

The gout and its various manifestations : their treatment at the mineral springs of Royat : with a complete notice of the new French watering place of Auvergne / by C.A. Petit.

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THE GOUT

AND

ITS VARIOUS MANIFESTATIONS

THEIR TREATMENT
AT THE
MINERAL SPRINGS OF ROYAT

WITH A COMPLETE NOTICE
OF THE NEW FRENCH WATERING PLACE OF AUVERGNE

BY C. A. PETIT, M. D. PARIS

CONSULTING PHYSICIAN AT ROYAT

*With author's
Kind regards.
J. Petit*



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CHEMICAL ANALYSIS

SPRINGS	CÉSAR	EUGÉNIE	S ^r MART	S ^r VICTOR
Out-put in 24 hours in litres.....	34,500	1,440,000	25,000	30,000
Temperature (centigrade).....	29°	35° 5	31°	20°
Soda bicarbonate.....	0.392	1,349	0.800	0.888
Potash.....	0.286	0.435	0.170	0.885
Lime.....	0.686	1,000	0.969	1,012
Magnesia.....	0.397	0.677	0.650	0.645
Iron.....	0.025	0.040	0.023	0.056
Soda sulphate.....	0.115	0.185	0.146	0.165
Soda phosphate.....	0.014	0.018	0.002	0.005
Soda arseniate.....	0.001	0.008	0.002	0.006
Sodium chloride.....	0.766	1,729	1.565	1,649
Silica.....	0.167	0.156	0.094	0.095
Lithium chloride.....	0.009	0.037	0.035	0.035
Total Solids.....	2,857	5,623	4,451	5,437
Free carbonic acid.....	1,229	0,377	1,709	1,492

THE GOUT

AND ITS VARIOUS MANIFESTATIONS

Gout, which at the present time brings such a large number of patients to Royat, is a disease affecting the whole constitution. It is in most cases hereditary, but in some, acquired, and is characterized by a painful swelling of the smaller joints, principally those of the feet and hands, and also by widely differing symptomatic appearances.

Gout was well known to the ancients; the physicians of Greece and Rome have treated of it at length. In the last century, Sydenham and Boërhaave published works on this disease which are still recognised as standard works on the subject.

And quite lately physicians of the highest reputation have endeavoured by their writings as well as in their lectures to throw a new light on the much vexed question of the pathology of gout.

Moreover, to the English physicians, Todd, Scudamore, and especially Garrod, are due numerous and carefully written works on gout and on rheumatic gout. And here it will be not out of place to observe that cases of gout are less frequent in France than in Great Britain and the countries of the North. Now, however, the disease seems to be everywhere on the decrease « to such a point », as M. Charcot says, in his valuable clinical lectures, « that it is now scarcely ever met with at Rome and Constantinople, where, nevertheless, it was, in the time of the Cæsars, of such frequent occurrence ».

But there is nothing astonishing in this when one takes into consideration the excessive sensuality and eastern luxury of Greek and Roman civilisation; sensuality and luxury which caused a Latin author to say : « Podagra Bacchi Venerisque filia. » And history itself has given us an instructive picture showing the even and simultaneous spread of disease and demoralization; for while in the time of Hippocrates women were as a rule free from attacks of arthritis, Roman women had lost this precious immunity. The decrease there, in the prevalence of gout is due, we would fain believe, to our advance in morality and in the knowledge of hygiene.

Certainly, in this respect there is a great change in our manners and customs : centuries ago, the suppers of Lucullus became things of the past; those superhuman appetites of the brave men of the middle ages no longer exist. Nor is it the fashion nowadays to assemble, as in the feasts of the Burgesses, « around an entire ox served up on a golden dish ».

Gout, that constitutional malady respecting which fancy has built up so many theories, would appear to be due, as we now know, to an excess of uric acid in the blood. Cruveilhier, Andral and Rayer were the first to take up this notion with enthusiasm; nevertheless it was not until 1848 that Garrod proved to

demonstration the presence in the blood of uric acid, and it was only since that period that physicians admitted the existence of an intimate relation between the alterations in the blood caused by this acid, and the alterations in the human system which are met with in gouty subjects.

