression; crown from the old Castle of Eger; capital of column from heathen temple there; tapestries, Bohemian birds, skeletons of animals; rarities of nature; a large formicary found in 1849; a portrait of Metternich when thirty years old; Don Carlos' baby-clothes; Chinese works, coins (the oldest 2600 years); bust of Metternich in bronze and porcelain; Mary Stuart's hair; Napoleon's orders of decoration; comb of Marie Thèrese; arms and scythes of Bohemian peasants from the Hussite war (1415-1436); toys of Emperor Ferdinand I.; comb of Henry II. of France; flower bouquets of shell-fish; walking-sticks of the Duke of Reichstadt and the Prince Talleyrand; antique terra-

cotta statue from Athens ; the washhand-basin used by Napoleon in Elba ; Chinese leaf-paintings ; cast of the Czar Nicholas ; galvano-plastic geographical maps ; a Chinese mandarin, life size ; travelling watch of King Matthias Corvinus of Hungary ; feather bouquet from Brazil ; sand-mosaic pictures ; Egyptian tombs, vessels, and ornaments ; Pompeian frescoes ; stearine bust of Pio IX., and models in wax. The Library contains 28,000 volumes, with a crest collection ; collection of bank-notes issued in 1848-49 by the Bohemian merchants and by Kossuth ; relief-panorama of the Rhine ; representation of the robber-chief Babinsky, modelled by himself in bread. In the Prince's private room there is a portrait of undoubted excellence of Marie Thèrese and her son Joseph. On the second floor : Musical instruments, arms, cuirasses, helmets, chairs from the Mainz Cursaal, instruments of torture, armour, magnet-stone weighing 14 lbs., portrait of Wallenstein when young, memorial of the Emperor of Mexico, and many other specimens of art, science, and antiquity.

Those who have the honour of accompanying the steward himself (Professor Paul Rath, a Benedictine brother and distinguished *savant*) through these rooms, will, by his aid, be enabled to thoroughly understand and appreciate the artistic treasures of this museum.

The meeting-house for praying in the midst of the forest makes a particular impression ; it lies west of the castle, and is visited on those days dedicated to the Virgin Mary.

North-west of the Franzensberg there is an obelisk-like monument, erected by Prince Metternich

in 1835 to the memory of his Majesty the Emperor Franz I.

A short distance north-east of the castle lies the small town Kœnigswart with the following mineral springs: Victor Spring, Eleonoren Spring, Mariaquelle, Neubrunnen, Richardsquelle, and Badequelle. The place is rapidly developing into a new spa, surrounded by beautiful villas. The Abbey Tepl is about a two hours' walk distant from Marienbad, towards the east, and is a worthy object to visit. The brotherhood who own Marienbad numbers one hundred members, who have the care of twenty-six parochial districts belonging to Tepl. Some of them are professors in various imperial royal public schools. The abbey, with its arrangements, well repays a visit. Its library contains 65,000 volumes, many valuable works being found amongst them; there is a collection of philosophical and mathematical instruments, and a small natural history cabinet. Goethe's cup from which he drank the waters is here preserved. The surroundings may be seen by any one, but the rules of the convent prohibit the entrance of ladies.

Tepl itself is merely a small Bohemian town; but near it, to the north, lies the little city of Einsiedel, with a very large educational establishment for Catholic girls, conducted by nuns. Close to this is a quarry where a light and beautiful serpentine stone is found. It was once largely worked.

The Mountain Podhorn, an hour's walk from Marienbad, likewise merits a visit. The road leading to Karlsbad brings you to the inn "Zum Podhorn," beyond which a footpath to the right passes by the

village Avaschin; a half-hour's farther walk takes you to a finger-post directing "to the Podhorn," the summit of which may be attained in twenty minutes. The name Podhorn means in Bohemian, under the mountain. The Podhorn is 2635 feet above the level of the sea, and was for a considerable period considered volcanic. It is basaltic. The carriage-way leads nearly up to the summit called Spitzigerstein. The view from this point is of great interest, insomuch as the Podhorn occupies a central point amidst the Fichtelgebirge and the Erzgebirge, the Bøehmer Wald, the Mauthner, and the mountains of Radnitz. Westward we distinguish the Fichtelberg, with the whole chain of the Steinwaldberg, of the Kæsslin, the Louisenberg, near Alexandersbad, of the Ochsenkopf, and the Schneeberg (the highest peak of the range), a part of the Egerland, and a few spots in the district of Bayreuth. Northward the mountains of Tepl and Petschau, behind which the Erzgebirge appears enveloped in a mist. Among these you may recognise the Hengstenberg, the Spitzberg and the Sonnenwirbel; the latter being the highest peak of that chain, while below lies the district of Joachimsthal. North-east the Erzgebirge appears covered by the mountains of Giesshuehel, Engelhaus, Duppau, and Waltzsch, as well as by the Wladmar, near Chiesch, and the Branischauberg of Tepl. To the last of this circling view we see the Stenkersberg, and nearer the horizon the Abbey and town of Tepl; at the foot of this mountain is the large pond Podhorn, which gives its name to the mountain. Between the east and south-east, quite on the horizon, are the mountains of Radnitz and the Mauthner;

in the centre the Radisch and the Schafberg; on the right side of which we observe that great ruin Schwammberg, and on the left the regions of Pilsen, the high tower of which is visible. Between the south-west and south we see Gruenberg, with the mountains near Winterberg, joining the Prachiner Böhmer Wald; on a clear day the whole Böhmer Wald, as far as the Dillenberg, near Koenigswart, can be distinguished, as well as the top of the lofty Rachelberg, the Kuhberg, the Seewand, the summits of the Arber and Osserberg, the Schwarzacher Hoehe. From the south-westward extend the Baerensteiner Mountains, the Plattenberg, and the Pfrauenberg. More westwardly still are the Rang-Büchen and Babenberg, the pointed summit of Mähring, and finally the Dillenberg. Below the Pfrauenberg spreads the wide plain, dotted over with townships and castles: Neu and Alt Zedlisch, Tissa, Dirna, Vogelsang, Naketendoerflas, Pau, Kuttenplan, Heiligenkreuz, Dreihacken, Neudorf, &c., a charming and extensive landscape of forest, meadow, and water.

The *Flaschenhuette*, within an hour's walk of Marienbad, where the bottles and jars in which the mineral waters are exported are manufactured, also belongs to the convent.

Kuttenplan, a market-place, belonging to the Count of Berchem-Heimhausen, not far from Marienbad, with a well-arranged farm, and very large brewery worked on modern principles. A place of amusement called Kellerberg, with park-land, rockeries, a pavilion, and a rock-cavern. Refreshments of all kinds may be obtained at the inn "Zum Goldenen Loewen."

Promenhof, a village about an hour's walk dis-

tant from Kuttenplan, is worth visiting on account of its wire and iron works.

Plan, the first postal station on the way to Pilsen, within easy reach (twenty minutes by rail), belonging to Count Nostitz-Rhineck, offers many historical records of the Thirty Years' War; and also contains a steam-brewery and beautiful park-lands.

Between Kuttenplan and Plan there stand the Church of St Anna, erected in the tenth century, in the village Doerflas, and an agricultural college founded by Count Nostitz-Rhineck.

Carolinengrund and *Josephshuette*, south of Plan, and close to it (about four miles), are large iron-foundries, in which more than 2500 hands are employed, for which proper dwellings have been erected, and inns, flour-stores, bakehouses, and an hospital have been provided. Several other excursions can be made comfortably by train—viz., to Eger in fifty minutes, Franzensbad in an hour, Elster (a Saxon bathing-place) in an hour, and even to Karlsbad in three hours and a half, and all without great expense.

Admirers of the beauties of nature should not miss the chance of taking the train through Plan and the charming Misa valley, as far as Schweissing or Chladrup-Mies. A more gratifying trip cannot be imagined.

ON HYGIENE, DIET, AND REGIMEN.

Health is seldom really valued until it begins to fail, and then only by reason of absolute necessity.

THE study of hygiene and dietetics is indispensable for every one who aspires to combat disease with success. By their principles we are enabled to prevent or eradicate its origin, and to intercept its development. Both are in close connection with our *materia medica*, because they assist Nature in her struggle against those hostile elements which tend to injure health. In order to secure a speedy and successful result in medicine, we have in almost every case to teach our patients the rules of hygiene and diet, that we may obtain their most important co-operation in avoiding everything which is likely to cause or to maintain the abnormal state of health commonly called "disease." No one, indeed, would attempt to cure, even by the strictest adherence to medicinal prescriptions, what nature alone is often disposed or able to heal, if aided by a reasonable hygiene, diet, and regimen. It is wise, therefore, for the purpose of rational treatment, to give our patients, if possible, some invariable rules. We have sometimes to use all our persuasion, backed by common-sense and untiring perseverance, in order to overcome certain injurious habits of our patients, which, I regret to say, in many instances, nothing but the near approach of death will urge them to

break off. The weakness displayed in such cases is lamentable and unpardonable, insomuch that it causes the reckless sacrifice of that greatest physical happiness—"health."

Most chronic invalids who desire benefit from mineral springs usually err in this respect, consciously or unconsciously deviating from some of these rules or laws which nature has established for the maintenance of healthy life. Thus mistakes are committed with regard to quantity or quality of food, bodily exercise, rest, sleep, late hours, the choice of a healthy abode, proper clothing, occupation, mode and amount of amusement, &c., all which are of great importance in maintaining or restoring the necessary balance between our proper strength and our daily conduct. Quiet and simple rules of living must therefore be observed, not only for the purpose of avoiding the ill effects of mistakes not easily rectified, but also to save time and money. In cases where even a last hope of an ultimate trial may be indulged in, may we not be justified in suggesting, Will this opportunity ever return again? Why not, then, vigorously abstain from all similar errors? Remember that the greatest safety of a patient consists in consultation with a medical adviser, and implicit obedience to his admonitions, warnings, and prescriptions. This, too, will enable him to understand his own nature, and to protect his body to the greatest advantage.

There is not the slightest doubt that persons of delicate and shattered constitution may preserve a certain degree of health, so as reasonably to enjoy life, provided hygienic rules be duly observed. To adopt habits under such circumstances which are suited to

the necessities of the existing lowered physique, is the *conditio sine quâ non* for the attainment of the greatest improvement of which the body is capable. Persons of such constitutions must therefore be guarded in eating, drinking, and exercise, so that nothing may be in antagonism to the law of health in any particular case. Changes prescribed may be carried out with greater facility at the spas than at home.

If I consider our present curative means with regard to the study of hygiene, regimen, and diet, I am happy to confess we are better off than our forefathers in every respect. The prevention of disease by means of all available knowledge has become a special science. Epidemics have in consequence diminished in frequency and severity, because society has given to the medical profession the power of applying the principles of hygiene, by appointing special medical officers to survey and protect the wants of public health according to established laws. Our towns and rivers have become cleaner; a system of sewerage has been introduced with undoubted benefit; our houses and apartments have been inspected; streets, dwelling-houses, hospitals, schools, and public institutions have been built in accordance with sanitary rules. Deodorisation, disinfection, and ventilation have become more general. The importance of pure drinking-water for public use has become universally acknowledged; even for animals public troughs and fountains have been established in our streets during summer; our meat, fish, and vegetable markets, too, are under the control of hygienic officers, while our public conveyances on land and water are rigorously watched—in fact, turn where we will, we find the stamp of useful sanitary pro-

gress. But however much has already been achieved, still more remains to be done. We are as yet only entering upon the endless benefits to be conferred upon society by means of protective sanitary revolution. The most interesting and useful subject for any individual to consider for himself is the careful regulation of habits. At the head of them stands regulated and daily outdoor exercise, which is indispensable for health. Its influence is shown upon the whole organism: activity stimulates our muscles, heart, and vessels to more energetic contraction; our lungs to a better and quicker oxidisation of the blood; the stomach and bowels to increased functional activity. It is a daily-demonstrated fact that persons who take exercise freely in the open air are the healthiest, whereas those who lead a sedentary life, and are in addition confined to close, warm rooms, are sick and miserable. The weak and delicate must not disregard the observance of this precious rule, but remember that proper clothing and shoeing, and the use of umbrellas and mouth-protectors, are the means of rendering exercise in the open air safe and advantageous. Walking and riding exercises are to be preferred, as they necessitate the breathing of good fresh air, so important for recovery; but these, of course, neither the strong nor the weak ought ever to over-fatigue themselves with, though the duration may be gradually lengthened as the strength returns. When the body has become heated by exercise, chills are more easily caught, and must be therefore carefully guarded against. At such a time cold drinks should not be taken unless, indeed, the exercise is to be immediately continued, and even then a few sips only.

Persons accustomed to exercise the brain specially should strengthen the body by the occasional use of *dumb-bells, gymnastic exercises, &c.*, in order to stimulate the skin to perspiration, which is one of the absolute conditions of health. Light gymnastics may be practised with advantage in cases of liver-complaint, indigestion, nervous and general debility, hypochondriasis, and tendency to corpulency, &c.; while manipulations, such as rubbing, tapping, and kneading, are equally good in local ailments. Most of these, however, require an operator, and consequently are not always convenient. The importance of retaining the skin, with its millions of outlets, in eliminating order, cannot be over-estimated. Warm baths, Turkish baths, vapour and shower baths, and cold plunges are all very useful for this purpose, but only when taken under special medical superintendence. The skin may be easily rendered active by dry friction, or even with a cold wet, or a scalding hot towel first, and a dry one afterwards, till a glow is induced. In any case, the bather should stand on a dry rug while undergoing this operation, which should not last more than two or three minutes, and should be performed in a room entirely free from draught. It will also be found that one may guard with tolerable safety against cold after washing the feet in cold water by rubbing them thoroughly dry with a towel.

AIR.—If the air of the patient's dwelling is pure and healthy as that of Marienbad, the windows may be left open during the day, and even a little during the night, unless creating a draught. The sun should be allowed free access to the grounds surrounding the house. Shade trees and shrubbery, however desirable they may

be in many respects, should never be so thick as to shut the direct rays of the sun out entirely. Those rooms most occupied should be the best lighted, for the sun in summer is to our apartments what the fire is in winter. If gas is burnt in a room, some ventilation must be provided at the top; because, since an ordinary fish-tail gas-burner consumes about three cubic feet of gas per hour, and one cubic foot of gas when consumed forms two-thirds of a cubic foot of carbonic acid—about the amount produced per hour by an adult's respiration—each burner is equivalent to the respiration of three adults. Ventilation must therefore be attended to, otherwise *rebreathing* of *breathed* air may produce various disorders, among which an author has ventured to include tubercular phthisis.

CLIMATE.—Sudden changes of temperature must be watched, and clothing regulated accordingly. Thermometers and barometers being our surest guides to these changes, should be placed outside, but in such a position that they may easily be consulted from within before passing into the open air. Should our occupations or amusements, however, lead us to any place likely to be crowded or heated—as, for instance, a ball-room, a theatre, a concert-room, or the opera-house—when the outer air is cold, we should wear next the body extensive woollen or flannel garments, which being bad conductors of heat, tend to correct sudden changes of its temperature. This simple and common-sense rule of protection is broken to an incredible extent often by educated, as well as by uneducated people. Ladies in their fashionable evening dresses, who expose at such places neck and shoulders,

should always carry with them, as invariably as they do their pocket-handkerchiefs, a mantilla of wool or fur, or a Shetland shawl, sufficiently large to cover all the unprotected parts thoroughly until they arrive within an actually warm room. This important covering should, however, be always within easy reach in traversing passages, or sitting in colder rooms or in draught. It should be taken off when leaving a cold place for a warm one, and the reverse. Waterproof overalls will protect us against the injurious effects of wet or cold weather, therefore all persons who have to brave all weathers should be provided with complete waterproof clothing of as light a weight as possible. The feet should ever be kept warm, for which purpose thick-soled boots (or cork soles), if necessary, with thick stockings, should be worn. A respirator or a silk handkerchief placed before the mouth will be found useful to protect the lungs and throat from injurious climatic changes; particularly during the prevalence of mists, fogs, damp, wind, dust, &c. So-called chest-protectors and the wearing of wrappers around the neck are decidedly objectionable, as they merely produce congestion of the protected parts and their neighbourhood, and dispose to catarrhs of the nose, throat, and lungs. Undergarments worn during the day should not be worn in bed during the night, and if such is necessary, a change is desirable; nightcaps should be dispensed with, and the head kept cool both by day and night. As a rule, only sufficient clothing should be worn to keep the body comfortably warm, undergarments being commonly necessary in a variable climate. No part of the dress should be worn so tight as to alter

in any way the formation of the body, or to impede the proper circulation of the blood and free movement of the body. The application of this remark may perhaps be regarded as specially applicable to the female sex.

PASSIONS.—Passion must be subservient to reason if we wish to preserve our health.

“There is no single influence,” says Dr Trall of New York, “more conducive to health than a cheerful, equable temper of mind; and there is nothing that will more surely disorder the bodily functions, exhaust the vital energies, and stamp premature decay on the constitution, than an uneven, irritable, fretful, or *passionate* mental habit. It is well known to medical men that violent fits of passion will arrest, alter, or modify the various organic secretions as suddenly as will an electric shock. Excessive mental emotion, a paroxysm of anger, will render the bile as acrid and irritating as a full dose of a drug poison; excessive fear will relax the bowels equal to a strong infusion of tobacco; intense grief will arrest the secretion of gastric juice as effectually as belladonna; and violent rage will vitiate the saliva like a mercurial salivation. Many a nursing mother has sent her babe to the grave by indulging a furious emotion, which changed the character of her milk from a bland nutriment to a deadly poison. These facts, which could be multiplied to a great extent, demonstrate the law that a sound body cannot exist unless connected with a well-balanced mind.” It is therefore apparent that, for the sake of health, we should so control our thoughts and feelings that we may not give way to emotions so injurious to body

and mind. *Vice versa*, I must observe that a deranged condition of the digestive organs influences our state of mind; so that it may be justly said, perhaps, that many accomplished satirical writers owe their reputation for sarcasm to the existence of a bad digestion, and crimes may have originated from the same cause. A healthy condition of digestive organs should therefore be maintained, whatever self-denial or abstemiousness may be required.

SLEEP.—Healthy sleep is the perfect repose of the brain, of the organs of special sense, and the nerves generally. Active mental life consists in continual currents of thought, from which the brain needs freedom at intervals, just as our body requires rest after exertion, to prevent weariness, anomalies, and deformities. The design of sleep is to renew the vital energies, to repair the waste and exhaustion produced in every part by previous exercise; but here we must remember that the causes of unsound and dreamy sleep are as often due to dietetic errors as to moral or mental causes. Ease of bodily posture, peace of mind, a comfortable degree of temperature, &c., are other essentials to healthy sleep. Usually about six or eight hours' sleep are required to thoroughly remove fatigue and re-establish lost powers: children require more, and adults again require less; but early retirement is desirable in all cases, as it admits of early rising. Take care that no draught blows upon your bed, and procure one covering of woollen material at least, just sufficient to keep the body warm, but at the same time to admit of heat escaping from the bed. Close counterpanes are relaxing; feather beds overheat the body and induce a relaxed

condition of body. Mattresses of horse-hair, wool, or straw are preferable to soft beds of any kind. If sleep is indulged in after meals, its duration should not exceed half an hour for healthy, and a trifle longer for old people. Very weak and emaciated persons ought to rest (although they may not be able to sleep) regularly from one to two hours after dinner, in order to encourage their important digestive functions. An easy-chair should be occupied, and awkward positions avoided; the feet and abdomen wrapt in a railway-rug; the dress loose around the neck and waist. It is quite certain that nature's requirements with respect to sleep cannot be very long disregarded without loss of health. Every precaution should be observed to insure quiet in sleeping-rooms. When in bed, care should be taken not to sleep with the arms exposed from beneath the counterpane, over or under the head.

POSTURE.—In walking, sitting, and standing, the head and shoulders should be thrown well back, with the clothing loose about the ribs. Those engaged in sedentary or stooping occupations should especially attend to this advice. A habit of drawing the breath deeply and slowly ought to be acquired, so that the lungs may be fully expanded during ordinary breathing. Those who have to maintain an erect posture for a number of hours each day, should take every opportunity of lying down flat, though only for a few minutes at a time. Those whose occupations compel them to adopt particular positions or movements, should always try to vary them at intervals.

REGULATION OF BOWELS.—The next point of importance in the maintenance of health is the regulation

of the bowels, which ought to act once in twenty-four hours, and a habit of *retiring* after breakfast should be encouraged. Should they not act spontaneously, some suitable wholesome article of diet, or some harmless aperient, may be taken as an assistance when advised by a medical man; the same medicine not being suitable to all, according to the homely phrase, "What is one man's meat is another man's poison." As a rule, they may be taken best at bedtime, not oftener than every second night, whenever the bowels have not acted satisfactorily during the day. The best way of inducing this habit will be to take a course of Marienbad, Ferdinands, or Kreuzbrunnen, which will be always found successful in their effects even when the patient has ceased drinking the waters for a considerable time.

FOOD—DIET.—Our golden rule is: It is not the quantity eaten that produces strength, but the quantity digested. Supply must be regulated by demand, and this will depend on the amount of exercise taken. Over-feeding is a sin towards thyself! The very feeling of distension after a hearty meal is but the warning voice of nature calling us to order. Flatulence, heartburn, and nausea are but the echoes of that voice; while the bilious attack, diarrhœa, &c., are nature's efforts either to counteract the effects of the over-feeding, or to expel the excessive materials from the system. A man can only assimilate enough to supply waste; and when the body is weak and the assimilating powers thereof feeble, over-eating increases the mischief. If you cannot assimilate one pound of food, still less will you be able to assimilate two. Therefore the correct way of improv-

ing health, in such cases, is to regulate the quality and kind of food. Food taken in quality and quantity beyond the existing powers of the system, will create disorder of a dangerous character. This is every medical man's daily sad experience. Thousands die from feeding where only units perish by starvation. I cannot lay sufficient stress on diet, as I am convinced that over-feeding is often not only the cause of disease, but frustrates its treatment, and it is sometimes a most difficult matter to convince sufferers of the truthfulness and importance of these statements. Many severe symptoms complained of by sufferers have no doubt been brought on by their ignorance of the physiological requirements of their body, and hence the disturbance in the harmony of the functions. The brain and liver become congested, because they are over-tasked; the lungs and heart become compressed, and shortness of breath, asthma, palpitation, giddiness, drowsiness, and nervous complaints are created, all kinds of pains are felt in the back and shoulders—ascribed to rheumatism—and hypochondriacal thoughts and disturbed dreams result. Persons habituated to alcoholic drinks and tobacco complain of similar anomalies. Sometimes a craving for food is created, and it is generally believed that additional eating and taking of stimulants, as wine, beer, spirits, tea, coffee, &c., are good remedies against general debility. Notwithstanding this *strengthening* treatment, patients become worse, lose flesh considerably, and complain of the weak and irregular action of the heart; the surface of the body becomes cold, and the extremities, up to the knees, almost without sensation; the pulse diminishes in its

frequency (not beyond 40 per min.), unless the heart's action has been increased by stimulants. I could specify innumerable symptoms without describing their concomitant anxieties. With such patients, doctors, however numerous, are helpless, and treatment useless, and because the real origin of disorder—viz., the patient's bad habits—has been unknown to their advisers—an alteration of diet being the only successful method. I have seen myself a strict attention to reasonable diet, in connection with the treatment of disease, invariably followed by beneficial results, as restoration of strength, sleep, weight, and good spirits—in a word, health renewed through moderation.

Another grave mistake is to suppose that *concentrated* food, or a particular kind of food *highly concentrated*, is turned to better account by a debilitated stomach than moderately nutritious food; and it is not difficult to bring patients who have their minds open to conviction, to detect this fallacy by their own experiences. The popular error on this subject mainly arises from ignorance of chemical analysis. Physiological chemistry has determined the elements of which our tissues, blood, milk, urine, and other secretions are composed, and we are thus enabled to supply the body with analogous material in the best forms to harmonise with the conditions of wholesome vitality. All the organs have their respective functions of selection and assimilation; but the first conversion of ingested food into assimilative material, for further progress through the blood canals, is dependent on many conditions. One of these conditions is, that the nourishment introduced into the stomach

must have a certain bulk or volume in accordance with the muscular arrangement of that organ. Nature has given our digestive organs a proper capacity for the reception of a certain bulk of food; therefore highly-concentrated food, or rather the exclusively nutritious parts of food, when artificially separated from its innutritious portion, do not alone answer this purpose, because the volume is out of proportion. If, notwithstanding this, we supply our alimentary canal with these alone, the stomach contracts, our glands are closed, secretions fail, &c.; and thus we soon destroy the functional power of this most important vital organ, the general process of nutrition becoming defective, and causing atrophy and death. Evidently, then, judicious admixture is essential in our food; and numerous experiments on animals have confirmed the fact that concentrated food, used exclusively, is incapable of duly nourishing the body and supporting healthy existence. It will rest with the medical adviser to fix the proper amount of food required, by his intelligent observation and judgment, investigating and weighing all the particulars and complications of any case. It is easy to understand, therefore, that for different individuals it will be necessary to vary in a greater or less degree both the quantity and quality of the food, and to regulate the periods of feeding.

I assume there is no necessity to dwell here upon the universally-acknowledged need of promoting good digestion by taking food at the proper temperature, and by well masticating all solids, in order to transmit them to the stomach in proper mixture with saliva.

Unfortunately, diet is so little understood, notwithstanding the great advance of general education, that choice of food depends more upon instinct than knowledge of dietetic principles. We ought, therefore, to do our best to promote this knowledge wherever we can, and then it will be left for the doctor to indicate merely the few essentials on which the success of a diet will principally depend. The kind of food must be adapted to each individual case. Food should be taken at regular intervals—about five hours intervening between one meal and another, which is long enough for the digestive functions to regain their full vigour before renewing activity. When the body is fatigued, a rest of a quarter of an hour should always be taken before a meal; after a meal the duration of rest should be from half an hour to an hour, or there will be deficiency in the secretions of the mouth and stomach, and consequent imperfect assimilation of the food taken. In weakly persons, and those of small appetite, the intervals between the meals may be reduced to three or four hours. In illness the medical man must arrange the interval day by day, and care must be taken to prevent the stomach from becoming exhausted and weakened through emptiness. Breakfast should be taken shortly after rising in the morning, dinner at one, and the evening meal at 6.30 P.M. The articles of food should be sufficiently varied to meet the requirements of the appetite, and their conditions, mechanical or otherwise, must harmonise with the digestive powers of the stomach. An adult of average stature, taking moderate exercise, and in health, may eat from thirty to forty ounces of dry nutritious food, which should contain from

fifteen to twenty ounces of anhydrous, solid alimentary material, with some mineral matter. In addition to this, every full diet should contain some vegetable potash or fruit, cresses, or lime and lemon juice. The amount of fluid to be taken in twenty-four hours should not be less than seventy ounces, including the water contained in the solid matter.

Condiments.—In civilised society it is a point of the greatest importance to use salt freely with every meal. I rather object to this custom, because prepared food generally contains a sufficient amount. Salt also passes through the organism without any material change, simply exciting the flow of saliva and promoting general secretion; whereas sugar has a similar property, and also excites a continual process of endosmotic or exosmotic action, besides being nutritious. Both salt and sugar have a capillary attraction for fluids, called humidity, and preserve organic matter from decomposition; but sugar is doubtless more useful in our physical economy than salt. Space will not allow me to enter into the merits and demerits of other condiments, such as pepper, mustard, onions, garlic, vinegar, &c.; but the dietetic rule is applicable to them also, “The less the better.”

The best *beverage* for the maintenance of health is no doubt water, if taken apart from meals, in the amount of three to five tumblers a day. Water used instead of tea and coffee has a most salutary effect upon the system if persevered in, though feelings of depression and other unfavourable symptoms may be the result for a few days. The indiscriminate use of water, as sometimes practised by persons at hydro-

pathic establishments, is to be deprecated; but there can be no doubt that to persons who have injured themselves by indulgence in alcoholic beverages, the adoption of a course of pure spring-water will be of the greatest advantage. A general rule in respect to water-drinking may be laid down. Do not drink water with or just before your dinner, nor for an hour after, lest the digestive process be retarded.

The preceding rules are intended to furnish the general principles by which disease may be treated under any system—especially during a course of waters either at home or at Marienbad.

SPECIAL RULES.

Simple living and moderation in food are at Marienbad the chief prescriptions for the attainment of lasting success. Debilitated, anæmic, and emaciated patients who take the ferruginous waters should especially partake of good meat, eggs, and everything that is strengthening, as far as their powers of digestion and assimilation allow; and they may also drink good beer. Fat people with a relaxed system and phlegmatic temperament should adopt animal diet in moderation, and avoid cheese, butter, milk, all farinaceous, starchy, and saccharine food, especially beer, chocolate, &c. The breakfast may consist, accordingly, of warm milk or cocoa, or beef-tea, or very weak coffee with milk, and some good bread, one hour after the patient's last glass of the mineral spring; or oat-meal porridge, barley soup, and an egg, &c.

It will not agree with some persons to drink the mineral waters upon an empty stomach, and it is therefore necessary to allow a cup of tea or broth, or

to take the first glass of the spring while in bed. Dinner between one and three o'clock may consist of a little weak soup, some meat or fish, with greens or vegetables, mashed potatoes, some bread, and afterwards some sweet, with cooked fruit, as *compôtes*. Those I should forbid are as follows: cream, butter, cheese, brown bread, hard-boiled eggs, fatty or oily fish, as sardines, herrings, haddock, mackerel, eels, salmon, carp; all fat gravies and sauces; shellfish, shrimps, prawns, lobsters, crabs, caviare, oysters; all hot condiments, as curry-powder, pepper, mustard, garlic, onions; fat meats, as pork, goose, duck, wild birds, sausages, smoked and pickled meat; cabbages; very nutritious heavy seeds, as cooked dried peas, beans, lentils; cucumbers, melons, tomatoes, chestnuts, celery, radishes, horse-radish, gooseberries, strawberries, raspberries, currants, uncooked fruits, mushrooms, puddings, cakes, pastries, patties, pies, buns, custards, vinegar, oil, spirits. Wine and beer can only be allowed by special medical advice. All mineral and aërated waters must be omitted at dinner.

The evening meal at 6.30 or 7, should be similar to that at breakfast. Suppers are generally prohibited, as three meals a day, the principal of which contains meat, are sufficient for the maintenance of health. If, however, supper is indispensable, it should not be heavy or late.

Convalescents should avoid drowsiness in the daytime; but weak, very exhausted patients, and very excitable persons, who often lack sleep at night, may replace it during the day—in the forenoon, when it will generally prove recreating. Stout and fat persons

should rise early, and not sleep more than five or six hours.

To rise as early as 4 P.M., for the purpose of drinking the waters, is simply waste of energy. As the situation of Marienbad is rather elevated, it is subject at times to sudden changes of temperature, especially in the morning and evening; therefore the clothing must be chosen accordingly, and be always ready for use. This care should always be taken when distant excursions are contemplated. All the clothing should be loose, particularly after meals, in order to avoid congestion, and to promote easy digestion. Bodily exercise, as I have stated before, is a real necessity; but care must be taken not to carry it to excess, as some persons suffering from abdominal complaints have sometimes acted too vigorously upon well-meant and reasonable advice. Great fatigue with excessive perspiration is an evidence of injurious exercise. Even dancing in moderation is not forbidden by the physicians of Marienbad, unless particular constitutions or certain ailments preclude it. All serious mental occupation, especially that of a professional and business nature, must be forbidden. Every one must make this sacrifice to his health for a short period. Politics and speculation should have no place at these springs; but pleasant, social meetings, with amusing conversation, quiet walks in agreeable company, and light reading, are advisable. Gambling, games at cards and chess, are strictly prohibited. Billiards, archery, and other quiet gymnastic entertainments, are exercises mostly to be recommended. The number of glasses to be taken in the morning varies from two to six. A rest of from ten minutes

to half an hour is necessary between each succeeding glass, according to the state of the digestive organs. This period should be spent in gentle exercise, and the glass of water should be taken quietly in sips and not swallowed at once. Sometimes it will be better to drink a glass again after the forenoon baths: in the evening the springs may be taken again, if required in certain cases, but not when it is likely to produce excitement or congestion; and in certain cases the advice of the physician must be followed without reserve. The waters may usually be drunk cold; but in some instances they must be warmed, or mixed with warm whey, or with water from other springs, according to prescription. At the commencement, great moderation and strict obedience to the rules are to be particularly recommended.

The *baths* had better not be commenced on the same day as the internal treatment; but usually four or five days after. The body should be in a state of complete rest before the patient be permitted to enter the bath, which should be about two hours after a meal, or when the waters have been entirely digested in the morning, one hour after the last glass of spring-water. Baths are unadvisable in the evening. Stout persons with a tendency to congestion must have regular evacuations before taking their first baths, the temperature of which must be fixed by the physician. They are called "tepid" when from 23° to 27° R., or 84° — 93° Fahr., "warm" up to 32° R., = 104° Fahr.; and "hot" above 32° R., or 104° Fahr. The bath-attendant should always ascertain by the thermometer whether the temperature is as prescribed. The patient should enter the bath quietly, and extend

himself gradually, without adding hot water at once, as his first sensations may prompt him to do. Rubbing the extremities with flannel or soft brushes may be practised moderately in the water, and a wet, cold cloth may be placed on the head in case of congestion. There are special head-caps for ladies, made of some impermeable light stuff to keep the hair dry, when cold compresses are required. In a *full* bath the water covers the shoulders entirely, and in a *half* bath reaches only to the nipples. The latter is taken unless a full bath is especially ordered. The duration of the bath, if taken daily, should be between ten and thirty minutes for the ferruginous bath, between twenty and sixty minutes for the mud-bath, and twenty to forty minutes for the carbonic-acid gas bath. Smoking, reading, and sleeping in the baths are forbidden, the last being highly dangerous. Any feeling of dizziness, weakness, discomfort, and headache are warnings to leave the bath at once. The bathrooms are spacious, without odour, dry, and moderately warmed during cold weather. The towels and sheets for use after the bath are warmed over tin vessels filled with hot water. Attendants can always be present, especially if the patient has a tendency to dizziness, sleep, cramps, convulsions, or fainting. Before leaving the room, the overcoat must be put on to prevent colds. If the patient feels weak or fatigued after the bath, a rest at his home for half an hour will restore him, otherwise exercise is preferable; and very weak persons will do well to be carried home in a sedan-chair. If the bath is taken for the purpose of increasing the action of the skin, a rest in bed must be indulged in after the bath. Ladies must

omit their baths during menstruation, and gentlemen when suffering from bleeding hæmorrhoids, unless the bleeding is particularly desired. The number of baths required, if used in addition to the internal course of waters, is fixed at between twelve and twenty-four, within longer or shorter intervals, and only one bath a day is allowed. If the baths at any other place, like Wiesbaden, Teplitz, Baden near Vienna, &c., are advised for subsequent treatment, only a limited number of baths ought to be taken in Marienbad, in order to avoid congestion of the head or heart afterwards. Sometimes the medical men order with the baths, bran, 1 to 2 lbs. per bath, soap (*sapo viridis*), common salt, sea-salt, salt of Kreuznach, and, as an addition to the ferruginous baths, a mixture of equal portions of sulphate of iron and bicarbonate of soda. Since 1868 an addition of extract of the needle-shaped leaves of the pine (pine-needle) to the water has been introduced at Marienbad in both bath-houses. For this purpose the pine-needles are daily gathered in the surrounding abundant pine-forests; they are boiled, and from one to two gallons of the decoction added to each bath, whence the latter acquires pleasant, strengthening, and stimulating properties.

Some remarks appear necessary here with regard to the *mud-baths*. The density of the mud and its temperature are always determined by the doctor in Marienbad; they are usually administered somewhat warmer than the water-bath. The mud must be well stirred by the attendant, who plunges the thermometer deeply into it in several places when ready for use, in order to secure the determined equable degree

of temperature throughout. When entering the mud-bath, remain standing upright for a minute or so, and then quietly sit down in it from time to time moving your extremities, and changing position so as to stir the mud, which otherwise would become cooler near the skin. A cold compress on the head is advisable in any case. Should the patient find the temperature of the bath too high or too low, it is in his power, without leaving the bath, to add cold or warm water at discretion. After the bath you scrape off the mud adhering to your body with the hands, and have yourself cleansed by the attendant pouring warm water over you of a temperature equal to that of the mud-bath, and soaping you with a flannel pad or soft rag, to prevent clogging of the pores of the skin. The remainder of the operation is the same as after any other warm bath. These mud-baths may be taken on alternate days, or every third day; if taken daily, an eczema breaks out in persons of a delicate and irritable skin, but quite of a trifling nature. The mud is also used for local application to the extremities alone, and as *cataplasms* on any part of the body. These mud-poultices are commonly applied at the patient's lodgings, where the method of preparing them will be thoroughly understood. The poultice is kept on as long as it retains the proper temperature, and then changed for a fresh one, if advised. During digestion they should not be applied. The mud *foot-bath* is used as a derivative, the blood being drawn to the lower extremities, and is consequently most serviceable in cases of determination of blood to the head in congestion and headaches. Its sympathetic action, moreover, throughout the nervous system, is

considerable. The foot-bath ought not to be taken too hot, and the feet should be rubbed one over the other while washing the mud off, and afterwards with a coarse towel. A brisk walk may be used to keep up the circulation.

In both bath-houses arrangements are made for the *rain or shower bath*, which may be taken twice or thrice during a bath—first tepid, then cold—in case of great or excessive irritability and hyperæsthesia of the nervous system, congestive headache, hypochondriasis, inclination to rheumatism and colds,—always to be followed by rubbings, to induce a healthy circulation on the surface of the body. They are a very useful auxiliary during the use of the mineral waters and baths of Marienbad.

The *douches* are mostly used tepid, of the temperature of the bath, during two or three minutes with more caution, and several times in the duration of a bath, at the interval of from five to ten minutes, upon more sensitive parts of the body. The douche can be given from the side, from above, and from beneath. They are used for paralysis, obstinate rheumatism, gout, indurations, and tumours. The ascending douche is an invaluable remedy in cases of piles, as also in various complaints to which females are liable.

The *vapour-baths* are a very common application in every town, and well known for their gradual abstraction of heat in persons whose skin does not perspire freely, although these baths are more relaxing than hot-air baths; this will be counteracted sufficiently by the cold or tepid ablutions which invariably succeed their use.

The *gas-baths* consist of carbonic acid, which must

not be inspired. For this purpose the patient is enclosed in it with the cover fitting round his neck, and this more fully closed with cloths, to prevent the escape of gas from underneath, as it is not respirable. The patient using it remains dressed, with the exception of the boots; all tight portions of the dress should be loosened; the gas should not reach higher than the pit of the stomach. An attendant should always be present, and the patient kept quiet. As the use of these baths increases perspiration, care must be taken that one does not take cold on leaving. The gas-baths act upon the circulation and the nervous system, and are a remedy of great value. The *gas-douche* acts more powerfully on any particular part than a mere bath.

Directions for after-conduct.—As soon as the course of treatment in Marienbad has reached its close, and the day of departure is determined, the patient should during the last three days diminish the amount of water, in order to terminate the course with two, or at the utmost three glasses of the Kreuzbrunnen on the last day, and even sooner, should the weather be favourable. All excitement which might be caused by packing, shopping, paying visits, wishing adieu, &c., should be avoided as much as possible, in order to gather strength for the return home. Travelling by night should also be avoided by weak and nervous persons. Long journeys should be frequently interrupted for required rest. Care should be taken to continue the diet for some few weeks longer as in Marienbad, so as to ensure a lasting success; the life should be approximately the same, even though the patient should be advised to go to some other spa

for after-treatment. Sea-bathing ought not to be allowed until ten days after the last bath in Marienbad, and the grape-cure not until twelve days after the last glass at Marienbad. Generally speaking, every patient who has taken the waters in Marienbad ought rather to consider himself a convalescent liable to relapse than completely cured and healthy, because he who believes he has done everything during his stay in Marienbad to satisfy his physicians by keeping to a regulated course of habits and diet, and on this account thinks himself entitled to run the risk of contracting disorders, or of deviating from the golden line of conduct there laid down—he, I say, will soon, nay, perhaps too soon, become aware of his irretrievable error and the grave results of his frivolity. To him I must exclaim, “Beware, take care; health is not for thee unless thou respect its laws.”

A regulated *after-diet* is indispensable to insure good *after-effects* from the use of these waters, and is often worth as much as any after-treatment by itself, which may prove useless if reason does not guide and control the habits and appetites.

KREUZBRUNNEN AND FERDINANDS- BRUNNEN.

THE BOTTLING AND EXPORTATION OF THE WATERS.

THE two most important and renowned springs of Marienbad, whose waters are principally exported, are, as I just mentioned, the Kreuzbrunnen (Cross Spring) and the Ferdinandsbrunnen, (Ferdinand's Spring), which stand first among the curative means of Marienbad, though their sister-springs are also of great use in therapie, for combination with them. The pre-eminence belongs to the Kreuz and Ferdinandsbrunnen, the properties of which have been longer known and more perfectly studied in their connection with disease, both at the springs and abroad. They have given to Marienbad its position and fame by their value in the treatment of various disorders. It is not at all exceptional to hear of patients who, after carefully trying all other systems of treatment, have been completely restored to health in Marienbad by a regular course of the Kreuz and Ferdinandsbrunnen within a few weeks; hence the gradual increase of visitors, especially during the last fifteen years, the number of whom was 20,000 persons in 1872, while the number of stone and glass bottles sent out exceeded 800,000 in the same year.

Every large stone or glass bottle contains one pint and a half, = 30 ozs., or six tumblers of 5 ozs. each. Every

small bottle holds $\frac{2}{3}$ of the former—*i.e.*, four tumblers, = 20 ozs. of water. The exportation of *glass* bottles has considerably increased lately, because they weigh less, have a more pleasing appearance, besides showing readily any deposit or impurity, and only being a very little more expensive than stone bottles, this little difference being compensated for by less cost of carriage. They are durable, of a dark green colour, and clearly transparent. Empties are not supposed to be allowed for or returned. The water is rapidly bottled by machinery, which fills two bottles at a time, to prevent the decomposition of the water by the influence of the air, which would quickly oxidise some of the chemical elements of the water if admitted, and throw them down at the bottom as a deposit. During the rapid process of corking, it may, however, happen that some small pieces of cork (organic matter) are torn off and driven into the bottle, and these will of course reduce a small portion of the Glauber's salt (sulphate of soda) into sulphurets of soda and sulphuretted hydrogen, which latter imparts to the water the well-known smell of rotten eggs; but the properties of the water themselves will not be in the slightest degree affected for remedial purposes. Mineral-water tradesmen, however, assure me that such accidents are rare (occurring only once in a thousand cases), although they will happen occasionally in spite of the greatest care; the iron contained naturally in these waters not being reduced thereby, so that the water remains clear, having all its elements in solution.

So long as stone bottles were in use, it sometimes occurred that there was a larger proportion of chloride of soda found in the water sold than in the springs

themselves. This is merely due to the salt used in the enamelling process, which is dissolved by the water; the only consequence of this being that the water becomes more saline. This cannot happen where glass bottles are used. The bottling process proceeds rapidly by the aid of a machine constructed for the purpose. The bottles are first filled with carbonic acid gas to expel the air, and are then quietly filled again with the water by means of a tin funnel having an india-rubber tube at the end, which reaches nearly to the bottom of the bottle. Thus the carbonic acid gas is completely displaced and the air wholly excluded. The cork is driven in through a conical tube by means of a wheel worked by hand. Seven or eight persons employed at the same time can complete the bottling at the rate of six hundred an hour. This work is usually suspended during the height of the season, as the waters are reserved for the individual use of "*cure-quests.*"* After being filled, the bottles are sealed with pitch, and so closely fitted with tin capsules as to entirely exclude the air. The capsule bears the date of bottling, the name of the spring whence the water comes, and the crest of the proprietors (three branches of a stag's antlers), the brotherhood of the Præmons-tratense Convent, to whom all the springs of Marienbad belong. The bottles are exported in cases of 18 or 30 large, and 18, 24, 36, and 50 small bottles each. The way to keep the waters best is to lay the bottles flat in a cold vaulted cellar free from damp. Orders should be forwarded to the directors at Marienbad, or to Heyl & Co., Berlin, agents for natural mineral waters.

The change which these exported waters undergo after a time, is principally in the proto-carbonate of

* Shortest and nearest expression of the German "*Curgast.*"

iron, contained in chalybeate waters, which latter are distinguished by their inky taste, and the rust or ochre deposited, on their exposure to the air. This proto-carbonate of iron, which is in a complete state of solution in the water, becomes decomposed through the presence of a small amount of suspended air, under the influence of carbonic acid, which forms no salt with peroxide of iron; and the *partly-decomposed* carbonate of iron, changed into the peroxide by the oxidation from air, is therefore thrown down in the bottle as a reddish-brown precipitate, which adheres pretty firmly to the glass. On shaking the bottle vigorously, however, the ochre mixes again with the water, which assumes a turbid or even a dirty appearance, caused by the yellowish-brown, finely-divided flakes of oxide suspended in the agitated water. When the bottles are left standing upright, undisturbed for a while, the water resumes its previous clearness, the deposit remaining at the bottom; and the bottles may be emptied almost to the last drop, if care be taken, without the admixture of the ochre, which is left on the bottle. Fortunately, however, these mineral waters keep a very long time in a clear condition (Dr Kratzman kept some for fifteen or eighteen years), the oxidation taking place very slowly; so that they are particularly adapted for exportation.

CHEMICAL AND PHYSICAL PROPERTIES OF MARIENBAD'S
KREUZBRUNNEN AND FERDINANDSBRUNNEN.

These two sources, like all the other springs of Marienbad, are cold; their temperature being $7^{\circ}.5'$ R., = 48 Fahr., = $9^{\circ}.4'$ Centigrade or Celsius. They are clear and effervescing, rapidly evolving carbonic acid gas, which rises in the shape of small pearls; of a

somewhat sharp, and at first agreeably acidulous taste, becoming almost pungent; very salt, and slightly astringent. They especially possess a great amount of sulphate and carbonate of soda, chloride of sodium, and free carbonic acid, and at present occupy the first rank among alkaline saline waters on this account. Each, however, is distinguished from the other. In the Ferdinand's Spring the solid parts—sulphate of soda, carbonate of soda, chloride of sodium, and also free carbonic acid—predominate, as the following analysis clearly shows:—

Names of Components.	Cross Spring.	Fer- dinand's Spring.	Cross Spring.	Fer- dinand's Spring.
	7680 grains (a pound of 16 ounces) of the waters contain.		1000 grammes (1 kilogramme) of the waters contain.	
Sulphate of soda,	38.040	38.7663	4.9531	5.0477
Sulphate of potash,	0.401	0.3256	0.0522	0.0424
Chloride of sodium,	13.065	15.3969	1.7011	2.0048
Bicarbonate of soda,	12.771	13.9999	1.6629	1.8229
Bicarbonate of lithia,	0.057	0.1105	0.0074	0.0144
Bicarbonate of lime,	5.746	6.0211	0.7482	0.7840
Bicarbonate of strontia,	0.008	0.0076	0.0010	0.0010
Bicarbonate of magnesia,	5.078	5.2992	0.6612	0.6900
Bicarbonate of protoxide of iron,	0.372	0.6528	0.0484	0.0850
Bicarbonate of protoxide of manganese,				
Basic phosphate of alumina,	0.038	0.0138	0.0049	0.0018
Neutral phosphate of lime,	0.014	0.0146	0.0018	0.0019
Silicic acid,	0.630	0.7411	0.0820	0.0965
Compounds of bromine and fluorine,	traces	traces	traces	traces
Soluble organic matter,	0.056	traces	0.0079	traces
Total of solid parts,	76.309	81.5153	9.9364	10.6140
Free carbonic acid,	7.734	14.8000	1.0063	1.9270
TOTAL	84.043	96.3153	10.9427	12.5410

This is the most complete and correct analysis of these waters out of the many that have been made.

We owe it to Dr Rajskey of Vienna, who made that of the Kreuzbrunnen in 1859, and Professor Kersten of Freiburg, in Saxony, who made that of the Ferdinandsbrunnen in 1844.

In this table we perceive at once in the Ferdinandsbrunnen a larger amount of all the solid compounds, on whose exceptional, nay, unique combination, the superiority of these two mineral waters depends, and also twice as much carbonic acid, thus rendering the taste acidulous, while the Kreuz water is more saline.

These differences are to be kept in mind, for the better understanding of the corresponding similar differences in the physiological and therapeutical effects of the two waters, which will be noticed in the proper place. The specific gravity of the Kreuzbrunnen at its immediate source (the temperature being $8^{\circ}.5' R.$, = $51^{\circ}.2' Fahr.$) is 1.0094, while that of the Ferdinandsbrunnen (temperature $7^{\circ}.5' R.$, = $49^{\circ} Fahr.$, = $9^{\circ}.06' C.$) is 1.0103. Comparing the foregoing analyses of the Kreuzbrunnen with the older analyses, which give only the total amount of solids in 16 ozs. water as follows:—

Steinman (1820),	.	.	.	66.1625 grains.*
Berzelius (1824),	.	.	.	66.1893 "
Bauer (1842),	.	.	.	66.5341 "
Kersten (1844),	.	.	.	66.1903 "
Peters (1851),	.	.	.	66.2940 "

It is evident that the Cross Well has gained about 3 grains in 16 ozs., or nearly 4 per cent. in the solid parts.

But we see, also, that the amounts of the separate solid portions are very nearly the same, according to

* The carbonic acid existing with the carbonate elements, as the bi-equivalent, is considered as free in these older analyses.

all these chemists; and if we add about half a spoonful of the old water to each tumbler of six ounces, the difference between the old and new water, with regard to its salts, will be removed. This alteration, therefore, is merely a subject of interest to the chemist, and cannot influence its sanatory effects. Amongst all the various natural springs of Marienbad, the Kreuzbrunnen has ever been the one to which Marienbad owes its celebrity, because medical men have preferred it on account of its adaptability to the largest number of cases. Its history, therefore, and the alterations it has undergone in appearance, will interest all believers in its virtues; and I therefore insert here an abridged account of it.

1. KREUZBRUNNEN.

The first enclosure of the Kreuzbrunnen dates as far back as 1249, and was the work of the conventual apothecary Père Damian Schulz, who had it confined and protected against the irruption of freshets or the entrance of rains, both of which had till then freely entered it. He first adorned it by erecting a cross by its side, hence its name. Our knowledge of the uses to which it was put at that time is somewhat limited. However, it seems merely to have been employed to procure by evaporation a salt known as "Sal Teplense," Tepl salt, which was renowned for its aperient and dissolving properties. In 1760 Professor Dr Scrinici of Prague published a treatise on the healing powers of this salt, and his pupil Zauschner did the same in 1766; but their remarks are valueless, as they had no opportunity of watching the course of a case at the springs, or collecting any facts of practical utility

concerning its curative effects. At that time both healthy and sick people resorted to the springs on Sundays and holidays in large numbers to drink the waters at pleasure, but not at leisure, in quantities of from fifteen to twenty pints, carrying away more for home consumption, thinking that it is "much which does much." In reading this, one wonders that, in spite of such irregularity and foolish excess, such favourable results should have been obtained as were inscribed in chalk, charcoal, and pencil on the frame-boards surrounding the spring, where one may have seen the names of many patients, their residences, and sometimes even the quantity of the waters taken and the immediate consequences.

The first practical work on Marienbad's natural springs was written by Dr Nehr, from his own experience at the place itself, where he had settled as physician to the Convent of Tepl. He replaced the old enclosure of Damian Schulz by another of polished serpentine stone in 1790. The description he gives of the state of the springs at that time is not enchanting. "How surprised," says he, "was I on entering this wild valley, surrounded by steep mountains and dark dense forests, in which these springs poured out their medicinal waters in abundance. All I saw excited fear, detestation, dislike, and horror: mountains and valleys, water-rents and marshes, stone and sand-hills, mouldering bushes, boulders, and fragments thrown down by the wind, lay about in endless confusion. A single hut in a state of dilapidation, in which two iron kettles stood in a chimney for the preparation of the Tepl salt from the Cross Spring, and a poor wooden enclosure of the same, this was all

that gave evidence of the human interest in the place. Neither footpath nor drive led to the well, and stepping-stones had been placed on the marsh to form a way to the wells. Fancy such a solitude; the home of wild beasts, wood-thieves, poachers, and robbers!" Dr Nehr soon recognised the importance of the well, and began to work with energy in order to make this desolation approachable by human foot. By his advice the Abbé Ambrosius Schmid ordered the demolition of the tottering wooden hut in which Glauber's salt was manufactured, and the erection of a timber edifice to the right of the well, a forge, a grinding and a saw mill, and at some considerable distance to the left an armour manufactory. These soon brought life into the place, and made it more suitable for the reception of strangers. He then railed in the well, protecting it with an inner enclosure of serpentine stone, and drained the surrounding marshy land. Near this, and in the rear, a structure was raised to protect the cure-guests from inclement weather; but as the increased fame of the well brought many more visitors, this accommodation was found insufficient, and Dr Nehr in 1805 built a house, containing fourteen rooms, for the reception of cure-guests of the better class. This was the first so-called "Curehouse" in Marienbad, which has since been replaced by the "Globe" of the present day. Others afterwards followed his good example, and busy life progressed in the new colony. A park of graceful design was laid out; promenades and decent footways arranged; the surrounding part of the Cross Well, and the entire valley in fact, embellished; and a small chapel built. At this time our colony was known to some as the "Bath of

Auschowitz," and by others the "Acid Well," or "Sauerbrunn;" but in 1808, the Abbé Pfrogner, on being asked to name it after himself, gave it a mightier name—Marienbad—and a patroness, the holy Virgin Mary. The prelate Reitenberger invested large sums of money in the place, hoping to transform it into a more fitting resort for permanent patients. His efforts to establish a regular exportation of Cross Spring water were rewarded with surprising and lasting success. In 1818 the number of bottles sent out was 75,000, against nearly 1,000,000 in 1872. This is proof positive of the great estimation attained by the Cross Spring in the professional world, to say nothing of the imitation waters, which develop in proportion to the spreading fame of Marienbad's natural Kreuzbrunnen. Dr Nehr's book on Marienbad appeared in 1813, in which he laid down the results of his twenty-four long years of experience at this watering-place. It is a simple but instructive work, which has found many attentive readers, containing, as it does, the additional chemical analysis of these waters made by the parochial apothecary Carl Brun.

Dr Nehr died in 1820; but his fame as the real founder of the reputation of Marienbad's remedial agents will live when perhaps the natural waters of the Cross Spring will be found insufficient to supply the demand; and Struve's artificial Kreuzbrunnen will be hailed with gratitude, as a necessary substitute, improved by the continual progress of chemistry. Nehr died a true believer in Marienbad's lasting virtue!

In 1817 it was found that the second stone enclosure had been greatly affected by the waters, which had corroded the sides, and a wooden one was therefore

substituted, in the hope that this would better resist the corroding influence of the acid mineral waters. This was the *third* enclosure, which was fairly durable, as it remained till 1858. A description of it can be found in Dr F. A. Reuss's excellent treatise, "Das Marienbad bei Auschowitz auf der Herrschaft Tepl;" 8vo; Prague, 1818. On special examination in 1858, it was found that the wooden enclosure had been considerably damaged in some parts: the layer of clay beneath the wood was found to be in a very bad condition, and quite softened: the foundation-stones had become loose; and some of the stones having been crumbled, appeared to have disadvantageously influenced the waters. Such a dangerous state of things could not be allowed to continue, if art and science could prevent it; so a *fourth* enclosure was decided upon in 1858, and the future prosperity of Marienbad insured by the *effectual* protection of the outlet of this most important source. Very energetic measures were now used under the supervision of the mine director Heyrowsky. Foundation-stones were properly laid, and immediately on these the oak tank was fitted, its shape being that of a regular octagon, the horizontal diameter between opposite angles being $54\frac{1}{4}$ inches, and the inner surface 13,412 square feet. All deposits of iron, chalk, and manganese left by the waters are carefully cleared away twice a week in the following manner: An oaken grate, closely fitting the sides and bottom of the tank, is covered with potsherds and lowered into the water. All the ochre formed deposits itself on these fragments, which are, when necessary, replaced by new ones. In this way the bottom of the tank remains intact; all scrubbing is avoided, which

was not the case when the potsherds were placed on the bottom of the tank itself; and all smaller matter which occasionally falls into the water is easily removed. By these means the water remains always clear and pure, and the tank lasts a much longer time. We may therefore say that the present enclosure, originating in 1858, answers every practical and scientific requirement. When the water rises in the tank to the height of one inch, the cubic contents are 1.1176 feet; and when it rises to the height of 34 inches (the normal height of the tub to the outlet pipe), it contains 38 cubic feet, which quantity suffices for all the wants of the drinking public, every cubic foot filling 150 tumblers of 6-oz. capacity each, or 57,000 tumblers for 38 cubic feet: this is a sufficient quantity for the use of the patients every morning. Suppose each drinks on an average four tumblersfull, also taking into account the continual influx which increases the quantity of water disposable to about 8000 tumblersfull (or sufficient for 2000 persons) we see there is no justifiable cause for anxiety, just at present, about an insufficient supply. In the case of an unusual number of visitors in the height of the season, it is possible to meet a much larger demand by simply stopping the bottom opening over-night. This would raise the height of the water to 40 inches in the morning, with a summary provision of 44,708 cubic feet of water. To calculate the speed with which the water issues from the earth, I may briefly state that by measurements taken at the outlet pipe, which is four inches in diameter, when the water in the tank has been allowed to remain undisturbed for some little time, the

volume amounts to 1 cubic foot in twenty-seven minutes, or 2.222 cubic feet per hour. The tank fills precisely in twelve hours, after having been previously emptied. Before the fourth enclosure, according to the observations of the commission in 1857, the well yielded 1 cubic foot in eighteen minutes, or 3.333 cubic feet per hour. This shows that the present normal supply is less.