As a rule, the gout is ushered in by some disturbance of the stomach or of the bowels, by some special form of numbness, or by spasmodic movements of certain parts of the body. These premonitory symptoms of the coming attack last for several weeks, and sometimes cease suddenly on the very eve of the appearance of the disease itself. Sometimes the attack of gout supervenes after great fatigue, or violent exercise or strong emotion; sometimes the patient is roused up in the middle of his sleep. In the beginning, the attack is confined to small annoying pains in the joints, that is to the less severe gouty pains. But when the disease comes to a more advanced stage, a most excruciating pain is felt in the great toe, or in other parts of the foot, accompanied by shivering and followed by slight fever. Not yet unbearable, the pain increases gradually at the same time as the fever, and is marked by a violent sensation of tearing of the flesh, or burning or excessive cold. The least pressure is intolerable to the sufferer.

This part of the attack lasts about four and twenty hours, and often terminates by a sudden cessation of the pain, the appearance of a healthy perspiration and the return of sleep. There then only remains swelling accompanied by redness and heat of the part affected.

From an analysis of cases made by Scudamore, it would appear that in three out of every four attacks of gout, the great toe is the joint first seized, and once in four at the same time as other joints. But after the first seizure, and until the attack of gout is over, the disease shows itself every evening in a paroxysm resulting from an increase of the pain and fever. Sometimes again the gout attacks both feet at first, or passes from one to the other, and gradually extends to the joints of the hands and even of the larger limbs. It is very seldom, however, that it makes its appearance in these latter joints.

In every case, gout of the joints scarcely goes beyond a simple inflammation, with intense pain, neuralgic, so to say, and accompanied by alternate periods of increase and decrease in severity.

While the attack lasts, the patient has a very small appetite; the urine, which is scanty during the feverish paroxysms, deposits a powdery sediment which contains, almost always, a large quantity of uric acid crystals, very often albumen, and sometimes blood. The swelling of the joint then diminishes rapidly, terminating by a local perspiration and peeling of the skin; the patient usually recovering his health after the attack.

At first these fits of acute gout are of short duration, lasting no more than a fortnight, unless the disease becomes general and spreads to a great number of joints. But the recurrences of these attacks, separated at first by long intervals, even of years, from each other, in time, appear at shorter intervals, returning once or twice in the year in the spring or autumn and lasting for a longer period. In such cases the disease may pass into a chronic state of ill-health.

A gouty diathesis has now become established in the system. Gout has become chronic when pains of the muscles and joints have spread themselves all over the system, when this comes into existence that particular form of articular rheumatism, which is known under the name of rheumatic gout. This, it has been supposed, can be distinguished by its progress with the course of time, by the greater obstinacy with which it remains, further, by its appearing to become localized in the smaller joints, and finally by the pain being confined within smaller limits, making itself felt in a single point, as

it were. Stomach troubles then show themselves in a more marked manner and are more difficult to get rid of; the appetite becomes extremely small; digestion very troublesome; and the urine coming away clear and copious, still very often contains uric acid crystals, and much less frequently crystals of oxalate of lime.

This chronic state of gout lasts thus for months, even for the whole year, except during the great heat of summer when it moderates somewhat. As long as it continues it roves about, accompanied by pain, over most of the joints, from which latter a kind of crackling can be heard; and later on, when the disease has become inveterate, there supervene stiffness of the joints, œdema, swellings of the ligaments and incrustations round the joints which are known under the name of « tophus ».

These last phenomena essentially depend upon the formation of a peculiar substance inseparable from an attack of gout, to which is due the contractions of the muscles and tendons affected, digital deformities, and ankylosis of the joints, on account of the constant deposition of layers of this tephaceous matter in the cavity of the joint and on the surface of the cartilages.

Further, it has been observed that these accumulations of tophus round the joints become the cause of local inflammation resulting in suppuration and wasting of the part, and ulceration of the skin accompanied by the discharge of tephaceous and purulent matter.