Up to the year 1852 it was the rule at this well to serve the water by plunging the glass deeply into it, thus rendering it turbid especially during the season when the tank was thus nearly emptied; and the drinkers had therefore to imbibe it in an impure state, almost from the same tumbler. The continued disturbance of the water, too, caused a considerable loss of carbonic acid gas. These inconveniences have been avoided by the advice and specification of Dr Heidler, by the introduction of a so-called mineral-water lifting-machine, invented for this purpose by John Tober of Prague. It consists of a pump-like apparatus, to which a flywheel is attached, which on being slightly turned causes the water to rise from the tub through an upright glass pipe into an open glass basin, whence it flows through lateral pipes into the tumbler of each visitor, clear and undisturbed, with its full complement of carbonic acid, which gives it its pleasant taste. In consequence of these new arrangements the water does not vary in the amount of salt, but constantly remains in its natural and perfect state, for no rain-water can possibly permeate from the surrounding humid soil through its granite casing. It is protected from the descent of rain by a spherically-vaulted roof or cupola, surmounted by a large golden cross, which

irradiates the surrounding space. On either side of this, extending in opposite directions, is an Ionic colonnade, supported by a double range of pillars, and terminated at each end by colonnades of the same style placed at right angles. In the centre of this rectangle, on a grass plot, is Dr Nehr's monument, erected to his memory as the medical founder of Marienbad, and consisting of a pyramid of red Bohemian marble supporting Nehr's bust in bronze. It is cast by Burgschmidt of Nüremberg after a model of the sculptor Max. On the face of the pyramid is the following inscription: "To the medical founder of Marienbad, Dr Josef Nehr: born in Tepl on the 8th May 1757; died in Marienbad on the 13th of September 1820. From his admirers. 1857."

The *Cure-guests*, who come to this edifice from six to eight in the morning, and from six to seven in the evening, walk in to drink the waters in two ranks in Indian file, separated by a barrier. They visit the spring, drink their water, and then proceed to their walks. During the height of the season you may see a long train of Cross Well pilgrims stretching down the promenade, which is 300 yards long, forming an attractive picture of watering-place life, since composed of the representatives of all nations and languages, who enjoy their walks and conversation, and the strains of a fine band, which twice a day performs selected masterpieces.

On the east side of the alley promenade, almost joining the colonnade, there is the colonnade-saloon, 240 feet in length by 40 in width, which serves for a wet-weather promenade; a passage connects this saloon with the upper and lower colonnade, and rests

upon cast-iron pillars. Both colonnades contain many shops, established for the sale of articles manufactured in the mountains, fancy goods, laces, and millinery; articles of jewellery, silver, gold, precious stones, glass, china, and turnery wares.

Patients who desire to register their change of weight during the course of waters find the weighing-chairs in the lower colonnade; but these should take care on all occasions to be weighed in the same clothes, and with or without umbrella, stick, keys, heavy boots or shoes, &c., as at first, and at the same time, before or after dinner, which also influences the correctness of the weight through ingestion and egestion.

Remote from the north side of the Cross Well there is the export-house for the waters, with large cold cellars for the storage of freshly-filled jars and bottles, these vaults being open for any one's inspection. The Kreuzbrunnen has the preference of all Marienbad's mineral springs; after it comes the Ferdinandsbrunnen, then the Wald and Rudolf's Spring. The others are only sent out on special order.

For the convenience of my readers I append the price-list of the genuine Marienbad mineral waters, as sold in London by Edwin Chapman & Co., 10 Duke Street, Portland Place, London, W., importers of mineral waters, manufacturers of Koumiss and sparkling bland, &c. &c.

	Price per Dozen.		Price per Original Package.	
	Quarts.	Pints.	Quarts.	Pints.
Marienbad Kreuzbrunnen,	18s.	12s.	72s. 50 bot.	48s. 50 bot.

I append also the price of the waters and salt at Marienbad in Austrian money:—

In Austrian Value.		Florins.	Kreutzers.	Gross Weight.
1 case containing 48 large stone bottles,	. . .	10	—	250
1 " " 30 " "	. . .	6	50	165
1 " " 24 " "	. . .	5	30	130
1 " " 12 " "	. . .	2	80	70
1 " " 100 small stone bottles,	. . .	18	—	330
1 " " 72 " "	. . .	13	20	245
1 " " 50 " "	. . .	9	20	170
1 " " 36 " "	. . .	6	70	133
1 " " 24 " "	. . .	4	50	85
100 large } bottles without case, packed in straw, . {		18	—	425
100 small }		16	—	275
GLASS BOTTLES.				
1 case containing 30 large bottles,	. . .	8	20	150
1 " " 18 " "	. . .	4	80	90
1 " " 50 small bottles,	. . .	11	—	170
1 " " 36 " "	. . .	8	—	125
1 " " 24 " "	. . .	5	20	80
1 " " 18 " "	. . .	4	10	65
100 large } bottles without case, packed in straw, . {		24	—	360
100 small }		20	—	250

After these, it seems the proper place to quote the annual statistical report both of the number of visitors at Marienbad and the number of glass and stone bottles exported, in order that my readers may see the rapid strides Marienbad has made in these directions since these reports were first issued. The sudden decline of visitors in 1859 is due to the Austrian-Italian war; in 1866 to the Austrian-Prussian war, with its battle-fields in Bohemia; it is, however, less perceptible in 1870 during the Franco-German war, as this commenced nearly at the end of the great season.

Date.	Parties.	Bottles.	Date.	Parties.	Bottles.
1815	187	—	1844	2,119	558,110
1816	379	—	1845	2,206	584,974
1817	235	—	1846	2,309	566,506
1818	500	75,000	1847	2,327	573,942
1819	592	160,987	1848	1,052	405,088
1820	507	187,697	1849	2,054	421,853
1821	605	165,412	1850	2,866	484,130
1822	753	182,071	1851	3,087	619,554
1823	794	195,863	1852	3,052	617,208
1824	813	213,815	1853	2,982	563,896
1825	815	206,524	1854	2,400	504,000
1826	642	219,028	1855	2,800	464,729
1827	877	215,985	1856	3,495	506,813
1828	838	215,650	1857	3,598	612,803
1829	897	216,264	1858	3,051	612,214
1830	921	244,408	1859	2,087	522,311
1831	642	209,300	1860	3,032	575,997
1832	800	187,962	1861	3,134	604,263
1833	1,104	265,972	1862	3,135	547,813
1834	1,177	345,677	1863	3,139	552,116
1835	1,144	343,195	1864	3,223	564,610
1836	1,207	355,569	1865	3,141	569,144
1837	1,120	382,156	1866	756	395,611
1838	1,267	388,578	1867	3,454	512,497
1839	1,541	437,938	1868	3,827	613,776
1840	1,541	444,055	1869	4,300	694,442
1841	1,754	477,489	1870	4,137	710,214
1842	1,854	535,311	1871	5,389	730,000
1843	1,950	503,038	1872	6,300	810,000
				115,918	23,973,158

The greatest number of visitors would appear to be those of Austrian nationality, then those of Germany, especially Prussia, and following it Russia and Poland; but England, Denmark, Sweden, Wallachia, France, and Italy have all a share of representation, as well even as some of the non-European races of the globe. The total number of visitors during the last fifty-

seven years was 115,918, reckoned not in units but by parties or families.

The export of stone jars and bottles amounted to 23,973,158 during the same period.

These numbers are sufficient evidence of the steadily progressive rise of Marienbad's reputation; but it is certain that it owes its greatness entirely to the splendid effect of the Kreuzbrunnen, which is doubtless the strongest of all alkaline-saline springs in Europe (Glauber's salt springs), apart from those of the Ferdinandsbrunnen in Marienbad, and the Salzbrunnen in Elster. It is this fortunate chemical composition which we have already explained that raises the Kreuzbrunnen to the first place among all other resolvent natural waters, not of Europe only, but of the whole globe. Hufland, one of the greatest medical men of Germany, has repeatedly called Marienbad "the cold Karlsbad," and its Kreuz Spring in particular "the palladium of Marienbad;" "because," says he, "it is the only one, and another cannot be found elsewhere which would recommend itself so generally on behalf of its strongly solvent and moderately aperient power, assisted by an increased action of the secreting organs."

The Kreuzbrunnen is preferable to the stronger aperient *Ferdinandsbrunnen*, because it is never violent in its action; therefore more generally adapted to the most widely differing constitutions, and suited, of course in the proper doses, for old and young people, for weak and robust persons, and even for pregnancy, a state of natural but transitory plethora.

Comparing the Kreuzbrunnen with the *Karlsbad* waters, we know that its most essential component,

according to all the analytical results, is the sulphate of soda (Glauber's salt), 38 grs. in 16 ozs. of the water, or 20 grs. more than in the same quantity of the famous "Sprudel;" besides which, the Kreuzbrunnen contains a greater amount of chloride of sodium and bicarbonate of soda. It contains even more iron than many of the so-called chalybeate or ferruginous mineral springs, besides the free carbonic acid gas with which it is more than saturated.

The action of the Karlsbad waters more directly affects the circulation of the blood and less the intestines, therefore it frequently becomes necessary, as they are less derivative, to assist their action on the bowels by other auxiliaries; in addition, they are rather debilitating, but more penetrating through their particular power of absorbing morbid deposits.

The Ragoczi (Kissingen) also stimulates the circulation of the blood more than the abdominal secretions. It likewise causes congestion more frequently, and resembles the Ferdinandsbrunnen more closely.

The *bitter waters* do not, it is true, excite the circulation; but they are, on the contrary, too cooling and lowering for many cases, and mostly injurious to digestion if used for any length of time. They affect the secretions only through the mucous membrane of the intestinal tract. According to some authorities, the Kreuzbrunnen has frequently acted beneficially when the *Homburg* waters had caused vascular excitement and congestion. If this congestion tends to localise in or to menace the vital organs, the Kreuzbrunnen is far preferable to Homburg, Karlsbad, Kissingen, and Ferdinandsbrunnen.

2. FERDINANDSBRUNNEN.

Since I have necessarily dwelt somewhat at length on the description of the most essential points of the Kreuzbrunnen, I can now curtail my next subject—viz., the Ferdinandsbrunnen—the use of which is comparatively limited, in consequence of its greater abundance in saline ingredients and carbonic acid, as well as iron, of which it possesses twice as much as the Kreuz Spring.

The historical records at hand inform us that on the special command of the Emperor Ferdinand I. in 1528, then King of Bohemia and Hungary, the saline wells of Auschowitz were selected for the preparation of *cooking-salt* on a large scale. Therefore, when the enclosure of the well, named after its Kaiser, “Ferdinandsbrunnen,” had been finished, the work fairly began; but through the large amount of Glauber’s salt present in this well, the great expense incurred for fuel, and the constant inroads of the belligerent forces which were in the field at that time, the enterprise had to be abandoned. It was not till Reuss again called public attention to the important sanatory effect of this well that an effectual enclosure had been provided in 1819. In 1822 Professor Reichman undertook the chemical analysis, the results of which were published in 1823. The name Fredericksbrunnen was adopted by the Abbé Reitenberger, who built a temple-like construction, with a depressed cupola, over it, and extended the building on both sides by wings of colonnades of equal length, which led to the offices, one of which was the dwelling

of the water-attendant, another the bottling department, and a third contained the steam-engine which propels the waters up to Marienbad.

But as the distance between this well and the Kreuzbrunnen is 1920 yards, or twenty minutes' walk, Reitenberger thought to render the connection pleasanter by constructing a path on the right bank of the rivulet Auscha through pleasant meadows, and a drive over a hill through an alley of trees. The Ferdinandsbrunnen is situated south of Marienbad, in a meadow at some little distance from the left bank of the little river Auscha. The spring rises amongst blocks of crumbling granite, with a large formation of carbonic acid gas rising in bubbles, which burst explosively on the surface.

Since the surrounding land has been well drained by extensive underground canals of brick-work, the spring is no longer contaminated with rain-water; so that though the volume of its water has diminished, the proportion of solid and carbonic acid gas has increased. This well also pours its waters into a wooden tank of octangular shape, with a diameter between opposite angles of 46 inches. Its internal volume is 1496 square inches, or $10\frac{7}{8}$ square feet. The height of the water-column from the bottom to the outlet pipe is 74 inches, and its contents 63.5 cubic feet, which is equivalent to 9525 tumblers of 6-ounce capacity each. The tank is filled at the rate of 1 cubic foot in a minute, or 60 per hour, yielding 9000 6-ounce tumblers, which is a very considerable amount in comparison with that of other mineral springs. Take, for instance, the source of the Nether Selters, which is believed to be inexhaustible, and produces

(measuring at the outlet pipe) 1,440,000 cubic inches of water, against 2,488,320 cubic inches at Ferdinandsbrunnen in an equal time.

This quantity (2,488,320 cubic inches) is the daily supply of water, which would fill 144 bathing-tubs of 10 cubic feet, 44,000 large bottles at 30 ounces each, 66,000 jars at 20 ounces each, or 220,000 tumblers at 6 ounces each. In one year, therefore, it yields 16,000,000 of large, or 24,000,000 of small jars.

According to Steinman, in 1820 the source yielded more than double this amount, or $120\frac{1}{2}$ cubic feet in one hour. The layer of carbonic acid gas has been supposed to extend to the height of 6 inches above the water level, or even higher according to Professor Kersten.

Since 1869 the waters of the Ferdinandsbrunnen are delivered to town by means of a magnificent aqueduct, to the satisfaction of many patients who were disinclined or unable to take the half-hour's walk or drive every morning. The increasing want of ferruginous baths has also been supplied by means of the Ferdinandsbrunnen, which, being so rich in carbonic acid and iron, was well adapted for the purpose. The first aqueduct attempted twenty years ago was a failure; and to obviate repetition, instead of earthen they used enamelled cast-iron pipes, for the whole length of 4392 feet, and this time with complete success. The ascent, however, being so great as 1 in 32, it was considered necessary to use steam-power; and now the water of Ferdinand's Well flows into the new bath-house quite fresh, clear, and undecomposed. It is used for the ferruginous baths, called Ferdinandsbrunnen baths, with great efficacy in every suitable

case. If they were called carbonic acid gas baths it would be more to the point.

In the year 1870 the aqueduct was continued up to that part of the promenade opposite the Carolinenbrunnen, the water flowing here into a basin placed under a temple-like structure. This spares the patients many tedious and fatiguing journeys, while the water tastes as well as at the source itself. Before the completion of this work, patients drank it from jars and bottles freshly-filled every morning, which were brought over to the Kreuzbrunnen colonnade or to the "cure-saloon."

The chemical composition of the Ferdinandsbrunnen was given in the table with that of the Kreuz Spring; and I have already stated that its waters are much stronger than those of the Kreuzbrunnen, in their action upon all the secretory organs and the blood system generally; hence greater caution in its use is necessary. Its value in the treatment of suitable cases is very great, however; and if its chemical composition is always borne well in mind, especially its amount of sulphate and bicarbonate of soda, its bicarbonate of peroxide of iron, and its abundance of carbonic acid, no doubt all blunders and mistakes will be avoided, and good results alone attained. I recommend its use strongly, especially beyond Marienbad, confident of the beneficial effects it will have upon all patients for whom it is intended. In most cases, however, it will be advisable to precede its use by a course of Kreuzbrunnen for a week or a fortnight, and then to drink about one or two tumblers of Ferdinand's waters at intervals of a quarter of an hour. It ought to be left entirely to

the expert judgment of the medical man in attendance to prescribe a course of Ferdinandsbrunnen.

PHYSIOLOGICAL EFFECTS OF THE MINERAL WATERS.

The knowledge of the physiological effects of mineral waters depends upon knowledge of their components. Every single ingredient must therefore be considered in its separate effects on our organism. Such an investigation will lead us, no doubt, to a conclusion as to the sum total of their effects both on the healthy organism and on the diseased; but to do this thoroughly, in order to satisfy all modern scientific requirements, it would also be necessary to describe the various effects of water at different temperatures, &c., and this rather belongs to the special department of water-treatment or hydropathy. I must therefore limit myself here to a few hints on this subject, and be brief, that I may be the better understood by my readers, whom I dare not lead too far into the tedious ramifications of chemistry, physiology, and therapeutics, while medical men are supposed to be thoroughly conversant with these subjects, in accordance with the present high standard of scientific medical education.

As much as water predominates in all organism, especially animal, and is essential for every change of matter, it is naturally found in all our drinks and nourishment. Every kind of food must become diluted with fluid before it can be prepared for assimilation, and only in a fluid shape can it enter our chylus and blood-vessels. The more water we take, the more will be excreted by the lungs, kidneys,

intestines, mucous and serous membranes, and skin; and in like proportion will the secretions and excretions themselves be more diluted and increased, and more urine, sweat, saliva, bile, and fæcal matter will be formed. We are not yet justified in assuming that our blood takes part in this process of dilution, though there can be no doubt that it must be influenced greatly by a course of mineral waters. We know that water is absorbed in great abundance by our organism, but it is soon secreted from the blood by the kidneys, skin, &c.; and we are not able to produce diarrhœa by the largest ingestion of pure water.

Water very readily dissolves salts, upon the variable quantity of which exosmotic and endosmotic action depends. The albumen of the blood also attracts water, *ad infinitum*, through our intestinal membranes, which it penetrates with great ease. The temperature of the water is of great importance in treatment. *Cold* water excites the action of the stomach and intestines, and increases their peristaltic movements. It detracts from the warmth of our body when used for any length of time, producing contractions of our muscles through the tonic action upon the nerves. *Warm and hot* water relaxes our membranes, permeates them very rapidly, and is absorbed more quickly by the blood. It also raises our bodily temperature and produces perspiration readily, besides dissolving the salts in larger quantities, the secretion of which it promotes in a high degree. It is therefore highly important that the medical man should have regard to the temperature of the water in prescribing for any individual case.

The *carbonic acid* in the mineral waters of Marienbad is held by the basic salts, with which it forms carbonates and bicarbonates; but a certain amount is also present in a free state, and the colder the waters are taken into the stomach, the more carbonic acid is introduced. Warmth expels it, and renders the waters flat. It is the carbonic acid which gives the pleasant *prickling* and acidulous taste to them. In the stomach it causes increased peristaltic action, aids digestion, and excites appetite; but the carbonic acid more especially influences our nervous system, and through this afterwards our single organs. Carbonic acid acts, according to the experiments of Cyon (as I have stated in my book on Koumiss; London, 1870), by irritating the *vagus ends* in the heart, and diminishing therefore the heart's action. According to Traube and Thiry, it irritates the inhibitory nervous system, and also the vasomotor centres, so that the lateral pressure in the vessels becomes increased in both. This increased pressure, and the more energetic contraction of the heart, depend upon the influence of the carbonic acid, which causes the contraction of almost all the arteries of the body. It calms the gastric nerves, even in those irritated states where the most easily-digestible substances readily produce nausea, vomiting, &c.; it increases the functions of all absorbing and secreting organs, and especially augments diuresis. It irritates the skin, producing warmth and redness, and a peculiar prickling sensation in the more sensitive parts, being absorbed by the skin when gas and water baths are taken, and must therefore be reasonably accounted a most beneficial agent in all aërated drinks, especially in the Kreuz

and Ferdinandsbrunnen, where it is contained in such large amounts. In some persons, however, it produces congestion, giddiness, &c., and then its use must be moderated.

Amongst the solid portions named in the analysis of the Marienbad waters, we have first to consider the *Glauber's salt*, or *sulphate of soda*, which was first discovered by Rudolf Glauber in 1658, from whom it takes its name. It is found indigenous to many European countries, and exists in sea-water and many mineral springs, especially at Marienbad, Carlsbad, Franzensbad, Elster, &c., and in all bitter waters. The salt has distinguished physical and chemical properties, for which I must refer my readers to chemical and pharmaceutical works. Here, however, I must mention that, as a salt, it has a great affinity for water, in which it is found dissolved naturally in various degrees. We know in these days that the law of endosmosis determines the absorption of the salts within our body. Salts need no previous chemical change in order to be absorbed; unlike organic elements, they pass readily into the blood and the kidneys, regulate their proportion by excreting the amount not wanted. An explanation of the laws, and the processes of endosmosis and exosmosis, belongs to books on physic and physiology. Here we have to deal only with the action of Glauber's salt, which varies according to the quantity taken. In small quantities it acts as a diuretic; in large and concentrated doses it is a saline purgative, because it has a very high endosmotic equivalent, although it does not diffuse itself as readily as common salt. Every particle of Glauber's salt attracts a certain amount of water, and fills the

intestines with fluid, which at the same time excites the peristaltic action of the bowels, and is thus expelled in the shape of more or less watery motions. The more concentrated the solution of salt, the more this action increases. But the Glauber's salt in the form of these waters does not irritate or inflame the intestinal vessels; it has a mild and cooling effect in its action as a purgative, although it draws a considerable quantity of serous fluid from the blood, especially that of the abdominal organs, and sets the circulation free in all glands, particularly those in the neighbourhood of the liver; the bile is secreted with ease and abundance, and all processes of absorption and secretion are vivified; all impediments of evacuation disappear; the blood begins to circulate freely; congestions of the head, eyes, throat, chest, stomach, liver, spleen, and kidneys are removed, and the danger of apoplexy avoided—in short, the principle, “*Ubi stimulus, ibi affluxus,*” is carried into effect, with all its beneficial consequences of an improved health, by this action of the sulphate of soda on the whole surface of the intestinal canal. The Kreuz and Ferdinandsbrunnen, however, never ought to be taken in such large quantities as to produce diarrhœa, only two or three pulpy defecations in the course of twenty-four hours should result, this being in most cases sufficient to cure all chronic constipation, abdominal plethora, engorgements, and derangements of the menstruation, hæmorrhoids, &c. But that does not alone explain the success obtained by a course of Marienbad's waters, for there are yet other points to be considered.

Next to the Glauber's salt in the analytical table of the Kreuz and Ferdinandsbrunnen waters stands the *chloride of sodium*, or *common salt*, which is a necessary article of food, contained in blood, saliva, bile, urine, mucus, and gastric juice. Its action is directed especially upon the lymphatic glandular system and the mucous membranes, which it excites to greater secretion, the kidneys again excreting it from the blood. It is a good digestive, producing appetite and thirst by augmenting the secretion of gastric juice and mucus, and the peristaltic movements of the stomach at the same time; it prevents the formation of flatus in the stomach and intestines, as also of worms, against which it is recognised as a remedy. Its value in hæmorrhages is well known. According to Liebig, it promotes the process of nutrition, acting as a slight stimulant and alterative, though it is not decomposed within the body, but excreted again unchanged, especially in the stool and the urine, having a diuretic action, and increasing the excretion of urates.

Externally applied it is also a stimulant and rube-facient; it increases the peripheral capillary circulation and warmth; it causes an itching and burning sensation if used in a more concentrated form. Sponging and bathing in salt water, with or without friction, are valuable aids in many affections, as chronic rheumatism, joint affections, &c. As an adjunct to clysters it is invariably used to destroy worms in the rectum, especially oxyuris.

The next important ingredient of the Kreuz and Ferdinandsbrunnen is the *bicarbonate of soda*, which

acts as a direct antacid when taken into the stomach, with which it agrees well, neutralising the acetic and butyric acids sometimes formed there by bad digestion; it relieves heartburn and some forms of dyspepsia. The soda combines readily with the acids, by setting free the carbonic acid which escapes. It dissolves the mucus gathered in the stomach, and cleanses its membranes. After it has neutralised the acid, the gastric juice is soon replaced in its normal condition. In acidity of the blood it acts as a neutralising alkaline, and soon improves the general state, as in gout, rheumatism, urinary affections where there is excessive deposit of uric acid, and especially in sandy deposits of the urine, and in concrements within kidneys and bladder. Bicarbonate of soda has been employed to great advantage in the treatment of inflammatory affections, as acute rheumatism in joints, &c.; and the urine becomes alkaline during its use. It is principally owing to this alkaline salt in our blood that the albumen is kept in solution in the serum, forming albuminates of soda, as albumen is not soluble in water in the absence of salts or alkalies, even after all fibrine has been removed; and although this salt is contained in the Kreuz and Ferdinandsbrunnen but in the proportion of 1 to 4 of the Glauber's salt, still this seems a sufficient amount to justify us in calling these waters alkaline.

The felicitous combination of all these ingredients—the carbonate of soda, which neutralises acidity and dissolves the mucus; the salt, which improves digestion; the sulphate of soda, which increases peristaltic motions and watery secretion of the bowels; the carbonic acid, which augments capillary circulation and

alters nervous functions—makes the Ferdinandsbrunnen a superior remedy in chronic catarrhs of the stomach.

The bicarbonates of lime and magnesia are also present in these waters, but merely in such a proportion as not to interfere with the digestibility of the waters. These salts are, moreover, indispensable for the maintenance of our organism—the bones, muscles, and nerve substance of which contain them abundantly. Their antacid properties are also not to be overlooked.

Iron is present in both waters, but in a greater degree in the Ferdinandsbrunnen. It is an essential element in the Ambrosius and Carolinen Springs, which are therefore the true ferruginous springs of Marienbad, and will be noticed in their turn. The kind of iron contained in the Kreuz and Ferdinandsbrunnen in solution is the bicarbonate of protoxide of iron, and their amount is just sufficient to counteract the general weakening effects of these alkaline-saline waters. In these times it is well known that iron forms an essential part of the red corpuscles of the blood, as much as $6\frac{1}{2}$ per cent. being contained in the pure colouring-matter or hæmatasine; it is intimately united with the organic elements, and if it becomes deficient, no matter from what cause, a state of the system is then induced termed anæmia. These waters are, then, most valuable to restore the blood to a healthy state, because they contain the iron in an easily digestible form. When the blood is in its normal state, it contains on an average 4 grains of iron in every pound; whereas in anæmic blood, in thirty cases the iron was only 2.8 per lb. The great importance of iron lies in its particular action as a

blood-restorer, and it is indicated more generally in all those diseases or states of systems where an improvement in the state of the blood is required. If iron be taken internally, it has a marked effect upon the colour of the fæces, blackening them more or less, this discolouration being chiefly or entirely due to the formation of the sulphuret of iron, though sometimes a little tannate of the metal is formed.

The tongue of a patient taking iron usually becomes somewhat stained, and the teeth are apt to become discoloured; but these effects can be avoided by drinking the water through a bent glass tube.

All the other ingredients mentioned in the analytical table—such as manganese, silicic acid, sulphate of potash, lithium, strontium, alumina, bromine, and fluorine, and even a trace of iodine and arsenic—are not important enough for a special notice, as their quantities are too small to produce any notable effects; besides, as many of them are present in our daily food, it would be difficult to note their effects.

After this short description of the special physiological features of every important ingredient contained in these two springs, we may at once consider the general effects produced by these two springs. Both are distinguished by a highly solvent power, exhibited, in the first place, by a mild aperient action of the bowels, though it must not be forgotten that the more intense action is caused by the Ferdinandsbrunnen. If three or four tumblers of water be taken from either of these springs, at intervals of a quarter of an hour, during a stroll on the promenades or in the Cursaal, this laxative effect will be evidenced by two or three soft pulpy motions in the course of the

day, without any griping or any other inconvenience. The secretions of the stomach, liver, pancreas, and the intestinal canal will merely be increased; and the stools will show a corresponding colouration, as more bile, mucus, &c., are intermingled with fæcal matter. The first glasses will allay all irritation, and carry away all accumulations in the whole intestinal tractus, and all previous unpleasant feeling in the abdomen. Colics, &c., will cease with the disappearance of impurities within the bowels. A sensation of pleasing warmth will spread over the stomach and the whole of the abdomen, accompanied by general comfort and gratification. The appetite improves. Besides bile, mucus, and intestinal secretions, all indigestible and foreign matter, concrements, worms, &c., are removed from the bowels through the increased peristaltic movements; and sometimes in cases of hæmorrhoids, blood more or less dark, fluid or coagulated, is observed in the motions, which generally does not appear mixed up with the fæcal matter, but either surrounds or follows it. An increased discharge of gas through flatus and ructus, mostly air and carbonic acid, is as frequently caused: sometimes the flatus smell very offensively, like rotten eggs, in consequence of sulphuretted hydrogen being expelled, usually preceded by rumbling within the bowels.

The colour of the stools varies of course very much, according to the various kinds of food taken; but in the beginning especially an unusual colour is noticed,—either dark green or quite black,—from the presence of the sulphuret of iron, formed within the intestinal canal by a combination of sulphur from the

food and various organic secretions with the iron contained in the waters; the usual yellowish or brown colour of more liquid, thin stools, which depends upon an increased secretion of bile, is therefore seldom seen during the use of these waters. Truly, watery stools are not aimed at by the use of these waters; and the principle of "Qui bene purgat, bene curat," is quite out of place in the treatment with Marienbad's waters, especially as their tendency and the physician's aim is not to weaken the body, but, on the contrary, to expel in a mild way all objectionable contents of the body in order to make room for the healthy function of all organs which have to regain their lost vitality, normal functions, and energy, to restore strength and health. The ultimate effect upon the body is therefore a general harmonious action of all the functions in the laxative direction, more resembling a spontaneous beneficial effort of nature itself to expel everything which may prevent the normal maintenance of health, than a consequence of special medicinal action; for it is not only one organ which develops its function, but all the abdominal parts act simultaneously in tending to assist weakened powers.

The second or *stimulating* action of these waters manifests itself by exciting any organ when inactive and increasing its activity. This action is a remote effect of these waters, which takes place not in the organs that are the direct receptacles of it, like the stomach and bowels, but in other distant organs, either through the currents of blood or the nervous system. To explain this scientifically belongs to that department of physiology where the inseparable connection of the principles of cause and effect, with all

its conditions of organic animal life and various special functions, are discussed. Practically, however, it is important to have a clear conception how and where stimulative action takes place; and for this reason I have to show actually by facts how remote actions of these waters are recognisable by their positive effects. In the first instance, there is no doubt about a large portion of solid and fluid parts of mineral water being absorbed by the intestinal capillary vessels, by which they are brought into circulation with the whole blood mass; and many of them appear again, after some time, in the secretions of organs not connected directly in any way with the gastro-intestinal canal. The fluid part of the water passes through the kidneys into the bladder, and produces more frequent and more considerable micturition, the colour of the urine being clear and light, sometimes even like water, and with very little if any odour.

The solids contained in the mineral water—especially the carbonates of alkalies, the Glauber's salt, and chlorides of sodium—are found also in the bladder, either unchanged or in other and new chemical combinations, which alter the neutral or acid reaction of the urine into an alkaline one, lasting but a short time, about twelve hours after the waters have been taken; the normal or acid reaction afterwards appears again. Thus we see that the Kreuz and Ferdinandsbrunnen have a marked diuretic action upon the kidneys. The free carbonic acid has evidently also a considerable part in this stimulating and diuretic action of these waters, and the Ferdinandsbrunnen especially; though by warming them we can easily diminish their stimulating power in cases where a

milder action is desirable. Patients who drink these waters feel this exciting effect usually during the first days: their pulse becomes fuller and stronger; they complain of congestion toward the head, pressure on the forehead, temples, and occiput, flushing of the face, giddiness, palpitation of the heart, increased bodily warmth, general physical excitement, singing in the ears, dazzling of the eyes, unquiet sleep accompanied by frequent dreams, fatigue in the limbs, and sometimes general prostration. The skin shows a tendency to perspire, chronic skin eruptions suddenly appear again, catarrhal and rheumatic-gouty affections, fever attacks reappear or increase intensely, hæmorrhoids and menses begin to flow again, and even more abundantly; piles which have never been remarked before break out and help to show the nature of some complaint in a distant part; gout affections are always increased if the patient has been subject to them formerly, and real yet shorter and less severe gouty attacks, with swelling, &c., are apt to come on during the use of the Kreuz and Ferdinandsbrunnen. It is, however, certain that as soon as these appear, different internal complaints disappear; all symptoms—which in older times found their explanation as so-called “crises” during a course of water-treatment, but which we know to-day are merely the expression of remote physiological action of these waters, which indicate the beneficial progress under this treatment, and are hailed as welcome for the attainment of a cure,—disappear again if the treatment is continued; all these disturbances show the active stimulation which must be anticipated, and therefore ought not to cause any anxiety, because they are sure to yield in the end

to a state of quiescence and improved health; the whole of these symptoms forming nothing else than a proof of the exciting or stimulating action of the waters upon the blood system and its more animated circulation, which of course have also a direct influence upon the various functions of the nervous system.

Most of the features in which the increased action of the system is expressed belong to the sensitiveness of the individual, who alone can feel the changes produced within his nervous sphere, just as he alone can tell his ailments through the feeling of pains which we are unable to demonstrate by outward appearances, except on producing or augmenting them by pressure, &c.; in such cases we are prompted by our patients, and treat their ailments according to the features and character we form from their statements and description. A correct judgment of more or less clear impressions or effects after we have taken remedies applicable to the nature of the disease, is not so easy as it would appear at the first glance, unless the effects are very pronounced, so as to exclude any doubt. This regards the sensitive part of our nerves, those of motion being somewhat more exposed to objective observation, and less removed from our direct comprehension.

The action of these mineral waters in this respect becomes evident, in a manifold way, to the mind of the person who drinks them according to the parts or nerves accidentally acted upon; and thus we see suddenly a renewal of old forgotten pains of a rheumatic or gouty nature, of neuralgias and the like, or some new outbreak in places which had remained

intact before, though it is impossible to count or describe all varieties of pains and most unaccountable sensations (often called hysterical or hypochondriacal), which occur frequently, with variable intensity, in all more or less important ramifications of the sensitive nerves within the head, chest, and abdomen, including the sexual parts and extremities. But all these symptoms are but transitional, and admit of a good prognosis, with a healthy issue at the end of the mineral-water treatment. Chronic distemper of mind is another ailment which we find represented at Marienbad, in all its stages of weakness, melancholy, and despair; and cures more or less permanent are effected, affording clear evidence of the close connection between mind and body. The various functions of mind and intelligence, and its operations—memory, imagination, and thought, as well as will—show here their harmony and union with the bodily functions, which are restored gradually as the latter improve. Energy of mind and power of will are often regained when the bodily health is restored to the normal state. The *stimulating effect* of the mineral waters is quite inseparable from their *tonic effect*, which finds its explanation in the general improved state of assimilation and nutrition acquired under the powerful influence of the Kreuz and Ferdinandsbrunnen. The quality and quantity of the blood can be properly regulated when the process of respiration revives, when the circulation becomes free, and when the oxidisation of blood becomes accelerated and improved. Where the brain and nervous system have been previously deranged by a general prevalence of anæmia accompanied with fainting, low spirits, fear,

and tremor, want of decision, &c., the general effects of increased circulation, oxidisation, and nutrition can be readily understood even without any particular knowledge of medicine; for we can perceive how, by the beneficial influence exercised upon the different processes of assimilation, nutrition, circulation, and respiration, the quality of blood improves; and how this consequently improves the nervous system, because the material of which the nervous matter is composed is constantly derived from the blood, and the better oxidised the blood is, the better the material it supplies to the nervous system. It appears, then, that the more lively the circulation becomes, the better the nerves perform their functions.

Thus we see hysterical life giving place to health and reason, hypochondriacal spirits and delicate nerves to strength and energy. This morbid state of the brain and nerves (*Hypochondriasis*), which leads to the belief in all kinds of incongruous and absurd things as to health—one of the most painful conditions—which is generally so difficult of treatment, is capable of successful treatment. If paralysis has resulted from excessive losses and weakness, we see the normal functions of voluntary action reappear under a suitable strengthening diet, fresh good air, and bodily exercise at Marienbad; tremor and restlessness, resulting from disease, give way to healthy sleep, quiet of brain, and co-ordination of thoughts; steadiness of body and mind are restored, and also whatever manifold derangements of the nervous vegetative life there may have been.

The appearance of persons using these natural

restorative means of Marienbad changes for the better. People of a plump and fat bodily constitution begin to diminish in size and weight, and their abundant *embonpoint* is modified so that they can resume exercise. Even the simple work of dressing and undressing gives much trouble and anxiety to very stout individuals; as a rule, they can scarcely put on their boots without great inconvenience and fatigue, and must be helped by others, who often are unable to suppress a laugh at the unnatural condition to which overfeeding, want of volition, too long sleep, and a general comfortable life has brought them.

Purging, walking, little sleep, and a suitable diet cure such general deformities readily and surely during a course of two months at Marienbad.

Thin and very emaciated people, on the contrary, gain flesh and strength at the same place by opposite treatment; their general condition of nutrition improves with reasonable habits and a corresponding good diet, always supposing there is no serious organic lesion which would defy all strengthening treatment.

The sallow, or sometimes even yellow and brown, or grey complexion, which alone sufficiently indicates disease, disappears, and the venous blue of face changes into a clearer, fresher colour; the pale and thin person with weak nerves attains a healthier colour and pleasanter conformation; the greenish-yellow cheeks of the anæmic girl change into a delicate pink, and later into a healthy red colour. When the blood has become restored, the eyes assume more brightness and liveliness—in short, throughout

the whole body freshness and new strength are perceptible, which express greater vitality and better spirit.

With regard to the difference between the Kreuz and Ferdinandsbrunnen, we have already mentioned the greater intensity of the physiological action of the Ferdinand's Spring in consequence of its greater amount of saline ingredients, carbonic acid and iron, by which it excites more readily the sanguiferous system, and is a better tonic than the Kreuzbrunnen, especially in acting upon the secretions of the alimentary canal and the vital functions throughout the nervous system. The Ferdinand's Spring is, according to all observation, the stronger, nay, the most effective amongst all the waters of Marienbad, and, so to speak, its "ultima ratio"—being preferable for real weakness in the abdominal organs, or in the whole constitution. In disorders of the digestive functions, attended frequently by morbid sensibility, or an inflammatory state, and extending more over the abdominal organs, especially in obstinate cases of chronic constipation in persons of a lymphatic temperament, with weak peristaltic action and sparse secretions of the intestines, with congestions of the liver, stomach, spleen, &c., which arise from a vitiated or venous condition of the blood, the Ferdinandsbrunnen will prove very effectual; for phlegmatic, well-nourished, fat persons, with a largely-developed belly, and a quiet, unexcitable temper, and appearance of general relaxation, with sallow and pale complexion, the use of the Ferdinandsbrunnen is most appropriate. But during its use great precautions must be taken to avoid all violent exertion, which would not serve

to promote the desired result, and sometimes even prove dangerous.

The Kreuzbrunnen generally proves a mild remedy, and its employment will be advisable in cases of weak nerves with morbid irritability. It seldom causes great excitement and congestion, especially influences the bowels, and can be used where an inclination to congestion of the upper part of the body exists; it acts less on the circulation and more on the mucous membranes, from which it removes superfluity of mucus, afterwards strengthening the digestive and assimilative functions.

Where there are no clear or precise indications for choosing one of these waters, it may be indifferent on which the choice may fall; but in doubtful cases, with any important complications, it is especially desirable to make the right choice; and it will be useful to recommend in all such cases *first* the use of the milder water, which may be followed by the use of the Ferdinand's Spring, or of the steel waters of Marienbad, if requisite. I especially warn patients against the use of the stronger saline water, which, properly considered, ought never to be administered in its full dose, under the name of the "great cure"—at least not in cases of true plethora, or inclination and disposition to apoplexy, to abundant active hæmorrhages, to congestion in the head, heart, or lungs, especially when the pulse is full, hard, and accelerated, or in great excitability; and of very weak, anæmic and pregnant women.

Contra-indications for the use of either of these waters are:—

(1.) Great weakness, anæmia, and prostration after

other chronic exhausting diseases, or great age, when marasmus commences.

(2.) Severe fevers and inflammations.

(3.) Disease of the left ventricle of the heart, or of the large arteries accompanied by atheroma of the valves, or stenosis of the orifices.

(4.) Diseases of the vital organs, with deeply-deranged nutrition, where all stimulants are to be avoided.

(5.) Organic and constitutional diseases, as carcinoma, tubercles, and putrefaction of organs.

(6.) Copious hæmorrhages caused by disintegration of the tissues and by exciting moments.

(7.) Hydropic disease, secondary to heart disease, to degeneration of the kidneys, with albuminuria (*morbus Brightii*).

(8.) Scurvy, *discrasia potatorum*.

(9.) Septicæmia, pyæmia, and all states of collapse and colliquations with disintegration of matter.

(10.) Syphilis.

If a milder effect is desired than that to be obtained by the use of these pure mineral waters, then we have merely to warm the waters a little, in order to expel the free carbonic acid, or to mix them with tepid whey, which is always ready in Marienbad for that purpose. On the contrary, if a stronger purgative action is required, we dissolve some of the Marienbad salt in them; and, if required, other natural springs, of which we will presently speak, are at the physician's disposal in Marienbad.

CLASS I.—INTERNAL REMEDIES OF MARIENBAD.

There is scarcely another watering-place in the whole world where, in such a small space as that of Marienbad, so many different natural springs exist; this is a privilege granted by nature to this place, which, in the hands of an intelligent physician, is turned to useful account in the treatment of numerous diseases, curable by alternative courses of saline and ferruginous waters, or combination with their outer application in the form of various baths, which assist internal treatment so greatly. It is thus explained why whole families or parties frequent Marienbad, because all may find remedies suitable for their respective ailments, nature having provided for different ages and constitutions in both sexes. The want of proper arrangements for an auxiliary Koumiss cure at this place is, however, felt by medical men who have to treat emaciation and weakness. Internally employed are:

1. The *Ferdinandsbrunnen*, distinguished by its powerful and sometimes violent action upon the secretion of the mucous membranes, especially the intestines, exciting and stimulating the arterial system at the same time, together with nerve-action.

2. The *Kreuzbrunnen*, by its mild action, which removes all impediments of the digestive canal, animating the circulation of the blood and lymph, and in a mild way the nervous system.

3. The *Carolinen and Ambrosiusquelle*, as chalybeate waters, with their powerful tonic effect upon the blood, &c.

4. The *Rudolfsquelle* and *Wiesenquelle*, the strong diuretic, for the urinary system.

5. The *Waldquelle*, suited in cases of catarrhal complaints of the respiratory organs, with obstruction in the circulation.

6. The *Marienbad*—Salt.

7. The *whey*, which is used in abundance for certain cases when combined with the mineral waters.

General indications for the use of the Kreuz and Ferdinandsbrunnen.—When in the course of years many patients appear before a medical man asking his advice concerning their complaints, and the summer resort most suitable for them; he usually allows himself to be guided by some strict diagnosis to find out the system or organ where disease has settled. There are, however, often cases among his patients where general disturbances indicate the approach of a dangerous disease for which no special place can be fixed upon to the exclusion of others. In such cases sometimes all systems and organs appear out of order, and the cause must be ascribed to constitutional disturbances, usually depending upon primary derangements of the digestive canal and blood-composition, through bad habits or immoderation in eating and drinking, already alluded to in the paragraph on “Diet.” Amongst the diseases most adapted for a course of Kreuz or Ferdinandsbrunnen, and showing in this way a chronic development from some apparently insignificant cause, the first is decidedly the “venous abdominal congestion or plethora,” sometimes called hæmorrhoids or piles, or disposition to piles, venous discrasia, &c., of which the pathogeny and etiology are still somewhat obscure. The common cause, how-

ever, of this abdominal plethora, and the most frequent cause of congestion everywhere, is regarded as some "obstruction of the circulation," a term which means the dilatation of the veins somewhere. We know that dilatation of the veins is one of the anatomical appearances of chronic catarrh in all the mucous membranes, which relaxes tonicity of the walls of the vessels, especially when they are exposed to continual irritation by food and drinks, as is the case in the whole intestinal canal, and still more in its lower part, called "rectum." During the digestion there is an increased flow of fluids from the intestines into the intestinal veins, which again increase the fulness of the portal vein; and this state of fulness in the vena portarum presents an obstacle to the free discharge of venous blood coming from the spleen, which in consequence experiences an enlargement during every digestion.

Thus it necessarily follows that excess in eating and drinking will dilate still more considerably the portal vein, as well as all other veins which open into it; and persistence in this bad habit will produce a permanent venous dilatation, inducing hæmorrhoids, for the origin of which, however hypothetical, I cannot find a better explanation.

The varicose veins of the legs of women during pregnancy offer a great analogy in this respect, although their cause is pressure on the veins above, varying at different times and in different persons; but as there are those even that are quite free from them, we must conclude that a disposition to chronic relaxation of the walls of the vessels may be congenital or hereditary. This is the same with our abdominal

plethora, caused by collections of large amounts of fæcal matter in the rectum, which, especially when hard and dry, press upon the veins powerfully, and at one time obstruct them, at another, after their forcible expulsion, produce their great expansion through previous irritation. A sedentary life, the use of irritating food, the abuse or misuse of drastic purges, the frequent and clumsy use of enemata, &c., are other exciting causes of abdominal plethora, hæmorrhoids, and their occasional bleeding when these veins are over-filled and ulcerated on their surface by mechanical and inflammatory irritation through indurated fæces, and their passage during forcible peristaltic movements of the intestines; but as abdominal plethora and hæmorrhoids are often absent in cases where the escape of blood from these hæmorrhoidal veins is greatly interfered with, in spite of the presence of all imaginary debauchery and other exciting causes, whereas, on the contrary, abdominal plethora or hæmorrhoids are very excessive and frequent where there is no marked obstruction, if we except a temporary constipation, we must certainly come again to the conclusion that there is such a thing as congenital or hereditary predisposition—a view supported by the undeniable fact that there are families in which all the members through several generations are suffering from hæmorrhoids or abdominal plethora.

These hæmorrhoids, sometimes in the form of internal or mucous or blind piles, and sometimes open or bleeding piles, have been regarded as symptoms of a specific constitutional disease; favourable when bleeding, but when not bleeding, serving to show a

casual disease in some other part, as head, breast, or abdomen. In connection with it is the so-called venous state of the blood (*status bilialis, atrabilialis, &c.*), a fulness of the venous system which exists both in the sanguine and bilious constitution. In such cases the blood, through the obstructions described, stagnates in all those extended abdominal vessels, and becomes darker because it flows slowly back to the heart and lungs, where it has to be decarbonised. The circulation becomes irregular, the blood corpuscles acquire more carbon, which renders the blood thick, black, and *tar-like*. Flatulence, dyspepsia, and obstinate constipation are the consequences. This habitus atrabilialis is found in individuals of a thin body, with rigid fibres and brunette complexion, choleric temper, small and soft pulse, with a disposition to liver and spleen complaints. The veins of the skin are also enlarged, full and blue; the cheeks, lips, and lobes of the ears are of a red-bluish colour; hands and feet cold; skin dry, and its colour sallow. Such patients are very irritable, easily excited, and usually great hypochondriacs. People of a sedentary life, after the age of forty—especially *employés*, learned men, artists, and business people—are subject to this, and aged women especially in the climacteric period, after change of life. The disease develops slowly, and medical men are only consulted when the state of the patient has become very critical, or some organic ailment has originated after many years of chronic general derangement. The first remedy is a change of diet: the use of protein substances must be limited; the patient should only eat a little meat or eggs once a day, preferring vegetables, rice, fruits, &c.; then

the consumption should be increased: long walks, energetic muscular exercise, and plenty of water may be taken; but spirituous liquors, tea, coffee, pepper, mustard, onions, &c., are forbidden. But at the head of all true and rational means of cure stand the saline-alkaline waters of Marienbad, which have produced great results, according to the experience of all medical men. The Ferdinands, but still more the Kreuzbrunnen, have such wonderful benign influence in these cases, that to increase the confidence of patients, I have ventured into detail.

These waters are real prophylactic means to prevent chronic and serious ailment; and though theories and medical systems will change with time, these waters will still keep their position in future as they have done during the past, the more because, generally speaking, the cures attained through their use are radical—in other words, they restore lost health. In Marienbad there is an open field for every medical man's observation and investigation, and diseases can be studied there with greater precision. If people of a plethoric constitution, who are not yet ill, perceive that their daily motions begin to be scanty and of rare occurrence—that they cause more difficulty and require greater effort for expulsion—that the abdomen feels tight and expanded, especially in both sides, called hypochondric regions, and are crossed by sudden lancinating or shooting pains or stitches, so that after eating, a certain heaviness, sleepiness, laziness is noticed, accompanied by yawning and stretching, by eructations, anxiety, and general feelings of discomfort—that the sleep at night begins to be interrupted or disturbed by anxious thought and

exciting dreams,—then it will be advisable to make a pilgrimage to Marienbad to drink the Kreuzbrunnen, which will suppress the threatened outbreak of long and painful disorders, and obviate threatened dangers, besides granting a new lease of active and happy life free from apoplectic attack or other disease, as gout, hæmorrhoids, &c. Remember, therefore, that Marienbad is a true prophylactic against all these dangers; that you can cast off the fetters of anxiety and sickness there, and return with good health, new hope, and fresh spirits.

Frerichs, the celebrated author of “A Clinical Treatise on Diseases of the Liver,” and my eminent, admired, and accomplished teacher, whose lectures are for ever impressed upon my mind, says, on the origin of abdominal plethora on persons who with a sedentary life combine a liking for good dinners and stimulating drinks—quoting Dr Murchison’s English translation (p. 376): “In such cases the absorption of nutritive material exceeds the waste, and sooner or later, but usually during the middle period of life, the muscles become flabby, and other affections show themselves in patients with a hereditary predisposition; while even at an earlier period there arises a disproportion between the power of the heart and the quantity of blood, owing to which that part of the vascular apparatus where the greatest obstacle has to be overcome becomes over-distended with blood. This is usually the portal system, which is the more readily congested, from the fact that under the circumstances just mentioned the irritation of the intestinal mucous membrane, resulting from errors in diet, as also the copious intestinal absorption, contribute to the inter-

ruption of the circulation. In this way one often sees chronic gastro-intestinal catarrh commencing with irregular and, for the most part, retarded defæcation, and accompanied by swelling of the hæmorrhoidal veins, tympanites, and pains in the hypochondrium. To these symptoms there is frequently superadded a habitual hyperæmia of the liver, which from time to time increases and makes itself known through painful distension of the right hypochondrium, a jaundiced tinge of the conjunctiva, &c. This condition may exist for a long time without inducing more serious lesions of this gland, such as fatty infiltration of the cells and catarrh of the bile-ducts. In most cases we may succeed without any difficulty in moderating or removing the hyperæmia of the liver by means of a carefully-regulated diet; by avoiding all indigestible, fatty, and over-nutritious articles of diet; by increasing the waste of material by means of active exercise in the open air, riding, &c., as well as by the use of bitter laxative medicines, &c.; and, still better, by regulating the intestinal secretions by the use of the springs of Marienbad, &c. Along with mechanical derangements we usually find abnormal conditions of the metamorphosis of matter, which were formerly attributed to arthritis, to the formation of urinary gravel, &c."

General fatness, or obesity, depending upon over-alimentation, shows itself by large deposits of fat underneath the skin generally, but especially on the belly and breast. Persons affected with this disposition sometimes acquire an enormous bulk and weight, cases being recorded of weight from 200 to 1000 pounds and more: they are known as monstrosities,

and described by many authors on this subject; for instance, Wadd describes the case of a man in New York who weighed 1100 pounds at the age of thirty-two years. Even children are subject to this excessive formation of fat throughout the body, the cause in every instance being overfeeding and too little exercise, and the process similar to that of fattening ordinary animals, which we shut up and stuff with hydro-carbons.

We see a singular disposition to development of fat in women after the function of the sexual organs have ceased, and in men after castration. Fermented liquors, especially beer and spirits, predispose to production of fat. Warm air, much sleep, want of oxidisation of the blood through insufficient respiration, &c., augment this state. All internal organs are largely surrounded by fat, and have a tendency to fatty degeneration, and in this the real danger to life arises; the liver is first supplied with large quantities of fat, till at last its tissues begin to degenerate by being converted into fat; the blood becomes milky from being overladen with oily matter; and as soon as this fat has been deposited largely in the subcutaneous tissues, the deposits appear also in all the internal organs, whose vital functions are thus seriously interfered with. The secretion of bile is usually very scanty, the circulation of blood very slow, the action of the heart very weak. Hereditary predisposition seems also here to exist, since many members of certain families suffer from abdominal disturbances, hæmorrhoids, great *embonpoint*, &c.; and their successive generations belong to the constant visitors of Marienbad, Kissingen, and Karlsbad.

Death occurs in fat persons usually through apoplexy, especially when they show a great inclination to sleep. The slightest indisposition produces very dangerous derangements of the organs of circulation and respiration, and of the liver and heart. Dropsy, associated with paralysis of heart and vessels, or suffocation, ends a difficult and wearisome life.

The treatment required in the case of gluttons and topers is a change in the mode of life, which, from Hippocrates and Galen up to the time of Banting, has been successfully adopted, and must be rigorously prescribed for such patients. Hours of exercise must be specified, afternoon naps and long night's rest forbidden, as well as hydro-carbonaceous food. For supper we should only allow light soups and a little of stewed fruit; coffee and tea have to be allowed only in great moderation, and the use of liquor strictly prohibited. A course at Marienbad will also tend to increase secretion of bile, the more so, because patients, while drinking the waters, have to rise early, to live moderately, and to exercise freely. We know that the free and continued use of the different solutions of salts, especially of the Glauber's salt, has a great limiting and retarding effect upon change of tissue containing nitrogen, albumen, and gluten, whereas it increases the process of combustion in all fat formations of the body. "It is certain," says Professor Niemeyer, "that the superfluous fat of the body soon disappears under the use of these mineral waters; simple pedestrian excursions, with the most moderate manner of living, have not by any means the same effect. We should, therefore, not wait for a better explanation concerning the action of the

alkaline-saline springs, but should send fat patients with fatty infiltrations of the liver to them." There is usually a decrease of weight from 15 to 30 lbs., and a decrease in circumference round the belly of from 6 to 8 inches, in Marienbad, in very fat persons, during a course of from four to six weeks, even before Banting's method was known. It is, in some cases of fatness, unobjectionable to keep Banting's full diet simultaneously with the use of these waters; in many others, again, there are serious reasons for avoiding it.

Fat persons with red cheeks and a fresh appearance give the largest contingent for the Kreuzbrunnen, whereas phlegmatous, lazy constitutions, with relaxed fibre and pale faces, improve more readily under the use of the Ferdinandsbrunnen. Karlsbad is more useful in advanced liver diseases, with jaundice, bile concretions, and diabetes mellitus; its effect is more stimulating through the considerable warmth of its springs. Marienbad, again, acts more as a derivative and aperient, which is of great use in irritable persons with a tendency to cerebral congestion, in whom it may even produce habitual hæmorrhoidal bleeding to their great benefit. Hufeland called Marienbad, therefore, very significantly the "Cold Karlsbad." Kissingen is more in the place in cases of scrofulous constitutions, with great depression of nutrition and strength.

Scrofula, a constitutional disease belonging to the general disorders of nutrition, is distinguished by its localisation on the skin, and by inducing tedious chronic inflammation in mucous membranes and the lymphatic glands. The Marienbad waters are more

particularly suited for its torpid form in younger persons, when there is not yet any considerable localisation of scrofula noticed, and the nutrition not yet essentially disturbed. Persons with a swollen thick nose and upper lip, enlarged tough belly, with all kinds of eruptions, are the proper subjects for these waters.

In anæmia and chlorosis we attain good results, in Marienbad, when the digestion, nutrition, and assimilation are favourable, and always in persons of the severally described relaxed torpid type, more especially in young girls at the period of puberty, and with constipation. The Ferdinandsbrunnen may be best tried in very small doses, taking care to avoid fluid stools; but the ferruginous Carolinen and Ambrosius Springs will be more in their place here, and act like Pyrmont and Driburg when assisted by a good strengthening and nourishing diet.

Rheumatism and gout are diseases of locomotion which are very similar in many points, being either idiopathic affections of the joints, bones, and muscles, or rather the expression of constitutional disease, or cachexia or dyscrasia. I consider them now only shortly, but separately.

The *rheumatism* which comes within the scope of the Kreuz and Ferdinandsbrunnen belongs to the chronic form of articular and muscular rheumatism, after all inflammatory symptoms have passed away. These waters may therefore be used for their general aperient and resolvent effects, as they stimulate the secretions of all the organs and excite the functions of the blood system, the lungs, and skin. The mud-baths are here, together with the mud-cataplasms, of

great importance in their external application, in combination with the internal use of one or the other of these mineral waters.

Gout (arthritis) is one of those diseases on the pathogeny of which we have no exact knowledge, although constant chemical changes have been observed in the blood of gouty patients (Garrod), and uric acid has been found in the products of gouty inflammation. The gouty diathesis depends decidedly upon an anomaly of nutrition, and especially also upon abdominal plethora, which, as we have seen, very often occur in connection with each other. Many writers consider rheumatism and gout as identical. To us this view may be acceptable only so far as both complaints are efficiently treated by the waters of the Kreuz and Ferdinand Springs. The reason is evident, when we recollect the properties of the waters described under "abdominal plethora," besides all the other effects upon the digestion, and the complications of gout.

The presence of larger or smaller concrements and sandy deposits within kidneys and bladder are evidently connected with abdominal plethora; the presence of uric acid in the blood is consequent on its limited secretion through skin and urine. The alkaline waters of Marienbad, as well as of Carlsbad, Vichy, and Kissingen, remove the obstructions in the circulation, and increase all secretions and excretions; hence their great success in the treatment of this disease in stout persons, especially when they are assisted by the use of Marienbad's Wald — and Rudolph's Spring, or followed by an after-treatment in Teplitz, Wiesbaden, Baden near Vienna, &c.

I must mention here my observation during the last years of decidedly successful treatment of rheumatism and gout by magneto-electricity, in the shape of warm baths administered on a special principle in Adolphus's Electric Baths in London. They could easily be added to the many other curative means of Marienbad, would soon prove their efficiency even in inveterate, obstinate cases, and increase, if it be possible, Marienbad's widespread fame. Even without any particular diet such patients recover through these baths.

SPECIAL INDICATIONS.

DISEASES OF THE ORGANS OF DIGESTION.

DISEASES OF THE STOMACH.

(a.) *The chronic gastric catarrh* is the first in the whole class of diseases curable by Marienbad's waters. A neutral observer will be surprised to see the wonderful improvement where symptoms of chronic catarrh of the stomach have become sadly prominent, in the shape of weakened digestion, loss of appetite, eructations of gases, offensive smell from the mouth, increased thirst, heartburn, stale, slimy taste, especially in the morning, thickly-coated tongue, augmented salivation, vomiting, together with a feeling of general derangement, mental depression, and physical prostration. "Most of what we know concerning the anomalies of digestion we owe to Frerichs," says Prof. Niemeyer; and I must refer the reader to the works of that

author, as well as to the special writings of others on this subject.

When the disease is of long duration, the nutrition of the patient suffers; the fat disappears, the muscles become relaxed, and the skin dry. The villous hypertrophy of the gastric mucous membrane is a secondary appearance, consequent upon the obstructions in the abdominal blood system, which also produce hyperæmia and catarrh of the intestinal mucous membrane, and of the liver, and general abdominal plethora, caused and increased by a stimulating diet and alcoholic drinks, as well as by excesses in food. Under the influence of the Kreuz and Ferdinandsbrunnen all these symptoms disappear by degrees; thin persons begin to get flesh, improve in colour and spirits, obtain tranquil sleep, and are blessed with a return of health generally.

It is, however, necessary to begin the treatment with small doses of these waters, taken at intervals during the day, rather than a large amount at one time, and in some cases the water would be better warmed.

The adherence to a suitable and strict diet is of great importance. Persons with a dilated stomach ought to carefully guard against increasing it with a great amount of fluid or food. Small portions of the mineral waters will produce more beneficial results in a short time in very weak persons, or in very desperate cases, than large doses, which will cause discomfort. Certain intervals of rest, too, must be given to the stomach, as the waters themselves require time to digest properly. Although it is a rule in Marienbad to drink the first glasses of the waters in the morn-

ing, yet in cases of great weakness it will be wise and even necessary to deviate from this rule, and to allow persons in this state a previous cup of weak tea, coffee, or some warm broth, before they take their matutinal glass of mineral water. Thus they will recover their appetites after a few days, in proportion as the heaviness and depression about the stomach disappear, the tongue becomes clean, and the thirst diminishes.

Occasionally, however, when the chronic catarrh is of very long standing, it may be some weeks before a symptom of improvement shows itself; but from the moment this appears it will progress rapidly, and Marienbad will prove the efficient *ultimum remedium*.

To accelerate convalescence the baths of Marienbad may be added, and it is usually seen that warm baths produce a sensible effect on the nervous system by calming the irritability of the stomach. In more severe cases the mud may be used as an external application, in the shape of cataplasms on the stomach. They act as counter-irritants on the skin in proportion to their degree of heat, and seem to give relief, especially to those patients who suffer from vomiting, by their pressure on the walls of the stomach.

(b.) *Dyspepsia*.—This is a very frequent form of difficulty in digestion, not so much dependent upon a state of hyperæmia and swelling of the mucous membrane of the stomach, with abundant secretion of viscid mucus, acids, and bile, as upon a want of action in the muscles or walls of the stomach, a diminished secretion of its juices, and an altered condition of the nerves. The appetite is appeased by eating very little, the tongue becomes clean, the

taste is unchanged, and there is no fetor from the mouth. Certain kinds of food, however, are generally found to disagree; one kind produces pressure, another heat all over the body, a third a burning sensation, and so on.

With dyspeptic persons the usual complaints are of weak nerves, easy excitability, want of sleep, and great anxiety. Within a little time these disappear, to break out again shortly under the influence of a new act of digestion. One day they find water agrees best with them, another a small quantity of wine, then again milk or broth, and so on—a continual change of food being requested; and we repeatedly see a great contrast in a choice of diet in the same patients. There is no doubt that we have to contemplate a disturbance fixed or localised principally in the stomach; but after strict observation we find that there appears to be at the bottom of the question an altered condition of the vegetative nervous sphere. People thus affected have no doubt usually been accustomed to a sedentary life, to much mental labour, youthful abuse, &c., and are therefore suffering from abdominal plethora, upon which the waters of the Kreuz or Ferdinandsbrunnen act with certain success. They immediately remove all symptoms which one person ascribes to hysteria or hypochondria; another to chronic catarrh of the stomach; another, again, to mental excitement, originating in the brain; and others to most absurd causes. For all these the proper remedy is one of the Marienbad springs taken under the direction of an expert physician.

Many persons owe the derangements of their digestive organs to an abuse of the pleasures of the table.

This is especially the case in countries where ice is used to an extensive degree in cooling drinks after dinner, &c., or in those where both liquids and solids are taken as hot as possible. They should adopt a more reasonable habit, and regulate their exaggerated appetite, thus giving the action of the Kreuzbrunnen valuable assistance in completing the expected cure.

Dyspepsia arising from derangements of the sexual organs, especially the womb, when pain in the epigastrium, eructations after eating, vomiting, great expansion of the gastric region, constipation, and rumbling within the bowels are noticed, is not only curable by Marienbad's waters, but affords the most frequent and prominent successes of that treatment. The value of the ferruginous springs (Ambrosius and Carolinen) cannot be overrated in their combination with Kreuz or Ferdinandsbrunnen, whenever anæmia is treated, but it will often be more beneficial to precede the use of the first by a short course (say a fortnight) of the latter; without this the ferruginous water will not only remain undigested, but it will even produce positive discomfort, depression, and anxiety. In addition to these the use of the acidulo-ferruginous and mud baths will be of valuable assistance.

(c.) *Nervous cardialgia*, or pain in the stomach, is a kind of neuralgia, not dependent on perceptible changes of structure, produced by hyperæsthesia of the pneumogastric nerve and the solar plexus. It comes under the treatment of the Kreuz or Ferdinand's Spring only when accompanied by anæmia. It appears especially in women after change of life, or in men who drink freely of spirits and wine, or are great smokers. The water should be taken in small

quantities, and would be advantageously mixed with warm whey.

(d.) *Chronic ulcer of the stomach* gives the sufferer great trouble for years; women being more disposed to it than men. Poverty of the blood and chlorosis, those frequent results of sexual disturbances, have great influence in causing the round ulcer. In other cases acute or chronic catarrh of the gastric mucous membrane appears to cause disease of the walls of the vessels, and often the recognition of an ulcer may be impossible till an abundant hæmatemesis takes place; while severe cardialgia and vomiting regularly after meals render it probable that there is a chronic ulcer of the stomach.

The therapeutic use of the alkaline carbonates has a wonderful effect in chronic ulcer, and if a patient cannot take a trip to Marienbad, the use of the waters at home will be very beneficial; but great care is needed when the cardialgic attacks have become severe and the vomiting intense. At first only small doses must be taken, that the stomach may not be distended; and the water should be properly warmed or mixed with warm milk at first. After a while the temperature of the water may be gradually decreased, and after a fortnight's use the waters may be imbibed cold.

“To reduce the pain, warm cataplasms may be used to greater advantage,” says Dr Kisch, “than any narcoticum.”

The waters must be taken for some time longer in order to attain perceptible effects; but if persevered in, the treatment will be satisfactory and surprising beyond expectation.

AFFECTIONS OF THE INTESTINAL CANAL.

(a.) *Intestinal catarrh* is the constant result of every hyperæmia; it produces some chronic ailments in the form of *habitual constipation* and *chronic diarrhœa*.

In adults the secretion from the mucous membranes is in most cases scanty, and patients are usually *constipated*. The tough mucous membrane hinders absorption and interferes with the nutrition. Consequently patients become debilitated and emaciated, and their complexion assumes a pale or dirty grey colour; flatulence and rumbling in the bowels give great annoyance, but their escape gives great relief; the brain dwells upon their state of health, and the griping pain or colic augments their anxiety or mental depression. Thus they find themselves in a very difficult and dangerous state, because their cases usually become very obstinate, especially in persons after middle age, leading sedentary lives, with much mental work; after a life of debauch, whether in eating and drinking, or in venere.

In other cases the chronic intestinal catarrh is accompanied by increased mucous secretion and accelerated peristaltic movements of the bowels, thus running its course as chronic diarrhœa. I omit speaking of the serious consequences if these complaints are not cured in time, and advise every patient to make the best use of Marienbad's waters, in order that he may avoid becoming a most unhappy and miserable being for the remainder of his life.

The effect of the Kreuz and Ferdinandsbrunnen is very great in all the various degrees of these com-

plaints, beginning from the first slight inconvenience caused by the rare and scanty motions, down to the most violent disturbances throughout the whole physical and mental organism—"when the divine light of the soul becomes obscured by full bowel" (Kisch).

The Kreuz and Ferdinandsbrunnen produce defæcation through increased peristaltic movements, and flow of secretion in a mild and comfortable way, especially the latter, which counteracts the debilitating effect by its amount of carbonic acid and iron. In cases where Glauber's salt waters are not advisable in large quantities, but strong purging is required, a mixture consisting of two parts Kreuzbrunnen with one part of Friedrichshaller bitter water will prove a useful recommendation.

If the mucous intestinal membrane is found irritable and sensitive, warm "Marien Spring" baths are advisable, as well as mud-cataplasms. Injections of Kreuz or Ferdinandsbrunnen into the rectum will do good in very obstinate constipation with great collection of fæcal matter, and will excite contractions even higher up in the bowels.

In chronic diarrhœa the use of these waters is called for when it alternates with constipation, attacks of griping, colic, and difficulty of digestion; or when diarrhœa is caused by abnormal secretions of the membranes, in consequence of an obstructed circulation in the portal system; and last, but not least, when collected fæces produce irritation.

In prescribing these waters, it must be considered a standing rule to administer but very small quantities, which will always prove to be safe and preferable.

It will perhaps comfort many patients to know that frequent motions (say four or five a day) are excessive, and better avoided, as they are not needed for the attainment of the physician's legitimate end.

Very favourable results are recorded from the use of the Ferdinandsbrunnen in desperate cases of constipation, localised principally in the rectum and the lower part of the colon; when patients complain of terrible pains before every motion, during which spasmodic contractions of the sphincter occur with the expulsion of a large mass of white, glazy mucus, tinged with spots or streaks of blood.

To the medical adviser it must be left to judge of the quality and quantity of the motions in every particular case, as he knows best what is wanted in this respect.

Every interference without a justifiable purpose is not only useless, but a sin against the natural course of the cure.

(b.) *Helminthiasis, or worms in the intestinal canal.*— They are: the *tænia solium* (long chain or tape worm), *ascaris lumbricoides* (round-worm), *oxyuris vermicularis* (thread or maw worm), *trichocephalus dispar* (hair-headed or whip worm), &c. All these worms have originated from eggs, and have reached the intestines in that, or a further advanced state. These eggs or the young of the worms are taken into the intestines with the food, especially with pork and goat's flesh, but more rarely beef. *Cysticercus* cannot withstand boiling, roasting, or smoking. They occur in persons who eat or chew raw flesh, or put knives soiled with *cysticerci* into their mouths, as is not unfrequently done by butchers, waiters, and cooks,

who may aid the spread of worms by cutting the sausage or ham that they sell, with a dirty knife, these articles being often eaten without further cooking. Raw shaved meat ought therefore never to be eaten, as it is dangerous, especially to children.

Both springs act here more indirectly by removing worms and abundant mucus from the stomach and intestines simultaneously with the condition or base for their existence, which is supposed to be the mucus; afterwards the reproduction of these is to be prevented by strengthening the digestive and assimilative organs and functions, both of which objects are frequently attained by the use of the Kreuzbrunnen alone. Although this treatment will not by itself suffice to free the patient from tapeworm, it will greatly facilitate the efficiency of specifics; and in some cases the subsequent use of the Ferdinandsbrunnen, or of the steel waters, is wanted to render the intestines incapable of the maintenance and production of worms.

(c.) *Hæmorrhoids or piles.*—I regard piles as a local disease caused by obstruction in the circulation, which renders the passage of the blood from the hæmorrhoidal plexus difficult. I have already explained my views upon this subject under “abdominal plethora,” to which I refer the reader: here it may be simply added, for the benefit of *the laity*, that the veins within the liver are very numerous and wide, and that they form a proper vein system, called portal system, which our ancestors have considered as the source of many ailments; hence the saying, “Vena portarum vena malorum.” Here is the place where obstructions in the circulation mostly occur,

which are the cause of so many complaints in the hyperæmic liver itself, as well as in all organs more or less intimately connected with it. These complaints are known to *the laity* under the general name of "piles." The patient has a feeling of burning and tension in the rectum; there are severe sacral and dorsal pains; the feeling of a foreign body in the anus. If the varices swell, and have become very large and tense, the patients have constant pain, cannot sit down, and even a soft passage gives them great trouble. If the varices are protruded through the anus, they become inflamed, and dreadfully painful; danger of strangulation is always present. One bleeding frequently removes all the numerous bad symptoms at once, after several ounces of blood are lost at one time, whence the significant term "bleeding-pile"—"vena aurea." Irregular hæmorrhoids are said to produce severe headache, congestion of the head, the eyes, momentary blindness, deafness, palpitations, bleeding of the nose, from the lungs or stomach, sexual derangement, sterility, irregular menses, tendency to miscarriage, hypertrophy and induration of the womb and ovaries, metritis, chronic infarcts, &c.—all symptoms of these so-called "irregular hæmorrhoids," which come largely under treatment at Marienbad, and with splendid results.

We observe in no other department such an interdependence of diseases as under this heading. Constipation, bleeding, nausea, vomiting, fainting, spasms, pains, anxiety, depression, are all links of the same chain; just as uterine disturbance is followed by an army of other symptoms.

Sterility may be cured in Marienbad if dependent

upon abdominal disturbances, or upon general fatness ; and after reduction, the normal functions of the sexual organs return, and conception is facilitated. The success obtained by a treatment with the waters of Marienbad often appears really incredible, in regard to the disappearance of local complaints which are caused by the swelling of the submucous ends of the hæmorrhoidal veins and varices.

Many patients suffering severely from most of these symptoms have found themselves so greatly improved in Marienbad that the previously proposed operation for piles—looked on as their *dernier ressort*—has become totally superfluous, and given up. I cannot therefore sufficiently press upon the reader the absolute necessity of considering all these points gravely before he may finally decide upon undergoing an operation not unattended with danger, and of trying first, while there is time, as an *ultimum refugium*, the natural resolvent treatment in Marienbad, which, to say the least, can be considered as the best and most necessary preparation for a successful result of the operation. In any case do not lightly throw aside the golden opportunity of a complete cure at the springs of Marienbad.

The baths at that place may also be a great relief for dilated veins and their troublesome consequences, as well as for profuse and frequent bleeding : cold sitz-baths may be used with advantage. To relieve a patient's life from pain and suffering, a periodical bleeding, produced by warm sitz-baths and the rectum douche, is the only object that it may be sensible to aim at.

DISEASES OF THE LIVER.

(a.) *Chronic hyperæmia of the liver (nutmeg liver)* may be caused either by a greater afflux of blood to the liver, or by impeded efflux; both produce congestion in the liver, and accordingly it is more or less swollen in one part or in all. In chronic congestion, dark spots, corresponding to the dilated central veins, or to the commencement of the hepatic veins, are seen on the surface of a cut through the organ, which alternate with brighter-coloured ones containing less blood, and representing the termination of the portal vessels, or with yellow ones, from obstruction of the bile-duct. This spotted appearance, much like that of a nutmeg, has given rise to that appellation.

When the liver has considerably increased in size, patients feel an unusual fulness in their right side, sometimes increasing to painful tension all over the abdomen; they cannot bear tight clothes, which interfere with their respiration; they suffer from headache, difficulty of digestion, irregularity of the bowels, hæmorrhoids, &c., in connection with this complaint; and sometimes their complexion takes a peculiar colour of blue and yellow, nearly greenish, when the bile has been retained in the blood, from a slight obstruction of the gall-ducts, accompanying the hyperæmia of the liver.

To cure this complaint the diet is to be regulated in cases caused by excess in eating and drinking; alcoholic drinks should be avoided, as well as hot things, &c., as explained in the paragraph on "Diet."

The Kreuz and Ferdinandsbrunnen are therefore *indicated* in all cases of liver hyperæmia, with the

above character, caused by abundant luxurious feeding; sedentary life, habitual constipation, and the many cases mentioned under "abdominal plethora;"—here these waters will certainly produce great benefit, even in severer cases, when the liver has already attained a large volume.

In all cases of impeded efflux of the blood from the liver, as in advanced lung and heart disease, we find a *contra-indication* for the use of these waters, and only in slighter cases may they be carefully used in order to regulate the circulation of the portal system.

(b.) *Chronic interstitial hepatitis or cirrhosis of the liver.*—Only in the first stages of this disease will it be possible to bring the process of degeneration in this organ to a standstill by the use of the Kreuz and Ferdinandsbrunnen, as we know that this disease affects the fibrous covering of the liver, and the scanty connective tissue which accompanies the hepatic vessels, as a continuation of Glisson's capsule, and traverses the substance of the liver; if this tissue of the liver increases, it gradually displaces and destroys the substance, strangulates the blood-vessels and bile-ducts, and a large part of the liver-cells atrophy and die.

The disease is most frequently induced by the use of alcohol, and is vulgarly known by the term "gin-drinker's liver;" but it may also often result from other irritating substances taken into the stomach, &c.

We have to forbid, in the first instance, the use of spirituous liquors, and to administer saline laxatives, which are best prescribed in the form of mineral waters, in which the carbonic acid and the alkaline carbonates are of great use to make them agree

better. The Kreuz and Ferdinandsbrunnen improve the impaired digestion and nutrition, especially when persons have been given to drink, and suffer from gastro-intestinal catarrh; they appear to enable the membrane to get rid of its tough mucus more readily. Very strong purgative action must be avoided, in order to prevent anæmia; nutrition must be very carefully kept up at the same time; but when the atrophic stage and diminution of the liver begins, these waters are not to be given.

(c.) *Fatty liver*—(d.) *Waxy liver*.—There are two forms of fatty liver. In one, superfluous fat is deposited in the liver-cells from the blood of the portal vein; in the other, the liver-cells undergo a fatty degeneration. It is the former, called by Frerichs a fatty infiltration, which is adapted to the treatment with Marienbad's waters. It is usually accompanied by general obesity—described above. The alkaline saline waters augment the secretion of the bile, and reduce the formation of fat through increased oxidisation; and thus we are enabled to reduce even a very large fatty liver to its normal volume and state. To accelerate the cure we also avail ourselves of Marienbad's mud-baths and mud-cataplasms on the region of the liver, to assist the internal treatment of the springs. The waxy or lardaceous degeneration of the liver contains a substance, the reaction of which, with iodine and sulphuric acid, resembles closely that of amyllum (starch), hence the name of "amyloid degeneration" of the liver. It occurs in advanced cachexia from scrofula, syphilis, mercurialism, tedious suppurations, and caries; but here it is the waxy liver, in consequence of malarial fever, which is under the

control of Marienbad's waters. To avoid debilitating effects the ferruginous springs may be taken at the same time with great benefit.

DISEASES OF THE GALL-DUCTS.

(a.) *Jaundice (icterus cotarrhalis)*, arising from catarrh in the bile ducts, is shown by yellowness of the eyes and skin, and is often found associated with gastro-duodenal catarrh and hyperæmia of the liver. During a course of the waters of Marienbad it disappears in a few weeks. The increased secretion within the intestines and the peristaltic movements remove constipation, and the bile soon begins to flow into the bowels, so as to heal the disease thoroughly. The secretions of the kidneys and the functions of the skin are also greatly augmented by the use of warm Marien Spring baths, and the warm mud-cataplasms serve to relieve pain.

(b.) *Cholelithiasis (Gall-stones)*.—The smallest concretions are usually called a biliary sediment, but more frequently there is only one calculus; in other cases, however, a number of them. They occur more frequently in women than in men, and far more so in old than in young persons. The Kreuzbrunnen may be followed after some time by the stronger Ferdinandsbrunnen. First we observe the removal of the stones from the gall-bladder and the gall-ducts, afterwards a normal formation of the bile itself, which prevents a new formation of stones.

Sometimes severe colics are produced before or during passage of stones, which may require an in-

interruption of the course of waters for a few days, or at least their careful use in very small doses.

To moderate the pain, and to shorten the attack of colics, warm baths of the Marien Spring, and warm mud-cataplasms, are found very efficient; the number of stones evacuated with the motions is sometimes very considerable—from forty to fifty have been recorded within four weeks in some cases. To ensure a complete cure, a renewal of this treatment is recommended during some consecutive years, as the tendency to return is very great in this complaint.

Whether these alkaline mineral waters really dissolve the stones within the gall-bladder and ducts, is still an open question.

DISEASES OF THE SPLEEN.

I consider the chronic enlargement of the spleen as developed through frequent hyperæmia and congestion after malarial infection, or obstructions in the portal circulation, or in consequence of liver diseases—as a hypertrophy of the spleen—which will be greatly improved and even cured at Marienbad, if the obstructions in the abdominal vessels can be removed. After intermittent fever a great diminution of this organ has been observed through the healing influence of the springs of Marienbad; and in cases where the nutrition and *sanguification* have been greatly impaired, and anæmia resulted, the ferruginous mud-baths have been of incredible service; and I may perhaps say, on good grounds, that there is no balneological remedy existing, which will produce such excellent

effects on the composition of the blood and the enlarged spleen, as the mud-baths of Marienbad.

DISEASES OF THE URINARY ORGANS.

(a.) *Stony concretions.*—These form in the straight tubules of the papillæ of the kidney, as they do in the bladder; many pass from the pelvis of the kidney into the bladder, where they increase in size through deposits of the urine; both have the same chemical composition, and are found in the shape of very small grains, like sand, up to the size of a hen's egg. The smaller ones often pass without the slightest inconvenience; the larger ones cause a sense of weight and pain in the lumbar region, renal colic, spasms, sudden frightful pains extending from the kidneys towards the bladder, and radiating towards the thigh and testicle of the affected side, with all the most severe symptoms of general disturbance, as great mental trepidation, anxiety, cold sweat, small pulse, cold extremities, convulsions, and torture of the patient, interrupted by temporary remission, and renewed by violent exacerbations, &c.

Without ascribing to the Kreuz and Ferdinandsbrunnen a special stone-dissolving property, we see merely that copious draughts of these mineral waters produce an increased secretion of urine, which washes small deposits out, driving them into the bladder. They facilitate the passage of the concretions by exciting the contractions of the ureters and of the bladder, through the amount of alkalies and carbonic acid. If the uric acid diathesis is connected with abdominal plethora, obstructions in the venal system,

or excess in eating, then these waters render the urine alkaline, promote the secretions, and relieve the painful symptoms in kidneys and bladder; the urine becomes more diluted, and the mucus of the bladder is more easily removed. Even after stone operations these waters are well calculated to wash out the smaller concretions, and to destroy the "uric acid" diathesis. These waters, however, appear contra-indicated in phosphatic diathesis or phospho-lithiasis.

The warm Marien Spring baths aid the internal treatment of the waters much, if taken for a longer time, and they always calm the spasms, colics, and convulsions, during an attack of exacerbation. The warm douche upon the lumbar region, and the application of warm mud-baths, greatly allay the pain in all these parts.

(b.) *Chronic catarrh of the bladder*, caused by concretions, by luxurious living, by excess in Baccho and Venere, and by obstructions in the abdominal circulation, &c., changes the colour of the mucous membrane, thickens the sub-mucous and inter-muscular connective tissue, and the muscular fibres themselves, which hypertrophy. Upon the inner surface of the bladder there lies a grey puriform mucus, or a yellowish purulent secretion; the urine contained in the bladder is often decomposed, and becomes of an acrid ammoniacal odour and alkaline reaction. Chronic vesical catarrh lasts for weeks, months, and years, and is usually accompanied by loss of appetite, and derangement of digestion. It is best to let the patient drink the natural mineral waters of Marienbad either alone or mixed with whey, and to prescribe the warm Marien Spring baths for a longer period.

DISEASES OF THE SEXUAL ORGANS.

(a.) *Chronic catarrh of the uterus and vagina* belongs to the most frequent of diseases. It is a consequence of a congestion in the vessels of the uterus and the vagina, caused by an obstruction in the flow of blood from the veins of those organs, as, for instance, by collection of hardened fæces in the rectum or colon, or by direct irritation of those parts, especially during menstruation. It sometimes accompanies constitutional disease, as chlorosis, anæmia, scrofula, and tuberculosis. The symptoms are usually pains in the sacral and inguinal regions, with a feeling of fulness and weight in the abdomen, often also with disuria and tenesmus, or pressure above the symphysis pubis, the abdomen becoming painful; after a few days the patient noticing a discharge from the genitals, first transparent and glutinous, subsequently cloudy, more or less purulent, leaving at first grey and then yellowish spots on the underclothes. The introduction of the speculum causes great pain if the vagina participates in the disease. The longer the catarrh lasts, the more frequent are severe molimina before menstruation, and pain while it lasts (dysmenorrhœa); conception is not always prevented; but if conception takes place, so also frequently does abortion; some become emaciated, dull, relaxed, and pale, or discoloured with blue rings round the eyes. For a careful examination a speculum must be introduced, and in the upper classes both the ladies and their husbands accept this as a matter of necessity when there is fluor albus present.

Where the catarrh is due to venous congestion, and this to habitual constipation, the saline alkaline waters of Marienbad do more good than any other treatment; and chronic hyperæmia of the liver and spleen, and all other abdominal obstructions, with great formation of fat in the abdomen, are the proper cases for Marienbad if connected with this complaint. Directly the pressure of the blood upon the mucous membrane of the uterus and vagina has been alleviated by the use of these waters, we see a speedy diminution of the abnormal secretions, and the value of the mild purgative or laxative action of these waters becomes evident. It is especially upon uterine and vaginal blenorrhœa that the most excellent effects are produced by these waters, and the most suitable subjects are therefore women with luxuriant development of the body, abundant fatty deposit, and a splendid appearance, who are usually fond of self-indulgence. Amongst the baths which may be employed with special advantage are the ferruginous and mud-baths, with special local appliances for the complaint.

(b.) *Chronic metritis*.—The chronic inflammation of the womb, caused by excessive hyperæmia and chronic catarrh of the womb, especially during the state of physiological congestion, also comes on after confinement or abortion.

The womb is then often enlarged to three or four times its normal size; its cavity increases, its walls may become an inch thick. The substance appears very pale, dry, and dense, and the os uteri often greatly swollen and elongated.

Patients complain of a feeling of weight in the pelvis, and a sensation of "bearing down." The

enlarged uterus presses upon the rectum and bladder, and causes constipation and annoying inclination to go to stool and to urinate; the menstruation becomes more and more scanty, till it disappears for months and years. Although the disease is very obstinate and tedious, it is not dangerous or incurable, even in its advanced stages. Experience teaches us that the continued use of slight laxatives in chronic metritis is very beneficial (particularly the laxative waters of Marienbad), and although we may not yet be able to state whether it is through direct derivation from the womb upon the intestines, or rather through the spinal cord and nerves, that the excellent results are attained, we certainly know and register this great and valuable fact for further practical use, especially in cases with abdominal plethora and obstructions in the circulation, or with habitual obstinate constipation and collection of gases (flatus), which may produce and maintain an abnormal position of the womb, or impede the regular circulation in the uterine vessels, or interfere greatly with the digestion, sanguification, innervation, and nutrition. The use of the mineral waters in chronic metritis is doubtless justified by the fact that they act as a diuretic and a purgative, promoting resorption in fat persons with abdominal plethora, besides counteracting habitual constipation, which is so unfavourable in its influence upon chronic metritis. From three to four tumblers of the Ferdinandsbrunnen may be taken for the space of four or six weeks, and in addition the ferruginous waters. Our aim is to produce rather abundant diuresis, and three or four soft but not watery stools.

Generally this treatment is to be adopted for women

suffering during or after their "change of life." The ferruginous mud-baths for anæmic persons merit full consideration in chronic metritis.

(c.) *Anomalies of menstruation*, as well as tendency to abortion and sterility, provide subjects for the waters of Marienbad only when they depend upon constitutional disease, as chlorosis and scrofula, or upon chronic catarrh and chronic infarction, in which the blood-vessels are compressed. Amenorrhœa and menstruatio difficilis in fat women will soon be healed by these waters; and also menorrhagia, or too copious menstrual hæmorrhage, if it occurs in plethoric patients—who, however, often bear very decided loss of blood without injury.

Sterility in fat women has the best chance of cure in Marienbad.

DISEASES OF THE RESPIRATORY ORGANS.

(a.) *Chronic hyperæmia, and catarrh of the mucous membranes of the larynx and bronchi*, are accompanied by abnormal secretion, swelling, and succulence of their tissues; and badly nourished, cachectic persons, with effeminate and sedentary habits, are more prone to catarrh than the robust, and country people, who live continually exposed to changes of temperature and to stress of weather. In chronic catarrh the mucous membranes appear thickened; and chronic hoarseness, a cracked voice, aphonia, difficulty in respiration, violent attacks of coughing, with more or less expectoration, are the symptoms. The cases adapted for treatment in Marienbad are again those with ob-

structions in the circulation, abdominal plethora, general embonpoint, depending upon excess of good living, anomalies of digestion, hæmorrhoids, constipation, &c. ; there is a radical cure through the use of Kreuz and Ferdinandsbrunnen for them.

(b.) *Chronic emphysema and asthma bronchiale.*—If the fine vesicles of the lungs lose their elasticity and contractibility by any of the various causes of catarrh, &c., many symptoms of difficulty in respiration and in the circulation of the blood are produced ; a venous disposition, with blue face and lips, is produced, and the obstructed circulation from the head makes the patient dizzy, especially when coughing.

The liver swells when hypertrophy of the heart is produced, because the efflux of blood is impeded, and the engorgement extends through the portal system back to the gastric and abdominal veins, giving rise to gastro-intestinal catarrh ; and varices in the veins of the rectum are greeted with joy by the patient, who is hopeful for a cure from the expected critical hæmorrhoidal flow to free the circulation so overloaded with venous blood. The asthma presents an habitual shortness of breath, and attacks of severe dyspnoea.

Marienbad, like many other springs, is quite unable to cure this kind of disease ; but in stout and strong persons, with large fatty deposits, and the symptoms of abdominal plethora, it is equally sure to obviate the most essential symptoms, besides affording benefit to such patients by the highly-oxygenated atmosphere.

On this account Marienbad's great elevation above the sea, its pure and mostly humid air, with the pleasant exhalations of the numerous pine forests by which it is surrounded, render it the proper place of

residence for patients such as these during the whole summer.

DISEASES OF THE HEART.

(a.) *Hypertrophy of the heart.*—Although it is impossible to cure this form of disease, yet we shall be able to do much to stay its development, and to prevent consecutive diseases, which might prove fatal without the interference of Marienbad's saline alkaline waters. The hypertrophy of the heart for which this treatment is suitable is that which is accompanied by general plethora. We know that a transient plethora arises after hearty meals and copious drinking, so that persons given to immoderate eating and drinking, who lead a gluttonous life, such as travellers in the wine and beer trade, &c., suffer from cardiac hypertrophy. The augmented action of the heart gives rise to this disease; physical exertion, as in rowing, sawing, &c., increases its action; and, on the other hand, it is accelerated by excitement of passions in irritable persons, whose heart's action trifling causes serve to excite. In such cases the blood is propelled into the arteries with unwonted energy by every stroke of the contracting heart muscle, and the arteries will become abnormally full, though such persons are seldom aware of anything wrong with their health till a casual physical examination of the chest detects the existing condition of hypertrophy of the heart.

The pulse of such patients is full and strong, the carotids pulsate visibly, the face is reddened, the eye glitters, and is sometimes remarkably prominent; there is a sensation of fulness in the chest, of pressure

in the epigastrium, and often a considerable degree of shortness of breath; yet, although "the heart jars the chest like a stroke of a hammer," very little or no inconvenience is felt by the patient.

Organs which are liable to an increased afflux of blood, because their substance is too tender and soft to resist the extension of the walls of the vessels—like the brain, bronchi, and kidneys—show symptoms of hyperæmia, especially during excitement. Consequently headache, spots before the eyes, buzzing in the ears, dizziness, formication, &c., are observed; and a fluxion to the bronchial mucous membrane gives rise to swelling, sibilant rhonchi, great dyspnœa, attacks of asthma, which may readily subside after an occasional bleeding. Cases of cerebral apoplexy occur, because the heart pumps too much blood into the arteries, which are thinner than those of other organs; and a blood-vessel within the brain is more easily ruptured when unduly extended, or when its coats are atheromatous.

The Kreuz and Ferdinandsbrunnen correct these disturbances by means of augmented secretion, or by giving another direction to nature's action; they alleviate or banish congestions, general plethora, and obstructions in the circulation; they diminish the blood pressure upon the walls of the vessels, and carry the hyperæmia down to less delicate and dangerous organs than the brain and kidneys are. All causes promoting and increasing the heart-action and general plethora must, of course, be avoided. Drunkards and gluttons must renounce their vices, or apoplexy, after a long and hearty meal, or after abuse of alcoholics, will suddenly occur. Large quan-

tities of pure cold water during or after meals tend to increase the danger by too great extension of the stomach and vessels, and must not be used even to counteract the pernicious influences of strong drinks ; and hot water is still more objectionable, as the many victims to apoplexy during the use of the Karlsbad Sprudel easily prove. The Marienbad waters relieve the aorta and its branches from the pressure of the abdominal organs ; and when taken for a period of from six to eight weeks for several consecutive years, are almost sure to prolong life and avoid fatal issues. In cases of extreme heart action, we may even begin by mixing one part of Friedrichshall with two parts of Kreuzbrunnen, and subsequently come to use the latter only.

(b.) *Valvular diseases of the heart.* — Through certain conditions in consequence of disease, the functions of the valves of the heart, which are in their normal state patent regulators of the circulation, become defective, and the circulation suffers greatly ; but though there are no means to cure valvular disease by any therapeutical interference whatever, we may greatly assist defective physiological action, and allay more or less dangerous symptoms. The treatment by Marienbad's waters will also afford very little benefit here, as the impoverishment of the blood, especially by diminution of its albumen, has to be carefully avoided ; but in cases where the veins and capillaries are overloaded, the liver enlarged, obstruction of the hepatic veins increased so greatly as to compress the biliary ducts, where chronic gastrointestinal catarrh follows the obstruction of the gastric and intestinal veins, the hæmorrhoidal veins

swell, and the engorgement of the uterine veins occasions menstrual derangement, the use of small doses of Kreuzbrunnen may sometimes (according to the experience of medical men in Marienbad) be beneficial; but the treatment must be always very mild.

(c.) *Fatty heart*.—It usually accompanies general obesity, either in luxurious persons otherwise healthy, or in drunkards. A layer of fat on the heart may then cause shortness of breath, obscure heart sounds, slow and weak arterial circulation, a tendency to faintness from anæmia of the brain, &c. “It is an indisputable fact,” says Professor Niemeyer, “that during the treatment of Marienbad, Karlsbad, &c., the fat decreases, and the garments of patients hang loosely upon them; yet we have no better physiological explanation of the circumstance than a somewhat feeble hypothesis.” This experience is supported by many other authorities; and I refer to my remarks on general fatness and fatty liver for explanation of the mode of action of the saline-alkaline waters of Marienbad in these cases also. The fact is, that the difficulty of breathing disappears when the weight of such persons has decreased, the heart-sounds become clearer, the pulse fuller and more frequent, and the general condition of the patient more satisfactory.

DISEASES OF THE NERVOUS SYSTEM.

DISEASES OF THE BRAIN.

(a.) *Chronic hyperæmia of the brain.*—The augmented flow of blood to the brain causes hyperæmia. Whenever this increases, the cerebro-spinal fluid diminishes; for, as they stand in inverse proportion, when the vessels are less full, the arachnoid fluid increases. This is the case in health during temporary general plethora induced by excesses of the table, energetic expiratory movements, coughing, straining, playing wind instruments, &c.; or during increased heart-action in fever and mental excitement in toppers and persons who undergo great mental strain; or in consequence of severe cold, when the cutaneous circulation is repressed (cold stage of intermittent fever); or through compression of the abdominal aorta and its branches by distended intestines, &c. The *symptoms* are those of *irritation* in the *sensory* functions, as headache, hyperæsthesia (abnormal sensitiveness to impressions on the senses), caused by light which gives trouble, or by slight sounds, or insignificant irritation of the nerves of feeling, producing disagreeable sensations, dazzling before the eyes, buzzing and humming in the ears, formication, and indefinite pain. Amongst the motory symptoms of irritation are: restlessness, sudden starting, gnashing of the teeth, crying out with pain, twitching of single muscles, automatic movements of the extremities, general convulsions, loss of consciousness, as well as other symptoms of disturbance; excited

vivid dreams, confusion of ideas and delirium ; hallucinations and illusions, where patients see things which are not, and hear imaginary voices, are unable to regulate their own movements, and apt to fancy that stationary objects are in motion.

Symptoms of depression in the sensibility are : want of sensation, indifference to external irritations, bright light, loud noise, strong smells, and even complete cerebral anæsthesia when no reaction follows even on the severest tests. *Motor* symptoms of depression are : decided slowness and sluggishness of movements ; “ the limbs being as heavy as lead ;” and if this state increases, cerebral paralysis or inability to make any voluntary movements results. *Psychical* symptoms are : loss of interest, indifference, inclination to long and deep sleep, with snoring, loud breathing, &c. ; great slowness of thought and limitation of ideas. In all these cases the Kreuzbrunnen is most effective, as it removes all obstructions to circulation in fat and plethoric persons by increased action of the bowels, skin, and kidneys.

(b.) *Apoplexy or cerebral hæmorrhage* involves general depression from cerebral hyperæmia, which treatment in time, by the mineral waters of Marienbad, may effectually prevent. These waters are especially indicated in plethoric persons showing an “ inclination to apoplectic fits,” which are preceded for a time by headache, disturbance of sensibility, dizziness, sleeplessness, or psychical disturbances ; in others, the fit comes on suddenly without any premonitory symptoms ; sudden dizziness is expressed by “ everything whirling around with him ;” the patient staggers, sees all dark before him, loses con-

consciousness, sinks to the ground, and death, by paralysis extending from the brain to the centres of the organic nervous system, may occur; more frequently, however, the patients recover consciousness after a time, not remembering even what has passed. This is the highest degree of depression caused by cerebral hyperæmia, for which Marienbad does wonders.

Here it is the consequence of an escape of obstructed venous blood and the secondary œdema of the brain, which both prevent a sufficient supply of oxygenated arterial blood, so indispensable for a healthy condition of the brain and the whole nervous system. The apoplectic fits caused by rupture of cerebral blood-vessels and escape of their contents may induce sudden paralysis of the brain or stoppage of functional activity. It may occur because the walls of the vessels are fragile or fatty degenerated, as in badly-nourished cachectic people; or from hypertrophy of the heart, as explained previously, through the increased pressure of the blood upon the walls of the vessels; and from any of the causes of hyperæmia: but the most dangerous, because the most frequent form of apoplexy, is that caused by long and luxurious meals. A fit sometimes occurs unexpectedly in healthy persons; in others, again, with premonitory symptoms, as mentioned before, which must excite the suspicion of the physician, who may yet be able to save the patient's life. Heaviness and fulness of the head; bad, excited, and irritable sleep; formication or temporary numbness in certain limbs; momentary loss of memory for words or figures, are "warnings" preceding the apoplectic stroke. If a patient has once

had an attack of apoplexy, he must carefully avoid all exciting causes, especially long and luxurious dinners, spirits, &c., and must keep his bowels regularly open in order to avoid a relapse, to which the patient is so very liable. When all inflammatory action has happily ceased, then it would be well to send our well-to-do patients to Gastein, Wildbad, and other warm spas; but the destroyed filaments of the brain will never be restored entirely, although both the cerebral and spinal paralysis often improve at those places.

The use of Marienbad waters should only be had recourse to later, where also the ferruginous mud-baths may be employed with advantage in cases of paralysis threatening to remain stationary. I have seen decided advantage result from electricity as applied in warm baths at Mr Adolphus's institution in London, where diminished nervous power and increasing atrophy of the muscles are alleviated after all other trials have failed.

Amongst the general neuroses of unknown anatomical origin belongs

Epilepsy.—We have to assume that the excitement of the motor nerves, expressed in the shape of convulsions, originates within the medulla oblongata. The arrest of sensation and consciousness is quite inexplicable also, although many theories on these subjects have been advanced. With certainty we do not know one single agent which could be relied upon to produce epilepsy. Females, we know, suffer from epilepsy more frequently than males at any age. It is a very common disease, which affects about six

in every thousand individuals. Violent mental emotions, sudden fear, and the sight of an epileptic fit are the usual exciting causes. Recovery must be regarded as rare; the longer epilepsy has lasted, the less is the chance of recovery. Patients rarely die during an epileptic fit, but more frequently in consequence of the progress of cerebral disease, or of injuries received during the fit, or of diseases entirely disconnected with epilepsy. All means of treatment prove equally uncertain. We have to regulate the external relations of the patient, his habits, his bodily health, and to correct every suspicious condition supposed to be connected with the origin of the disease. An epileptic patient should never be left alone lest injuries be sustained during the fits.

All exhausting mental occupations, intemperance, and secret vices should be avoided, and more attention be paid to a moderate exercise of body and mind. In anæmia, a nourishing diet, good air, the ferruginous waters of Marienbad, and cheerful treatment are advisable. In plethora, the diet should be reduced, and Marienbad's saline-alkaline waters tried; inasmuch as they remove abdominal obstructions, improve digestion, and expel the hardened, copious fæces and worms, regulate the uterine circulation, induce normal action of the skin, prevent congestions in the upper parts, and act generally as derivatives. Experience has taught that Marienbad shortens the duration of fits, and lessens their intensity and frequency.

Hysteria is a disease so generally known by its derangements of the sensory, motory, and psychological functions, that it may suffice here to say it can be

treated at Marienbad in vigorous and well-nourished persons, when combined with disorder of the circulatory and nutritive systems, with abdominal obstructions and complaints, where tympanites is a predominant symptom, and indigestion; or when symptoms of cerebral and spinal congestion are manifested; or in persons during and after climacteric age, and wherever the cause of hysteria appears to demand the use of those springs—especially for individuals with strong constitutions, high spirits, excitable imaginations, exalted feelings, who are very irritable, uneasy, passionate, disposed to laugh and weep alternately. These are indications for the use of the saline-alkaline springs, with their calming effects upon the whole nervous system. In anæmic, weak, slow, and depressed persons, the ferruginous springs are often of great service, along with the Marien Spring, -ferruginous, -gas, -and mud-baths.

Hypochondriasis is more properly regarded as a disease of the mind, which is oppressed by some painful impression, inducing melancholy. The person affected with it believes himself to be always sick, or fears that he is going to be sick. The disease proceeds from nutritive derangements, debilitating influences, &c. It is most common between the ages of twenty and forty, and more frequent in males than in females; the more it develops, the more assiduously does the patient endeavour to discover the cause of his indisposition. All his ideas are concentrated upon daily and continuous observation of the state of his tongue, his eyes, his urine, his stools, his pulse, &c., because they seem to him to afford a clue to the nature of the grave and obscure imaginary disease.

He studies all works on medicine within his reach, and consults one medical adviser after another with great predilection, apprising them often afterwards that they did not understand his complaints properly. For a time the patients are usually able to transact business, to take care of house and family, and forget their disease; are cheerful, and even in high spirits, till they relapse again. They become gradually emaciated, sickly in appearance, and fall into a state of mental depression.

Marienbad is crowded with these patients, because they cannot elsewhere derive such benefit, though similar brilliant results have been observed at the lunatic asylums in Prague and Vienna from the use of the Kreuzbrunnen and Ferdinandsbrunnen in most severe cases of melancholy and chronic derangements of the mind. These great effects are mainly due to the beneficial influence of these waters upon diseases of the digestive organs. Business men and savants suffer mostly from constipation, great extension of the abdomen, flatulence after meals, and hæmorrhoids, which, when they begin to bleed, give rise to special joy and hope. I repeat, therefore, Marienbad is the salvation of hypochondriacs, who often return home completely cured, and, extolling the wonderful healing power of the Kreuz and Ferdinandsbrunnen, make themselves true apostles of Marienbad's great virtues. All the physical functions of such patients become normal, their spirits improve, and they feel themselves born to new life. If, however, their complete cure has not been obtained in Marienbad itself, it will often be found to follow the use of these waters, or on repeating the treatment the next year.

All other *nervous* diseases may be judged by the same principles which I have laid down in considering the particular constitution and character of persons suited for the treatment with Marienbad's waters.

Diseases of the senses are to be classified as those of the eyes, which may find a good chance at Marienbad, if depending upon some constitutional, gouty, scrofulous, or venous state; or if they are in connection with disturbances of the abdomen, as obstructions, infarctions, and engorgements, &c., or such as chronic catarrh, or inflammation of the conjunctiva and of the choroidea (*choroiditis chronica*), the organ of the sense of smell, which upon similar principles may be expected to improve under the influence of those waters.

The sense of hearing in the same respects.

Diseases of the skin may yield to the general influences of the waters, if they are consequent on a general abnormal state of the blood, abdominal plethora, engorgements, &c.; and although many of them are cured by merely local applications, there are, on the other hand, those which are benefited or cured by the Marienbad's waters.

3. THE CAROLINEN AND AMBROSIUSBRUNNEN.

The Carolinen Spring, known previously under the name of "Neuquelle," received its present name in 1818 from the last wife of the Emperor Franz I. on its solemn inauguration by the Abbot Reitenberger, on the 14th of July, the anniversary of Vladyken Hroznata, the founder of the Abbey Teple. It is

situated on the south of the Cross Spring, at a distance of 300 steps, issuing from the sand soil, and covered by a beautiful, vaulted roof, the cupola of which rests upon eight Corinthian columns; its enclosure forms a wreath of sandstone.

The *Ambrosiusbrunnen* lies about 300 steps distant from the previous spring, at the end of the Kreuzbrunnen Promenade, and bears the name of the old Hieronymus Ambros, Abbey of the Convent Teple; its present enclosure dates from 1823, and its Gothic covering from 1826.

Both springs are chalybeate, distinguished by their larger amount of carbonates of protoxide of iron and their small amount of salts, which consist of carbonate of lime and carbonate of magnesia; but of course they are behind the richly ferruginous waters of Pyrmont, Spaa, Driburg, Schwalbach, our strongest chalybeates in Europe. The water of both the Carolinen and Ambrosius Springs are clear and colourless; their taste is prickling, somewhat astringent and inklike. Their temperature is 70° R. = 190° Fahr.

The Ambrosius Spring is the stronger chalybeate of the two.

The following table shows, according to the analysis of Dr Ragsky (1860), the proportions of solids and volatile elements of the two springs:—

In 1 Pound (16 Ounces) of the Water there is	Ambrosius-brunnen.	Carolinen-brunnen.
Sulphate of soda,	1.451	2.786
Sulphate of potassa,	traces	0.012
Chloride of soda,	0.384	0.844
Carbonate of soda,	0.737	1.964
Carbonate of lithia,	traces	0.004
Carbonate of lime,	1.862	3.557
Carbonate of magnesia,	0.848	1.395
Carbonate of protoxide of iron,	0.338	0.310
Carbonate of protoxide of manganese,	0.023	0.028
Neutral phosphate of lime,	0.010	0.012
Silicic acid,	0.361	0.536
Bromine and fluorine,	traces	traces.
Soluble organic matter,	0.012	0.180
Total solid portions,	6.026	11.628
Free and loosely combined carbonic acid,	15.847	16.637
Total amount,	21.873	28.265

The Ambrosius Spring is now more generally prescribed, as it contains more iron and less salts.

The physiological action of the iron and carbonic acid is the same as described under the heading of "physiological action of the mineral waters," to which I refer the reader in order to avoid a repetition. Both these agents excite and improve impaired digestion, stimulate the heart-action, increase bodily warmth, and give power and energy to the muscular system.

Young married and unmarried ladies who accompany their parents and husbands to Marienbad take these waters with great benefit, on the advice of their physicians resident in Marienbad. These waters are also used externally as ferruginous baths. Internally taken, they must be thoroughly digested in order to produce the above-mentioned effects. To correct their astringent action upon the mucous membranes, and their exciting influence upon the circulation, owing

to which they are so beneficial in all weaknesses to which they are applicable, it becomes necessary, especially in certain conditions of the body connected with other disorders requiring the solvent action of the saline-alkative springs, to prescribe their use together with that of the Kreuz or Ferdinandsbrunnen.

The Ambrosius and Carolinenbrunnen Springs are of service in the following forms of disease:—

1. Weak digestion, atonic dyspepsia, in consequence of anæmia and chlorosis, and uterine derangements.

2. Derangements of the intestinal functions, expressed by habitual constipation, or chronic diarrhœa, whether in consequence of defective peristaltic movements, or caused by atony of the intestinal muscles, or by excessive excretion of water from the anæmic blood.

3. Anæmia and chlorosis, or green sickness, for which the chalybeate waters are known to be sovereign remedies, either during the developing period of the woman, or when these diseases are caused by debilitating influence, like chronic debilitating diseases, frequent confinements, hæmorrhages, profuse secretions, mental exertions, sexual debaucheries, &c.

4. Sexual female diseases, in consequence of anæmia, where amenorrhœa, menorrhagia, dysmenorrhœa, uterine and vaginal blenorhœa, leading to abortion, are present; in cases of sterility, caused by abnormal condition of the blood, general weakness, or where local weakness induces besides mucous discharges, sterility, and a tendency to miscarriages.

5. Hypochondriasis, hysteria, hyperæsthesia, anæs-

thesia, hemicrania, gastralgia, spinal neuralgia, and other nervous complaints, when depending upon weakness of the abdominal functions, or of the whole frame, sometimes accompanied by cramps, convulsions, paralysis, paresis, &c.

6. Virile impotence, spermatorrhœa, and frequent nocturnal pollutions, in consequence of general nervous weakness, after exhausting diseases or sexual excesses.

7. Constitutional diseases, like anæmia, scrofula, malaria, and mercurial cachexia.

Contra-indications.—General plethora, inflammations, fevers, tending to congestion towards the lungs and brain, to apoplexy, and to acute hæmorrhagia, consumption of lungs, biliousness, chronic abdominal indurations, and habitual constipation of an erethic character.

4. THE RUDOLFSQUELLE AND WIESENQUELLE.

Rudolf's Spring. This spring lies on the south of the Ferdinand's Well, on the same ground of meadows, at the foot of a chain of mountains which extends between Marienbad and the village of Auschowitz. It was discovered in 1865, during researches and diggings after some new well which might exceed the Wiesen Spring in richness of its analogous elements. The success was surprising; the water brought up being very palatable, prickling, and slightly astringent. A proper enclosure was added, with a roof, and the physical and chemical examination entrusted to Dr Lerch, Professor and Lecturer of Chemistry at the University of Prague, the result of which is given as follows:—

CHEMICAL COMPOSITION OF THE KRON-PRINZ-
RUDOLFSQUELLE.

The Carbonated Salts reckoned as Anhydrous Bicarbonates.	In 1000 parts are contained	In 1 lb., equal 7080 Grains, are contained
Sulphate of potassa	0.2250	0.1728
" " soda,	1.0630	0.8104
Chloride of soda,	0.5862	0.4500
Bicarbonate of soda,	1.3929	1.0673
" " lime,	11.1628	8.5731
" " magnesia,	6.7030	5.1480
" " protoxide of iron,	0.4155	0.3191
" " protoxide of manganese,	0.0747	0.0574
Basic phosphate of Alumina,	0.0370	0.0261
Silicic acid,	0.1260	0.0968
Arsenic, lithia, strontia,	nominal	portions
Total of solid portions,	21.7831	16.7210
Free carbonic acid,	12.1616	9.3400
Total amount,	33.9447	26.0610

The temperature of the spring is = + 8°. 2' R. = 51° Fahr. The specific gravity, 1.00197.

We see, therefore, that this is one of the first of the earthy-alkaline-chalybeate springs in Germany, with a prevalent amount of carbonate of lime, magnesia, soda, and iron, of which, again, the carbonate of lime and iron are therapeutically the more important agents, having more solid portions than Wildungen, with which it is to be compared. These earthy alkaline springs are prescribed with beneficial results on account of their earthy alkalines, according to the experience of numerous inquirers—Benecke, Bocker, Dietl, &c.—for scrofula and rickets (rhachitis); the ferruginous elements obviate anomalies of the state of the blood, increase diuresis, and alter the chemical properties of the urine.

The use of the Rudolfs Spring appears, therefore, to be indicated in—

1. Abundant secretion of gastric juice or formation of acidity, producing heartburn, &c., against which it proves a useful addition in the cure with the Kreuzbrunnen, Ferdinandsbrunnen, and Waldquelle. In anæmic or chlorotic, scrofulous constitutions, it improves digestion.

2. Torpid forms of scrofula and rhachitis, with anæmia, if taken for about four or six weeks; for which the beautiful and balsamic air of Marienbad must be acknowledged, however, to play also its beneficial part in the cure, and merits consideration in this respect.

3. Chronic catarrh of the bladder, with profuse mucous discharge, especially after the removal of concretions from the bladder, and in all cases of neuralgia at the neck of the bladder and along the urethra; in dysuria and ischuria spastica, when either the sphincter muscle is in a state of spastic contraction and the patient can only pass water drop by drop or in a very fine stream, and with great effort, or when the closure of the sphincter is absolute and there is complete retention of urine. This affection may also extend to neighbouring organs, and give rise to pains in the rectum, which may recur at short intervals and cease as suddenly as they have begun. In such cases we may, according to Dr Lucka and Dr Kisch, obtain very great benefit from the use of this spring, and also where the catarrh of the bladder remained chronic after gonorrhœa, or in consequence of alcoholic abuse; and finally, where the urine, in consequence of an abundant blenorrhœic secretion of the mucous membrane of the bladder, is found turbid, whey-

like, pus-like, and containing traces of blood. For concretions, however, of the kidneys or of the bladder, nobody attempts to recommend the Rudolfs Spring.

4. Pyelitis, or chronic inflammation of the mucous membrane of the pelvis or the kidney. Dr Kisch of Marienbad has had the opportunity of observing such cases under his own treatment which were greatly benefited by the Rudolfsquelle, and even in some cases of chronic albuminuria (without urinary casts), in well-nourished, fat persons of luxurious living.

5. Chronic gonorrhœa. It was by chance that Dr Kisch made the very important discovery that the use of the Rudolfsquelle healed chronic catarrh of the urethra, as well as urethral blennorrhœa kept up by chronic inflammation of Cowper's glands.

Wiesenquelle.—As the Rudolfsquelle has now superseded the place of the older and weaker Wiesenquelle, I merely give the analysis of the latter to compare it with the first, which is stronger, and gives much more satisfactory results in the treatment of similar diseases. The Wiesenquelle contains, in one pound of water—

Sulphate of soda,	.	.	.	0.883 grains.
Chloride of sodium,	.	.	.	0.369 „
Carbonate of soda,	.	.	.	0.499 „
Carbonate of lime,	.	.	.	4.531 „
Carbonate of magnesia,	.	.	.	2.884 „
Carbonate of protoxide of iron,	.	.	.	0.269 „
Carbonate of protoxide of manganese,	.	.	.	0.089 „
Silicic acid,	.	.	.	0.691 „
Total of solids,				10.215 grains.

THE WALDQUELLE.

If we trace the sounds of music at noon in Marienbad during the season, we have to take a walk down an avenue behind a row of houses, which brings us from

the Kreuzbrunnen to a beautiful retreat in a forest, giving shelter during a hot day against the warm rays of the sun. This romantic, charming, and shady place contains the Waldquelle, opposite the Orchestra House, near to the rivulet Schneiderbach on the north-west side of Marienbad, and is the retiring-place of the *cure-guests* who seek rest in the pleasant refreshing coolness of the trees. Here is the really pleasant water of the acidulous alkaline-saline spring, which in its composition ranges amongst the mineral springs of Selters, Bilin, Fachingen, Geilnau, and Obersalzbrunn in Prussian Silesia, which latter it resembles especially in taste and medicinal action; the taste being acidulous and refreshing, the temperature being only $+ 5^{\circ}$ R. = 44° Fahr.

The Waldquelle especially contains carbonate of soda, but very few purgative salts; and its amount of carbonic acid gives it a place second only to the Ferdinandsbrunnen, though the iron contained in it is but small. According to Dr Dietl's analysis (1870), the Waldquelle contains, in 10,000 parts: of

Sulphate of potassa,	1.0155 grains.
Sulphate of soda,	12.1307 "
Chloride of sodium,	3.9174 "
Carbonate of soda,	7.7662 "
Carbonate of lime,	2.4762 "
Carbonate of magnesia,	3.0538 "
Carbonate of protoxide of iron,	0.1682 "
Carbonate of protoxide of manganese,	0.0155 "
Silicic acid,	3.8318 "
Organic matter,	traces
<hr/>	
Total of solids,	34.3753 grains.
Free and loosely combined carbonic acid	28.9027
<hr/>	
Total amount,	63.2780 grains.
<hr/>	
Really free carbonic acid,	22.9202 grains.

The physiological action of this spring upon the intestinal duct is, of course, very slight; whereas upon the mucous membranes of the respiratory and uriniferous organs it is decided. This water being of a pleasant taste and very easily digestible, is used as a refreshing thirst-allaying drink by everybody, without any particular medical advice, an hour before dinner, to the amount of one or two tumblers, just as at other similar spas of Germany where there are sold at the springs as a palatable addition the so-called Brunnenpfeffer-kuchen, spiced light-brown cakes of a pleasant taste (like our gingerbread).

The Waldquelle has the following physiological effects. The secretions of the abdominal organs are generally increased by the use of these waters, though this increase is not so great as during the use of all the other springs of Marienbad. The effect upon the bowels is considerably less, and the resolvent aperient action is so mild and slow as to excite the secretion of bile and mucus very moderately; in very nervous persons, however, it may produce some abundant secretion, like the Kreuzbrunnen, but then only occasionally. The Waldquelle neutralises, besides, any prevalent acidity in the stomach, and rather promotes appetite. Upon the system of circulation it acts as a mild stimulant, owing to the large amount of carbonic acid; but this does not prevent its being employed even when the sanguiferous system is very easily excited; in fevers and inflammations, in certain organic heart and lung diseases, it is contra-indicated.

This effect, however, when necessary to be avoided, may easily be lessened in degree by mixing the water

with warm milk or whey, so as only to excite the arterial system very slightly. Upon the mucous membranes of the lungs it has the effect of increasing their secretion. The urine is augmented in its flow; and the sexual organs, when in a torpor, are reanimated: it strengthens them when too weak and irritable, and regulates disordered menstruation. If taken in such small quantities as one or two glasses, it frequently appeases morbid sensibility and irritability instantly; the spirits improve, and a feeling of animation is produced. At first these symptoms may be transitory, but after a longer use indispositions of weak and nervous persons are cured gradually, and the nerves are strengthened without agitating the circulation. The effect upon the change of matter is no doubt explained by the better digestion and innervation, together with the improved functions of all organs; and the nutrition, therefore, improves under its use, the nervous system becoming strong.

The Waldquelle may therefore be taken with benefit in the following complaints:—

1. Slight habitual constipation and catarrh of the stomach in weak and delicate persons, for whom the action of the Kreuz and Ferdinandsbrunnen would be too strong; and if there is a slight abdominal obstruction, the Waldquelle may be sufficient to obtain the desired result.

2. Chronic catarrh of the respiratory organs, especially of the bronchi, with a tough and viscid mucous secretion or lung emphysema, bronchiectasy, and asthma mucosum. All resident medical men of Marienbad confirm these splendid results from the

use of the Waldquelle in chronic catarrh, associated with obstruction of the abdominal circulation.

3. *Catarrh of the bladder* in other persons, with impaired power of muscular contraction, or in consequence of concretions and strictures in the urethra, according to Dr Kisch.

4. Catarrh of all other mucous membranes, especially those of the gall-ducts (Dr Kisch).

5. Gout, when abundance of uric acid, concretions in the kidneys, &c., are present (Dr Kisch).

6. Nervous weakness, irritability, morbid sensibility, for which it is considered by several writers as a peculiarly valuable spring.

7. Simple chronic congestion of the liver, and spleen of weak and scrofulous persons.

THE WHEY.

This preparation of milk is to be had at almost every watering-place as an addition to the mineral waters. Through the separation of the solid caseine and butter, by means of rennet, whey is obtained from the milk. In Marienbad, goats' milk, which has a peculiar flavour, is used for this purpose.

As according to all modern views in medicine (see Prof. Lebert's "Milch and Molkenkuren") whey is not nourishing, we cannot suppose that it will still be given to consumptive patients in order to increase bodily weight, as was formerly delusively done. Amongst all preparations of milk, full Koumiss, made from cows' milk, is the most beneficial remedy in treatment of emaciation. Milk itself is often difficult of digestion, and less suitable for adults,

and cod liver oil a rather unpleasant medicine. Koumiss is therefore the more advantageous substitute for both in emaciation, with catarrh of the mucous membranes. It ought to be procurable at Marienbad for patients who do not find the means to successfully combat loss of flesh and strength.

The goat's whey in Marienbad is prepared fresh every day, and brought to the Kreuzbrunnen and to the Waldquelle, where it is taken warmed and mixed with the springs, or alone, according to prescription. It is added to the above waters, and to the Ambrosiusbrunnen, in the proportion of a quarter or a third. In this way the chill is taken off the waters, a part of their carbonic acid driven out, and their influence upon the circulation and the organs of respiration greatly modified.

THE MARIENBAD SALT, OR SAL TEPLENSE.

The knowledge of this salt dates as far back as that of the springs themselves. Previously, it always was prepared from the Kreuzbrunnen by evaporation. During the last few years it has been obtained from the Ferdinandsbrunnen in large quantities by the same method, and in its composition and therapeutical action it is very similar to that of Carlsbad yielded by the "Sprudel." Its chemical elements are those given in the formula of the Ferdinandsbrunnen itself, less the water and carbonic acid; when exposed to great heat, it loses its water of crystallisation, and crumbles to powder, but without detriment to its physiological effects.

Its taste is saline-bitter, somewhat alkaline.

This salt may be used as an excellent cooling purgative remedy (purgans antiphlogisticum), for which it is generally recommended. It is suitable as:—

(*a.*) A preliminary treatment, preceding a resolvent course at Carlsbad, Marienbad, &c.

(*b.*) An auxiliary means in the water-treatment at Marienbad itself, in order to lessen the exciting influence of those waters, and to increase their aperient properties.

(*c.*) As after-treatment following any resolvent method it may be desirable to prolong during the journey home, or continue for some time longer at home.

(*d.*) A substitute for the resolvent watering-treatment in Marienbad, when the waters cannot be obtained or kept by the patient; or in winter, when it is objectionable to drink water.

(*e.*) As a prophylactic treatment to prevent diseases, when this salt may be used independently of diet, occupation, &c., or together with other medicinal treatment.

The dose of this salt, as a purgative for adults, is from one or two drams to half an ounce, dissolved either in cold or warm water, and to be taken at night, or before breakfast in the morning.

For children between eight and twelve years old, as well as for weak persons with slight constipation, half this amount at once, or several times during the day, will be sufficient to promote soft stools and improve digestion.

The average dose, when this salt is to be added to the mineral waters, consists in a tea-spoonful for the first glass or tumbler.

This salt is sold in sealed boxes containing one pound each, or in bottles well secured with tin capsules, and containing a half or a quarter of a pound each, as sent out from Marienbad.

DIRECTIONS FOR THE INTERNAL USE OF THE MINERAL WATERS OF MARIENBAD.

For patients determining to undergo the mineral-water treatment of Marienbad, the following observations and directions may prove useful and interesting. Before patients may begin the drinking of Marienbad's waters, or start for this place, it will be advisable to prepare the body appropriately by keeping to a moderate, regular, and healthy mode of living in every respect during the first two or three preceding weeks, as directed in my remarks on diet and regimen, and not to regard the prospect of a cure at this or any other spa as a dispensation for any sin committed previously. Heaven may not always be disposed to forgive such sins.

If the treatment has been commenced with two or three tumblers (for adults) at six fluid ounces each—for children, with half the amount, at intervals of from fifteen to twenty minutes—it may be permitted to increase the doses by and by to the full amount, which may *produce two or three copious stools of a soft or half-fluid nature* per day; for *this* purpose it may be necessary to take during the morning, in some cases, five or six glasses, or a large bottleful; in others, as little as two tumblers holding three or four ounces each. The course ought to last from four to six weeks, and with the approach of its end the doses be

diminished accordingly, in order not to break off this habit too suddenly. Every day one tumbler less may be taken, in order to finish with two or three full or half tumblers per day. The best time of the year for this treatment is undoubtedly the warmer season, and, according to experience, the months from May to September inclusive. Weak, pale, relaxed, phlegmatic patients, of a rheumatic or gouty disposition, should better select the spring and autumn; but there is nothing objectionable in the waters of these springs even at your own home, or at Marienbad, during the winter, if required;—nay, it would be reprehensible to delay this cure till *the proper* season, when there is *periculum in mora*, and the complaint would evidently grow meanwhile. The proper time of the day for this purpose is the early period of the morning while fasting, between six and eight, taking care to have sufficient active exercise if possible in the open air. There may be exceptions to this rule in particular cases, where the waters have to be taken in bed or in the house, and after partaking of any warm drink in the morning; but these instances must be left for the medical attendant to regulate. Dislike, capricious disposition, fancy, bad spirits, &c., must not detain anybody from obeying this rule; even bad weather, low barometer or thermometer, cloudy sky, fog, mist, rain, wind, &c., are no excuse for breaking these rules, as I have already shown in my paragraph on habits; besides, there is the Cursaal open to any amount of exercise in case the inclemency of the weather should defy open-air exercise during the time for drinking the waters.

Sometimes it may be advisable to drink the Kreuz-

brunnen waters again in the afternoon about four hours after dinner, taking about half the quantity prescribed for the morning.

The evening dose has to be omitted—

(*a.*) When there is a tendency to motions during the night. Strange to say, several watery stools often result in succession from the use of a few tumblers of the Kreuzbrunnen waters in the morning, whereas in the afternoon the same doses on the same day do not produce any motion till the following morning.

(*b.*) If the patient feels excited or irritable from the use of the Kreuzbrunnen in the afternoon, and his sleep is likely to be disturbed.

(*c.*) When the dinner-meal falls rather later than usual.

(*d.*) When a rather hearty dinner appears to retard digestion beyond the hours fixed for the evening drink.

(*e.*) Immediately after any fatiguing excursion ; and finally,

(*f.*) If there is a desire for a more hearty supper.

All modifications of these standing rules of treatment in Marienbad which may be required, are regulated by the number, copiousness, and consistency of the alvine evacuations. As long as the stools are not decidedly watery, but hard or soft, numerous and bilious, there is no fear that their frequency will be exceeding the wants of nature ; for, instead of weakening, they produce a decided relief, and do not injure the body at all. They are to be hailed as salutary crises, which resolve the morbid matter and eliminate it ; after expulsion, the abnormal functions of an organ affected even by a very long-standing disease will disappear,

and health return. Besides the proper condition of the stools, it is necessary to remark that it is not the quantity of the spring-water drunk, but the manner it is digested, which produces good results and symptoms of improvement: the more easily it is absorbed, and the less water drunk, the better the prospects are. If, however, there are slight indispositions—as pressure or heaviness, pain in the stomach and the other abdominal organs, or want of appetite, nausea, vomiting, colics, diarrhœa, &c.—then an alteration in the prescription of the medical adviser is required, who either should cease allowing the waters to be used for a time, or alter the spring, the diet, habits, &c., or prescribe some medicine, according to the individual case. Particularly great or excessive irritability of the digestive organs will make this desirable—to allow the patient some warm black coffee, or some aromatic tea, like peppermint, camomile, or balm tea, in the morning, half an hour before his first glass of spring-water. Should the spring be *too weak* in its desired effect on the bowels, then it will be necessary either to increase the doses by allowing so many ounces more each time, or to shorten the intervals throughout: the temperature also may require raising by mixing each tumbler with some warmed mineral water, or by adding some purgative salt—as that of Marienbad—to the water, or mixing it with an additional glass of some bitter water.

Should the waters act *too strongly* on the bowels, or the patient be of a weak, irritable constitution, and complain of digestive derangement, then either the quantity of the doses requires lessening, or the intervals prolonging (about half an hour or an hour's rest

to be allowed), which latter alteration is likely to stimulate the diuresis more.

Another variation consists in dividing the daily quantity of water into two portions, taking solid refreshment between, or by mixing some warm milk or whey with the mineral spring, or again by taking a cup of tea before and after the brunnens. In cases of relaxation of the bowels, with chronic diarrhœa, temporary combination with the ferruginous Ambrosius Spring may prove astringent enough. But a patient should never take a second glass after the first has caused heaviness or fulness.

So far as quantity is concerned, two methods of treatment exist: the one called the "great cure," when proportionately large quantities of these waters are taken within short and frequent intervals during the whole course of treatment, which lasts from four to six weeks.

It is used in cases where we intend to lower the functional energy of the organs, or to control the power of digestion, and especially to expel unhealthy matter in large quantities in an expeditious way. It should be employed only upon stout, plethoric, and well-nourished persons, with obstinate constipations.

The other method is called the "small cure," which consists in drinking smaller quantities, at great intervals, and less frequently during the course, as I have already mentioned in various parts of this book.

The effect of this method is mild and constant, and we obtain all we desire by its use. There is less precaution required before, and less caution during use; and there is no danger connected with it. The small course is therefore not shorter than the great one, but

it less violently affects the organism by debilitating its vital powers ; so that it may be extended over a longer period, and even during winter, because its effect is slow but sure. In any case, it is greatly to be preferred, and to be considered the standard method in Marienbad.

It is of great value as a palliative and preservative, and may protect persons from great diseases if used in time.

Weak, delicate, relaxed constitutions, easily affected with small doses, irritable persons, ladies, children, and old people, are equally adapted for this method.

A *long* cure may be advisable, in the same way, and for the same reasons, as in hydropathic establishments, where patients remain for many months to recover their health. True, this will not be convenient for many persons who have their business occupations and duties to fulfil ; but instances will occur when the more advantageous, cheaper, and surer way will be found in prolonged and continued treatment, than when periodically interrupted and protracted over many years. In the first, we radically cure the disease at once and for ever ; whereas, in the latter, we fight small battles every now and then without a decided victory or triumph.

Many of the resident physicians in Marienbad have recorded cases where, a long cure having been decided upon, the waters of Marienbad have been taken for months, and even a whole year. Some medical men from Vienna have made use of this method with excellent results in their own cases ; and Goethe, in his old age, drank the waters of the Kreuzbrunnen at home, by the advice of Hufland, for several years,

with very great benefit, consuming 400 small bottles a year.

By "after-effects" we understand the sum total of beneficial action manifested after a full course of the waters, when the improvement follows in consequence of the elimination of material impediments, either in course of time, or, as it sometimes happens, almost immediately.

In the first method, no violent reactions of the circulation or of the nervous system occur, because the animal functions return almost unnoticed to their normal state; in the other, the favourable results appear unexpectedly, at times suddenly, with more vivid reaction and severer symptoms, or occasional aggravation of the original chronic complaints, like fever exacerbation, augmented secretions and excretions, as diarrhœa, profuse perspiration, more or less considerable deposits in the urine or in the joints, accompanied by pains of a milder or severer character, but contemporaneously with decrease of all the symptoms of the fundamental or original disease.

These frequent occurrences are facts in the experience of medical men, and may add to the hope, comfort, and calmness of patients, who, in their hypochondriac humours and anxieties, sometimes despair of ever being restored to health.

CLASS II.—EXTERNAL REMEDIES OF MARIENBAD.

1. *The Ferruginous-Mud-Baths of Marienbad.*—These are the most important baths of Marienbad used for medical purposes. When Dr Heidler, in 1821, first recommended mud-baths and mud-poultices, the mud was taken from the site of the present back yard to the old bath-house.

With the increasing demand a larger field was found called the “Stænkerhaue,” lying on the north-east of Marienbad, at half an hour’s distance in the “Rojau” district, and containing extensive mud-beds, besides several mineral springs, and very strong exhalations of carbonic acid and sulphuretted hydrogen. There is no doubt that the origin of these deep layers of moor-mud has been some chemical alteration in decaying vegetation, as proved by the discovery of enormous knots of roots, and other remnants of mighty logs and trees, which are undeniable signs of the pre-existence of forests on the tops of equally ancient and rich woodlands.

The mud provided by these deep marsh-fields is called the “old mud.” It consists of a wet, soapy, smeary substance, of a blackish-brown colour, of a particular bituminous, resinous, slightly sulphurous odour, astringent, bitter taste, and when dry, of light-grey colour. Sulphur has been traced in its layers in veins of gravel and stones, or as *coverings* of perished and rotten tree-stems and branches. This mud is very rich in organic substances and humus acid, with less sulphate of iron, sulphuric acid, and organic matter than a third mud-field found near Marienbad. This

old mud belongs, according to its chemical properties, to the coal, sulphur, and mineral moors, and it was exclusively employed till 1854. But in the preceding year, 1853, the third mud-field was discovered, somewhat to the south of Prince Metternich's zoological gardens, and this belongs to the best saline-ferruginous bog-muds ever yet discovered; and, according to Prof. Dr Lehman, of Jena, excels, in its great amount of iron, all ferruginous marshes whose chemical analyses are known. This new field has a surface of 16,000 square yards at the foot of the west cliff of the Darnbergmountains, and is crossed and surrounded by numerous mineral brooks containing carbonic acid and carbonate of protoxide of iron, besides being impregnated with the powerful gas exhalations of carbonic acid and sulphuretted hydrogen.

The new mud, when in its wet state, immediately after being dug up, shows a yellowish-brown colour, which, on contact with the outer air, turns to a deep black, having a marshy smell, and a slightly inky taste, forming a soft, loose mass, composed partly of vegetable remains, roots, branches, &c., partly of humus matter and iron pyrites, sometimes pieces of iron ochre, &c.

If the mud is sufficiently long exposed to the influence of the air, sunshine, and meteoric waters (containing black iron), then the process of oxidisation takes place almost throughout, and on the surface a slight white covering is noticed, owing to the mud and mineral salts formed; but the most important change induced by this process of oxidisation consists in the solubility of organic substances which, previous to these influences and changes, have been insoluble

mineral and organic matter. Thus, also, volatile organic acids are developed. The bisulphuret of iron is changed more or less completely into soluble sulphate of protoxide of iron, because the pyrites rises in temperature and absorbs oxygen, which converts its iron into protoxide of the metal, and each of its equivalents of sulphur into sulphuric acid. The one of these combines with the oxide of iron, changing it into sulphate, FeO, SO_3 .

I do not consider here the changes of the alumina which are contained so largely in this mud, although its sulphates are still more soluble. Amongst the organic acids we find, especially in this mud, formic acid and acetic acid. The more complete the oxidisation of the mud, the greater the quantity of formed soluble portions, which are physiologically and therapeutically important; so that it is essential to dry the mud as long as possible on the meadow. The first analysis of this mud is ascribed to Eggert, in Eisleben, 1853, who found in 100 parts of the mud 29.39 per cent. of sulphate of protoxide of iron, and 14.11 per cent. sulphuric acid,—a result which confirms Professor Lehman's analysis. According to others, Professor Dr Ragsky, at that time President of the Imperial Geological Institution of Vienna, is considered to have first analysed this mud; but Professor Lehman has shown that the organic acids, as well as the amount of the sulphate of protoxide of iron in this mud, can be raised by the oxidation process to ten times its soluble parts. The amount of iron found in it is even larger than that of the famous mud of Franzensbad. The great therapeutical effects of Marienbad's mud-baths may be

To the former belong: 1. Its tough, fatty, and smeary consistency, like an emollient poultice.

2. Its specific gravity, which increases the skin action, and indirectly influences the deeper lying organs.

3. Its development of gases which give it the properties of a gas and vapour-bath.

4. Its retention of warmth, which it keeps the longer on account of being a bad conductor of heat.

The chemical properties of the mud must be expected to answer as well in a common water-bath if the same ingredients are present, unless the absorption through the skin of all chemical substances soluble in water is denied; but apart from all theories, experience during each season affirms such chemical effects.

The physiological effects noticed when one enters a mud-bath containing six cubic feet of mud are, according to Dr Kisch's experiments on himself and his patients—

(1.) A sensation of excitement, warmth through the whole body, especially in the face, oppression in breathing, and palpitation in those not accustomed to mud-baths, which symptoms cease after about ten minutes, leaving merely a red face and a feeling of heat at the vertex of the head; from the buttock and scrotum extends a vivid burning sensation up the extremities and back, with more or less tickling in various places.

(2.) The first effect upon the pulse is an increase of from 10 to 12 feet per minute (in a novice of 16 per minute). During the remainder of the bath, it is true, this rate diminishes, but always remains from four to eight beats higher than usual; two hours after

the bath, it is again regular. The number of respirations is also raised generally from four to six breaths; in the beginning still higher, but half an hour after normal again. The more consistent the mud is the clearer these effects.

(3.) The bodily heat measured in the armpit increased during a bath of half an hour by $1^{\circ}.5'$ to $3^{\circ}.5'$ C. On bathing-days the temperature of the body in the morning and evening has been greater by $0^{\circ}.5'$ C. to $1^{\circ}.3'$ C. than usual.

(4.) The perspiration was more active immediately after the bath. The diuresis did not appear promoted after every water-bath, but more particularly after every gas-bath. The volume of urine has not been found increased in twenty-four hours, although, it is true, it appeared somewhat smaller than on the days on which a common water-bath or a carbonic-acid bath was taken.

(5.) The urates excreted in the urine were augmented by the mud-bath; the phosphates, however, diminished.

(6.) The congestion of the head and the hyperæmia produced in very plethoric persons, as well as attacks of fainting or bleeding from the nose, are consequences of disturbance in the nerves and circulation, and the discharge appeared greatly increased when the baths were taken on the approach of menstruation.

Therefore the mud-baths are indicated—

1. In neurosis dependent upon anæmia or sexual derangements of ladies, or upon spinal irritation; and in neuralgia of one or more nerves and their branches, when free from inflammation.

2. In paralysis of rheumatic and arthritic origin,

especially if caused by exudation on the periphery of the nerves, where it is intended to promote re-sorption and to restore interrupted innervation, as in anæmic ladies, after difficult confinement; puerperal diseases, especially when an abscess remained in the pelvis; in hysteric paralysis, and that caused by cold in the lower extremities, or after sudden suppression of the catamenia in weak persons. All pressure on the nerves from rheumatic and gouty deposits is relieved by these baths. In paralysis from apoplexy they also appear useful, but great precaution is necessary in cases inclined to congestion.

3. In rheumatism of the muscles and joints (chronic) when increased action of the skin is required.

4. In gout, because the mud-baths produce absorption of all swellings and local deposits around and within the joints, so that contractions and pseudo-anchylosis disappear, and there is increased change of matter, which promotes healthy nutrition.

5. In sexual derangements of females when accompanied by anæmia or chlorosis, as in metritis, amenorrhœa, and chronic catarrh of the vaginal and uterine mucous membranes.

6. Pollutions, spermatorrhœa, and impotence in consequence of loss of blood and flesh from exhausting diseases; extreme mental and bodily fatigue, as long as there are no organic alterations within the spinal marrow.

7. In abdominal complaints caused by abdominal obstruction, piles, and, moreover, by very frequent and debilitating hæmorrhages from piles, by swelling of the liver in consequence of hyperæmia, and infiltration of the lymphatic glands in scrofula, &c.

The temperature and the determination of the density of the mud to be used for these baths is of great moment. The mud for the bath is ordered by the cubic foot.

From these effects obtained by the mud-baths, I am inclined to suppose that magneto-electricity may operate in these baths; and my ideas seem correct in this respect, since I hear from reliable sources in Marienbad that a declination has been observed in the magnetic needle when the mud was brought near it. I declare I merely supposed the presence of magneto-electric currents in the mud by deduction from analogous experience and effects, which I constantly and more regularly obtained by the continued use of magneto-electric baths when the patient is isolated in a marble, stone, or slate bath, with his hands also under the water. Farther observations and experiments are very desirable with regard to this magneto-electric property of the mud. They should be made on it in all its states, whether wet, dry, warm, or cold. I shall be obliged to my colleagues resident in Marienbad for any communication on this subject, not doubting but that the presence of such properties will confer upon Marienbad great advantage in the treatment of many diseases which can be influenced by magneto-electricity through the use of baths.

2. THE GAS-BATHS.

There are, issuing from the ground, in various spots of the Marienbad territory, moffetti, which proceed from fissures of the primitive rock. They consist of carbonic acid gas, mixed here and there with such

a minute quantity of sulphuretted hydrogen that it could scarcely be traced. This permanent and abundant carbonic gas evolution is in many places collected by means of large wooden funnels closed hermetically, standing immediately over these fissures.

The gas is conducted by an ingenious contrivance into the wooden gas-tubes, for the use of the gas-baths, which are filled to the brim.

This gas contains, in a thousand cubic centimetres—

	Cubic Centimetres.
Carbonic acid gas,	990.0
Nitrogen,	7.4
Oxygen,	2.6
Sulphuretted hydrogen,	traces
	<hr/>
	1000.00

The gas was used also in the form of local douches for the ear and eye—a proceeding which, however, is at this time quite abandoned. Dr Kisch found that these gas-baths cause all over the body a varying sensation of warmth and pricking, which is more decidedly apparent in the genitals and in diseased parts. If the foot is held directly over the outlet of the conducting pipe, a sensation of cold is noticed; pricking increases, chronic pains are soothed, and sensitive persons become gay and exhilarated.

The rate of the pulse diminishes during the first quarter of an hour in the bath by four to six beats per minute; but in twenty-five minutes it becomes normal, and even quickens, but quiet rest upon the sofa reduces it again. The respiration remains more or less normal; but if the duration of the bath be prolonged over an hour, the pulsations increase in

frequency; quick respiration and congestion towards the head, feeling of pressure and weight in it, anxiety, and perspiration on forehead and temples occur. The bodily temperature, however, is not sensibly altered.

The skin, however, becomes far more sensitive, red, and improved in its diaphoretic action.

Diuresis appears increased through these baths; and during the stay in the tub very soon a desire to make water is noticed, and the amount of urine within the twenty-four hours has been found augmented. Menstrual bleeding is anticipated during the use of these baths by two to five days, and becomes more abundant.

In the recapitulation of this we see that the physiological action of the carbonic acid gas bath consists in an increased congestion of the capillary system, irritation of sensitive and motor nerve branches, and (but after a longer duration) in excited heart's action, cerebral congestion, increased respiration, and derangement of the general feeling.

They are useful against the following diseases:—

1. Derangements of the whole nervous system without special affections, as hysteria and hypochondria.

2. Neuralgia of different kinds, hyperæsthesia, anæsthesia without anatomical changes.

3. Peripheric paralysis after exhausting disease.

4. Skin diseases which require an augmented action of the skin, like anhydrosis, friability of the skin, and atonic ulcers with a low circulation.

5. Rheumatism in the hip and thighs, and many sexual complaints, as nervous dysmenorrhœa, amenorrhœa, hysteralgia; sometimes also in impotence, sterility, incontinence of urine, and disturbance of the senses of hearing and sight.

In the bath the patient sits half dressed on a wooden chair, his head only out of the tub. These baths, however, will soon be completely displaced by the more advantageous mud-baths.

3. THE MARIENQUELL-BÆDER (MARIEN SPRING BATHS).

The Marien Spring, at the back of the *old* bath-house, affords, by its extraordinary abundance of carbonic acid, an interesting and exciting view of continually rising and bursting gas-bubbles, and of various experiments with the carbonic acid layer on the surface of the water, which the attendant superintends to the amusement and attraction of bystanders. Coloured soap-bubbles float upon this layer of gas at an elevation of two feet; bright-burning tapers extinguish beneath its surface, &c. The spring yields in twenty-four hours 2580 cubic feet of gas. The Marien Spring, the waters of which are only used for bathing purposes and its vapour for the heating and wetting of the mud-baths, is poor in solid constituents, and has but a temperature of $9^{\circ}.5 \text{ R.} = 49^{\circ} \text{ Fahr.}$

It contains in 1 pound = 16 fluid ounces—

	Grains.		Grains.
Sulphate of soda, . . .	.354	Total of solids, . . .	1.036
Chloride of soda, . . .	.048	Free and loosely-com- } bined carbonic acid, . . }	9.217
Carbonate of lime, . . .	.303		-----
Carbonate of magnesia, . . .	.040	Total of all portions,	10.353
Carbonate of protoxide of } iron, }	.027		
Silicic acid, . . . . .	.189		
Soluble organic matter, . . .	.075		

Total of solids,	1.036		

The spring is covered over with an elegant pavilion, and has an enclosure to prevent accidents through the carbonic acid. It is situated S.E. of Marienbad.

The effects of these Marien Spring baths depend particularly on their temperature when employed. At a temperature of from 26° to 27° R. = 90° to 93° Fahr., most patients feel more perceptible warmth than in any ordinary water-bath of the same temperature, especially in the diseased parts of the body.

These baths stimulate the peripheral circulation, and thus withdraw superabundant blood from internal organs, and are thus valuable in the treatment of abdominal complaints during the internal use of the Kreuz and Ferdinandsbrunnen.

The augmented change of matter, and the elimination of diseased products in the blood, are two more valuable results of their influence. Nervous persons with pains and spasms become tranquillised, their pulse softer and more regular; obstructing cramps are removed, and the action of the intestines and kidneys is promoted. In old rheumatic affections the pains first exacerbate.

In gout the deposits soon disappear, and eruptions on the skin are augmented at the commencement of the course, even developing into wounds and ulcers, which, unless they are extreme, are speedily healed.

Cases of inflammation are inadmissible.

On account of their local effects, these baths may be used with benefit for—

1. Diseases of the skin, eczema, prurigo, lichen, and psoriasis.

2. Rheumatism and gout with exsudations in skin, cellular tissue, periosteum and bone.

3. Neuralgia and general or local hyperæsthesia.

The warm douche is useful as a local irritation against paralysis and deposits.

4. THE FERRUGINOUS BATHS.

It is the Ambrosiusbrunnen and Carolinenquelle, which afford these baths through their chalybeate waters. Both these springs occupy the most prominent position in the watering-place, along the Kreuzbrunnen Promenade.

The Ambrosiusbrunnen is close to the new bath-house, and is sheltered from the influence of the weather, &c., by a structure like a Gothic temple. The Carolinenquelle is connected with the tank of the Ferdinandsbrunnen waters, which have been led up by means of the aqueduct before mentioned, which is also used for baths, and provides nineteen bath cabinets in the new bath-house. These chalybeate baths rival the Louisen baths of Franzensbad, or those in Schwalbach, if they do not supersede them in their exciting effect.

The physiological effects of these baths are tonic, similar to those derived from the internal use of the waters, and therefore they ought to accompany the internal chalybeate treatment. They strengthen all the vital functions, and correct the inactivity of the skin. They accelerate the circulation of the blood in a greater degree than the Marien Spring baths, and are usually employed at about one degree (Réaumur) lower. These good effects are most strikingly shown in cases of debility of the muscular system in scrofulous and anæmic children.

Of the use of the douches, shower, and vapour baths I have already spoken, and they are all well known generally.

5. THE PINE-LEAF BATHS

are only a later addition to the curative remedies of Marienbad. They have a certain beneficial effect on diseases where the skin has to be energetically stimulated by the temperature of the water; in chronic rheumatism, therefore, they are very valuable and efficient. Their effect is due principally to their amount of an essential oil resembling oil of turpentine, some resin and organic acids, especially formic acid, which is also contained in these baths. According to the recent analysis of Prof. Kletzinsky of Vienna, their constituents are—

	Per Cent.
Water,	46.42
Glycerine (added),	15.12
Pectic acid and gum,	13.15
Glycosen,	4.05 ; ashes, 2.50 per cent.
Balsam (resins and ethereal oil),	6.32 ; nitrogen, 0.82 „
Malic acid,	0.25 ; polarisation (to the left), 15 deg.
Succinic acid,	0.55 ; odour, balsamic.
Formic acid,	0.36 ; colour, green.
Gallic acid,	0.25 ; consistency, thick fluid.
Tannin,	2.08
Chlorophyl (wax), etc.,	5.15
Albuminoid substances,	0.74
Bitter substances, } and losses {	0.27
Extractive mater, }	2.13

There is no doubt that the aromatic ethereal fir-vapour may be inhaled with great advantage in diseases of the throat and chest, because it stimulates the action of these mucous membranes.

HISTORY AND DEVELOPMENT OF
MARIENBAD.

Although Marienbad is the youngest of the Bohemian watering-places which deservedly enjoys a world-wide reputation, and although universal appreciation of its efficient curative media does not spring from a remote antiquity, yet it is much older than contemporary Bohemian authors, such as Thoelde, Merian, M. P. Stransky, Czechura, Balbin, and others, mention.

Ancient chronicles aver that Dr Hornick of Eger and Dr Raudemius were the first who used the waters of these springs as medicines. The former prescribed them in the year 1601 for Dr Prudentius, the counsellor of Emperor Rudolph II. Abbot Raimund Wilfert I. drank in 1663 the saline waters of the Kreuzbrunnen by the advice of Dr Dueler of Karlsbad.

At the beginning of the eighteenth century the Abbot of Tepl, Barmund Wilfert II., zealously took up the welfare of the mineral spring of Auschowitz, directed by Dr Curtius, the physician of the abbey. The spring was more comfortably fitted up, and visitors began to flock in from the neighbouring countries. In 1710 the abbot had erected the Castle of Hammerhof for the accommodation of visitors, and houses in the very village of Auschowitz were taken by them for their residences.

The waters were first exported in casks, and Abbot Eugen Titel of Plass obtained very favourable results by bathing in the Marien Spring waters.

Goethe, who visited Marienbad as a patient in the

year 1822, on Hufeland's advice, describes thus the busy life of this small place in a letter to his friend Zelter: "I visited Marienbad, a new and important establishment under the Abbey of Tepl's dependence. The arrangements of the place are pleasant. In all such arrangements and plans there are many inconveniences, but here they know how to interfere at once energetically. The architect and the gardener understand their business, and are used to depend on their brains; the latter, it is clear, possesses imagination and practical sense, not minding how the place looks now, but how it should look; levelling and filling-in do not impede him. I appeared to be in the solitudes of North America, where forests are cut down in order to erect within three years a town. The pine is felled and used as timber; the shattered granite-block gives material for a wall when jointed with bricks yet warm. The painter, moulder, and plasterer, from Prague and other places, work steadily and well, living in buildings taken in accord; and thus all is advancing rapidly to create surprise."

The fancy gardener, Skalnick, created gardens and parks, a magnificent walk between the Kreuzbrunnen and Carolinenbrunnen, the handsome bath-temple and the colonnades, the shop-building, the curespital, the interimtheatre, the new cursaal, and other buildings intended to ornament the place. The surprising cure of Dr Struve, effected through the use of the carbonic acid gas-baths of the Marien Spring, gave occasion to the erection of a separate establishment, fitted up with douche and Russian vapour baths. The introduction of the chalybeate mud-baths in the year 1822 was of the highest importance to

give Marienbad a rank amongst all the Bohemian watering-places; and in 1827 a separate building—"the mud-bath house"—was devoted to the use of the ferruginous carbonic acid gas baths. In the year 1818, the place had only sixteen dwelling-houses; but it was raised by the Government to the rank of a "public watering-place," with all the special rights and privileges. Then the late Dr Heidler followed Dr Nehr as the appointed physician-in-chief of the watering-place, which recognises his lasting and meritorious services.

The number of mineral springs was again increased in 1829 by the enclosure, fittings, and the analysis of the Waldquelle, connected with the watering-place by pretty footpaths and drives. The distance of this spring from the Kreuzbrunnen is traversed by a ten minutes' walk. There are three ways to the spring: one from the Kreuzbrunnen, at the back of the Stadt Leipsic Hotel, in the shadow of a magnificent abbey; the second, to the right by an ascending path to Frederich-Wilhelmshöhe; and the third, starting from Franz-Joseph's Square and the Theatergasse, through the forest valley. The dark summer forest overshadows the fresh green meadows which border the spring, whilst thickly-planted, well-grown avenues offer a refreshing shade, and an elegant newly-erected temple canopies the spring.

The Abbot Dr Adolph Kopmann (1828), besides urging improvements in the sanatory establishments, took a lively interest in the planning and building of handsome streets and houses, like the Tepler House and the Exportation Warehouse and Office.

He erected a cross on the Hamelika Mountain in

thankful remembrance of the miraculous preservation of Marienbad from cholera in 1834, when this epidemic raged frightfully everywhere.

His successor, the Abbot P. Melchior Mahr (1836), displayed no less zeal in his anxiety for the prosperity of Marienbad.

During his administration were erected the large bath-house, the handsome conversation-hall, and a reading-room adjoining.

Canon Marian Heinl, when elected abbot in 1843, proved himself worthy of his predecessors by the essential sacrifices he made to secure the success and progress of Marienbad.

He built, in 1844, a magnificent Catholic church, his everlasting monument, not neglecting, however, to pay great attention to the formation, due to the advancing spirit of the age, of proper sanitary regulations and methods.

No wonder, therefore, that under these circumstances Marienbad attained the rank of a world-renowned watering-place, when its efforts were seconded by the munificence of the brotherhood of the Abbey of Tepl, the solicitous care and sympathy of the organs of his Imperial and Royal Majesty's Government, and the stirring scientific and literary activity which the physicians displayed, headed by the chief-physician, Charles Joseph Heidler. Consideration for his health, impaired by the arduous labours of a large practice, compelled this distinguished and benevolent physician to retire into private life in the very zenith of his fame, blessed by the respectful admiration and favourable recollection of all who knew him. He was raised by the Emperor

Francis Joseph I. to the rank of the Imperial Royal Austrian hereditary nobility, with the honours and title of "Noble von Heilborn."

My own countrymen (Poles) erected a monument to him on the lawn before the new bathing-house in Marienbad, in thankful acknowledgment of his great and memorable services. It consists of a quadrilateral obelisk of white granite twenty feet in height, and bearing the following inscription in Latin: "Carolo Jos. Heidler, Nobili de Heilborn, medico, virtutis aquarum loci exploratori et nuncio, ad recuperandam salutem, inde ab annis quadraginta innumeris duci humanissimo, grati Poloni. 1858."

The building of a Lutheran church was completed in 1857 by the charitable contributions of the visitors, and the powerful patronage of his Majesty the late King of Prussia, Frederick William IV., brother of his Imperial Majesty William I., Emperor of Germany. A public place of worship and a hospital for poor sick Israelites, requiring the curative means of Marienbad, were erected in 1861.

The Wiesenquelle and the Rudolfsquelle deserve special notice. They are separated one from another only by a few steps. The Wiesenquelle belongs to a peasant of Auschowitz, and is neither roofed over nor enclosed. The Rudolfsquelle is covered by a temple, and, like all the other springs, the property of the Abbey of Tepl. The new Rudolfsquelle was discovered in the year 1866, and was honoured with the name of Rudolfsquelle after his Imperial Highness the Crown Prince Rudolf.

The present ruler of the abbey, the Right Rev. Prelate Maximilian Liebsch, in assuming the duties of

his high dignity, gained by the affectionate thankfulness of Marienbad's inhabitants, set to work in right earnest to promote Marienbad's greatness.

The projected aqueduct for bringing the water of the Ferdinandsbrunnen to Marienbad was constructed by his influence. The abbé's great qualities will not fail to secure every improvement for Marienbad in accordance with the spirit of the age, and the requirements and claims of science and comfort, in order to promote the pilgrimage of still larger numbers of sufferers to Esculapius's natural temple in Marienbad. However, we must recollect that Marienbad's rank is secured, not by incessantly-changing fancies and fashions, nor by empty puffing—but simply by the true significance and efficiency of its healing media.

Now, I have still to add that the old bath-house contains the baths supplied from the Marien Spring, the mineral mud-baths, and, in a separate building, the carbonic acid gas baths, with the Russian vapour-bath.

When the first bath-house was built in the year 1810, it contained only sixteen bathrooms, which increased in due course of time to the present number of eighty-two mineral-water bathrooms, thirty-nine mud-bathrooms, and in the gas-bath establishment of four gas-bathrooms. The bathrooms are roomy and conveniently fitted up. Each of them contains, besides the tin bath tub or basin, a sofa, a table, a looking-glass, and clothes-stand. A bell is placed close to the bath-tub, within the reach of the bather. There is no lack of foot-rugs, bathing-sheets, and towels. The mud-bath tubs are wooden.

The Marien Spring bath waters are warmed by hot, fresh water. The bath-tubs are filled from the bottom,

in order to avoid dripping from the watercocks. The new mud-baths are, as I mentioned, provided with the mud of the new mud-fields, which are adjacent to the watering-place, and facilitate the necessary supervision over digging and the proper sun-drying of the mud on the slope of the hills. Their proximity makes them frequently visited.

The mud-bath tubs, running on wheels, are pushed into the bathing-room direct from the yard, each tub being marked with a distinct number to prevent the re-use of the same mud by a second person. The cleansing after the mud-bath takes place in wooden tubs provided with hot and cold water pipes, and a small wooden water-can. The mud itself passes through the following operations: After being properly cleansed from all impurities and coarse elements, it is exposed to dry in the open air, then put into large vats elevated on a hollow stand in the yard of the old bath-house, and then reduced to a pulp with the mineral waters and heated by steam. The bath-tub, running on wheels, is pushed under the vat and filled through an opening in the bottom. The proper admixture of dry mud, &c., is then made to bring it to the temperature and consistency prescribed by the physician.

Each mud-bath tub is emptied immediately after use. The new bath-house, or Neues Badehaus, contains the chalybeate-baths, supplied by the ferruginous waters of the Ambrosiusbrunnen and the Carolinenquelle; and, after the last considerable enlargement, has now forty-two bathrooms. The arrangements, generally speaking, are the same as those of the Marienquelle.

The heating, however, of the mineral waters employed is accomplished by the direct admission of steam at a considerable pressure.

This method possesses two advantages—rapidity, and the necessity of only adding a very small amount of fresh water. Such a bath incessantly foams and froths, and the skin of the bather is covered with small gas-bubbles. In several of the bathrooms are contrivances for all varieties of the douche-bath, particularly for the head-douche. An addition of bran and pine-leaf extract is also made when desired. Two separate rooms afford opportunity for steam-baths, of which about six persons may avail themselves at a time.

The staff of the establishment consist of a “bade-meister,” a “maschinenmeister,” and stokers. The preparation of the baths and attendance is entrusted to bath-maids, each of whom carries a correct thermometer.

The resident physicians of Marienbad, according to seniority, are—Dr Joseph Frankl; Dr Leopold Herzig, who speaks English; Dr Anton Schneider, Stadt Physicus;* Dr S. Lucka, Dr Albert Wolfner, Dr Jos. David, Dr Aug. Herzig, Dr E. Kisch, Dr S. Porges, Dr Emil Kratzman, Dr Carl Schindler; Dr Adolph Ott, who speaks English; Dr S. von Basch, Dr Franz Schmidt, Dr Frederick Steiner, Dr Moritz Bastyr.

* The Stadt Physicus is elected by the Commune. His duties are to survey all springs and baths, to act as sanitary officer and public vaccinator, to certify deaths, and inspect dead bodies, &c.

BATH REGULATIONS FOR THE BATH-HOUSES AT
MARIENBAD.

1. These establishments are under the direct management of the Mineral-Spring Inspector, appointed by the Abbey of Tepl.

2. The bath-hours are fixed according to the rules in the order-book.

3. For the carrying out of this rule each bather must be provided with a card indicating the time and his number; and the time-distribution table is also exhibited in the office.

4. The order must be shown to the bath-maid.

5. The order, counter-order, and payment for baths are only valid when received by the paymaster of the establishment.

6. The hereunto-annexed tariff shows the prices of the baths, as well as of the use of bathing-linen.

7. Every bath ordered must be paid for unless it be countermanded before 7 o'clock A.M. If there is to be a postponement, the ordering parties will please to give notice of it the day before.

8. An hour's time is allowed to each bather for the use of a mineral-water, a Moor, and a douche bath, which begins and ends with the stroke of the clock. After three-quarters of the hour have passed, the bather is admonished by the clock of the approaching time for his leaving, in order that the next bather may not be inconvenienced by delay. The bathers are earnestly requested to be punctual in their hours, since after a quarter of an hour's non-appearance the bath may be disposed of to another.

9. The bathroom is ventilated, the bath-tub emptied and cleaned, after every mineral bath.

10. Every bather is at liberty to be present at the preparation of his bath, to convince himself of the cleanliness and the temperature of the bath.

11. As the greatest cleanliness and implicit obedience to medical instructions are duties stringently exacted from the bath-attendants, so also is cleanliness in the bathroom expected from the bather.

12. Smoking and the use of strong embrocations in the bathrooms are to be avoided.

13. In every bathroom there is a bell, which must be rung once for common requirements, and twice in cases of fits or other serious paroxysms.

14. There are always at hand in the bathrooms the necessary restoratives for cases of sudden illness.

15. *The Bademeister* is responsible for any irregularity or neglect; and the public will oblige by informing the Inspector of Medical Springs of every cause of dissatisfaction.

OFFICIAL BOARDS, MAGISTRACIES, AND PUBLIC INSTITUTIONS.

Marienbad remained allotted in the year 1849 to the patrimonial jurisdiction of the canonical Præmostratense foundation of Tepl. According to the present political organisation, it belongs to the Eger Circle, and stands under the jurisdiction of the Imperial Royal District-Court of Tepl. The care and management of municipal affairs are entrusted to a mayor, three communal councillors, and a communal committee.

During the bathing season a *Cure-Commission*, main-

taining public order, officiates for the protection of the *cure-guests* and the promotion of the interests of the spa. The Imperial Royal Principal of the District of Tepl, the Mayor of Marienbad, and the Attorney of the foundation of the Abbey of Tepl are the members of this *Cure-Commission*.

The following rules have been issued from the Lieutenant-Governor's office by virtue of an ordinance of the High Imperial Royal Ministry of State (11th day of March 1866), with regard to the management of the police concerns at the spa, viz. :—

1. The keeping of the records of the *cure-guests*, as well as the compilation and arrangement of the *cure-list*, is allotted to the Mayor in the district committed to him under the control of the Imperial Royal District Principal.

2. The Mayor, in his capacity of a member of the *Cure-Commission*, determines the charges for the *cure* and *music*, &c. An appeal, however, to the Imperial Royal District Principal is allowed.

3. The Mayor is, moreover, supreme, but always in his delegated capacity only.

4. To grant permission for concerts, exhibitions, shows, and other performances, upon a short notice forwarded to the District Principal's office, in urgent cases, and when the exhibitors or performers are provided with the required concessions. He has authority to control the proper theatre regulations, and more particularly the conduct of every performance. The supervision of the press and society meetings belongs to the Imperial Royal District Principal himself.

The duties of the Mayor include, moreover—

5. In his delegated character, the adjustment in a conciliatory manner of all disputes, on matters of rent, tenancy, &c., between the cure-guests and the local inhabitants, as well as disputes concerning cab-hire.

There is also an officer sent to Marienbad weekly from the Imperial Royal District-Court of Tepl to settle all disputes which may have arisen, and have not been decided by the Mayor. There is a body of ten park-keepers, and a picket of gendarmes to look after the public safety in the forest and environs.

The administration of the estate of Marienbad is entrusted by the owners to an inspector-in-chief of the mineral springs (at present Father Ludolf Staab, canon and attorney of the abbey). Inferior in rank to him are a spring-manager, spring-controller, and two bath-masters. They superintend the bottling and exportation of the mineral waters, the inspection of all bath establishments, the maintenance of public buildings, and the drawing up of rules and regulations for the proper administration of the estate. These latter it is their duty to see strictly enforced.

The *Mayor's office* is in the *Tepler Haus*, the entrance being in Franz-Joseph Square. The *Imperial Royal Post-Office* is in the hotel "Neptune," Kaiser Strasse; and during the season the office hours are from 8 A.M. to 7 P.M. The *Imperial Royal Telegraph-Office* is at the "Kœnig von Baden," in the Karlsbader Strasse. There is a chemist's shop "under the *Adler*," in Church Square.

The *Catholic Church*, completed in 1848, is a noble structure in the Byzantine style. The crutches left as mementoes of the curative power of Marienbad's waters have been placed in the church.

The *Lutheran Church* is in Franz-Joseph Square. It is built in a plain but tasteful style.

The *Synagogue* stands in a square at the back of the house "Zum Gruenen Kreuze," on the Kirchen Platz. Its foundation-stone, as well as that of the hospital connected with it, was laid on 4th July 1860.

The hospital is intended for poor Israelitic patients, and is entirely supported by the voluntary contributions of Hebrew cure-guests. It contains 12 beds, and relieves yearly about 50 poor Israelites.

The *Algemeine Curespital* is in the Karlsbader Strasse. It admits all indigent patients who may require water-treatment, but they must produce certificates of their indigence from their local or clerical authorities. There are at present in this spital 34 beds for in-patients. The out-patients, though, may have assistance from the "Donation Fund." Their number exceeds 100 in the course of a year. Each season several assemblies and concerts take place, the proceeds of which are devoted to the use of the Curespital.

There are also other charitable institutions in Marienbad, and among them two foundations for indigent Saxons, admission being granted by the chief managing board of the foundation at Dresden. The *Gisela* Foundation has an endowment of 12,000 florins.

The superintendence of the hospital fund belongs to the Government authorities, the administration being entrusted to the Inspector of Springs, who is appointed by the Abbot of Tepl. The Bath Inspector can order for any needy persons residing in Marienbad the supply of baths and waters upon a physician's prescription.

APPENDIX.

LEGAL NOTES, ON LETTING AND HIRING, FOR LANDLORDS, TENANTS, AND LODGERS.

*According to the latest Decrees of the Municipal Board, from
11th March 1859, referring to the Bohemian Spas.*

THE following may serve as a caution against imposition in hiring or quitting apartments or houses in Marienbad :—

1. Every new-comer or foreigner can hire a dwelling for a definite or an indefinite period.

An agreement, made verbally or in writing, is equally binding on both landlord and tenant.

2. If the apartments be taken for a definite period, as a week, month, &c., and it is understood that tenancy shall positively expire at the end of that period, then no notice to quit is necessary; but should the holding be continued beyond that time by agreement on both sides, under the same or other conditions, this prolongation is to be considered a new contract.

3. Where rent is paid, as is usual, weekly, this circumstance does not influence the contract.

4. During a period definitely agreed upon the landlord cannot raise the tenant's rent.

5. Should apartments be taken for an indefinite period, then it is supposed in cases of doubt, where no special conditions exist, that the visitor has taken the apartments for the usual period—*i.e.*, four weeks—and no increase in the original rent will be allowed during this period. Should the tenant wish to leave at the four weeks' end, or the landlord be desirous of reletting his apartments, a weekly notice to quit must be given; if this has not been done, the agreement holds for a longer indefinite period, and can be broken at any period after a week's notice has been given.

6. If, however, the apartments have been taken by express agreement for weeks or days, in the former case a week's, and in the latter twenty-four hours', notice on either side should be given.

7. When notice is to be given on either side, it dates from the day on which the rent becomes due ; thus, if the notice be given in the middle of the week, it reckons as if it had been given at the end, if the rent be due at the end ; the week consisting of seven days.

8. If apartments be engaged by the week or indefinitely, and notice to quit be given by the tenant immediately on the first day of occupation, the landlord may only claim one week's payment.

9. If a tenant takes apartments for a definite or indefinite period by agreement, and then wishes to quit suddenly, he must pay the rent for the current week, another week's rent for indemnification, and lose all right to occupy the apartments himself, or to underlet them. In cases of daily payment, the indemnification is a day's payment.

10. Every landlord has the right of asking an advance deposit, which must not exceed one week's rent, all claims to which are lost by the tenant if he does not enter into possession within the week. If the landlord has not received any deposit he may let his apartments at the expiration of the week.

11. In hotels and similar public establishments, the visitor may leave any day, at any time, by paying for the day only. If, however, the visitor has agreed with the hotel-keeper for a fixed price, or a definite or indefinite period, the same regulations apply as those for private houses.

12. If the landlord does not observe the terms of the agreement, as in not furnishing necessary accommodation, or if sufficient proof be adduced that the apartments are uncleanly or unhealthy, or if anything be found to exist which is injurious to the tenant (all not being previously known at the time of agreement), then the latter has the right of quitting without notice or indemnification, merely by paying for the time of actual possession.

13. In such a case, also, the tenant must bring evidence of the stipulated conditions of agreement, or of the defects, faults, &c., in the apartments. The same is necessary if a

dispute arise concerning the period of hiring, &c. If no written agreement exist, and no proof of a verbal one, then the registration sheet must be produced in evidence. This sheet contains a column declaring the duration of the visitor's stay, which it is the landlord's duty to see the visitor sign. If the landlord fails to produce this, then the tenant's word is sufficient.

14. No special indemnification can be demanded in furnished apartments for reasonable dilapidations, except—(a.) Something has been seriously damaged or broken. (b.) In severe and protracted disorders, when more than the usual linen has been required, or some portion rendered unfit for farther use.

15. Every cure-visitor is perfectly at liberty to take his coffee, or meals, or his bath, at any establishment he chooses, where such may be obtained. He may also have his linen washed at any place he may think fit. Should any restriction in these matters be placed upon him in his hiring agreement, it will not hold legally, and renders the agreement null and void.

16. The rent does not usually include the service required, as the latter is an item for special agreement. In those spas where there are certain charges for attendance, they must be specified accordingly. It is usually, however, mutually agreed upon, according to the custom of the house.

17. If, however, the payment for attendance is fixed by either landlord or tenant, and paid in one sum with the rent, either monthly or weekly, no claim can be made by the servants for a special *douceur* from the tenant.

By *service* is usually meant the care of rooms, supply of water, or other requirements, except the ironing of dresses, washing, needlework, brushing clothes and boots, or the nursing of patients.

18. Disputes in letting or hiring are referred in the first instance to the Burgomaster or Mayor, who should attempt a pacific settlement; if, however, this appears impossible, he must advise the proper course for the litigants to pursue in the law courts.

On the request of the disputing parties, it is the duty of the Imperial Royal District Office to pronounce judgment.

CURE AND MUSIC-RATES.

I. The *cure-rate* must be paid by every visitor at Marienbad residing longer than eight days at the place. It is divided into two classes.

(a.) For the wealthy parties and their relations proper, 5 florins 25 kreuzers each.

(b.) For the less wealthy, &c., 3 florins 15 kreuzers.

Children under fifteen years, and servants, 52½ kreuzers.

Those who are free from the cure-rate are—

(a.) The Imperial and Royal officers on active and retired service, from the rank of captain downwards.

(b.) The Imperial Royal employés of small income.

(c.) The medical gentlemen with university diploma, and surgeons.

The wives and children of the above-mentioned parties, however, are only exempt from the cure-rate when in company with their husbands and fathers.

Finally—

(d.) Paupers provided with legal certificates of their indigence.

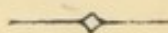
II. The music-rates are to be paid by parties—

(a.) Of the 1st Class.		(b.) Of the 2d Class.	
	Florins.		Florins.
Consisting of one person,	. 4	Consisting of one person,	. 2
„ two persons,	. 5	„ two persons,	3
„ three persons,	. 6	„ three persons,	4
„ four persons,	. 7	„ four persons,	5
„ five and more		„ five and more	
persons,	. 8	persons,	. 6

Those free from cure-rates are subject to these except the before-mentioned Imperial Royal employés. These pay 1 florin each.

Casual exceptions from this rule are to be determined before the Imperial Royal District Commissioner.

TABLE OF CONTENTS.



	PAGE
INTRODUCTION,	v
SITUATION AND DESCRIPTION OF MARIENBAD,	1
THE ENVIRONS,	6
DISTANT EXCURSIONS,	10
HYGIENE—DIET AND REGIMEN,	17
KREUZBRUNNEN AND FERDINANDSBRUNNEN,	43
THEIR CHEMICAL AND PHYSICAL PROPERTIES,	46
1. THE KREUZBRUNNEN, ITS HISTORY, ETC.,	49
2. THE FERDINANDSBRUNNEN,	62
THEIR PHYSIOLOGICAL EFFECTS,	66
GENERAL INDICATIONS FOR THE USE OF THESE WATERS,	99
DISEASES OF THE ORGANS OF DIGESTION, ETC.,	99
DISEASES OF THE NERVOUS SYSTEM,	127
3. CAROLINEN AND AMBROSIUSBRUNNEN,	134
4. THE RUDOLFSQUELLE AND WIESENQUELLE,	138
5. THE WALDQUELLE,	141
6. THE WHEY,	145
7. THE MARIENBAD SALT,	146
DIRECTIONS FOR THE INTERNAL USE OF THESE WATERS,	148
EXTERNAL REMEDIES :—MUD-BATHS, GAS-BATHS, ETC.,	155
HISTORY OF MARIENBAD,	169
BATHS REGULATIONS,	177
OFFICIAL BOARDS, MAGISTRARIES, PUBLIC INSTITUTIONS,	178
APPENDIX : LEGAL NOTES,	182