With some patients, the gout is confined to these abnormal productions, these accumulations of tophi and this deformity of the joints; only the pains in the joints become worse with a change in the weather, or on the recurrence of the periodical attacks.

In some cases this painful swelling has been seen to disappear. Its place being taken by one of the symptomatic affections of gout. In other cases, however, these affections show themselves in the intervals between and independently of, the attacks of gout proper. These may produce very terrible pain or even serious accidents; suffice to say, however, that in the great majority of cases, these accidents are due to the efforts made to subdue the swelling of the joints, or in like manner are caused by the remedies which have been used to bring the inflammation suddenly to an end.

In cases of rheumatism, no less than in gout, the use of a treatment that renovates the whole system is often imperative, and our success in a certain variety of rheumatism is proof thereof. This, it may be said, is the point of contact between gout and rheumatism. But it is not the only one, notwithstanding the difference between these two diseases.

Now with regard to the treatment of disease by the mineral waters of Royat, the first condition necessary for success is that the disease should have become really chronic, that is to say, that there should be little or no pain, or least of all fever; that all the symptoms indicating a period of acute disease should have been sufficiently overcome, and further that there should be no inflammatory mischief in any part of the system, or at least in any vital organ.

That the waters of Royat are most efficacious in those affections of the joints, which have just been spoken of, is nowadays a subject of doubt to no one. Whether the gout be completely developed or latent, whether the rheumatism be muscular, articular or visceral, the sedative effect of the waters is equally apparent, and their mineral elements they contain, when applied systematically, become the means of effecting a cure. And ever since gouty patients have made their way to Royat, we have only had successful cures to record. And therefore it may be well to cite some cases coming under my own observation to give the reader an opportunity of deciding the question for himself.

M. V..., fifty five years of age, the proprietor of a Paris Hotel, was suffering from acute and chronic gout of the joints, accompanied by old tophus, then almost dissolved by having been treated with lithia. The gout was preceded by rheumatism affecting the joints, frequent occurrences of which had caused enlargement of the bony extremities of certain articulations. The tophus had almost disappeared, but the bony and cartilaginous enlargements still partly remained. Moreover the joints were incrustated with urate of sodium, notwithstanding the great dissolution of the same by artificial means, i. e. preparations of lithia and iodine given for that purpose.

« I should not be astonished », wrote M. V...'s doctor, « if an attack of gout were to supervene after the first few days, treatment at Royat. If that should occur, I am certain that salicylate of sodium given together with tincture of colchicum would produce most happy results; but however that may be, I entertain a strong opinion that the treatment with thermal waters should be interrupted for the shortest possible period ». M. V... is tall, his frame well developed, but of a lymphatic temperament. From the first day, I prescribed baths of thirty minutes duration in the Eugenie spring; during the whole bath very gentle local douche on the smaller joints; as a beverage the water from St Mart spring; at meals, Cæsar spring. After the eighth day, I increased the duration of the bath to one hour, to be followed in his room at the hotel by a methodical kneading and shampooing. At four o'clock in the afternoon, another bath for half an hour, etc. Under this treatment the most marked improvement was felt by M. V... His joints became supple, his appetite perfect, every day he was able to take a long walk, and after three weeks he left Royat without having met with the smallest accident and without having experienced the least complication of disease. M. V... has since come back and spent another season here, his health being all the time excellent.

M. W... of London, whose father had also been subject to gout, fifty years of age, and of a lymphatic temperament, had up to the age of forty five years enjoyed perfect health. At that period he began to experience attacks of gout at rather short intervals, and notwithstanding the most judicious treatment, the disease grew worse and worse, becoming complicated by dyspepsia, extreme anæmia and hemorrhage. He was advised to try the waters of Royat.

The following was the state of the patient on his arrival : general weakness; complete loss of colour in the tissues, but, however, no wasting; slight deformity of the joints of both feet; want of sleep.

I prescribed daily shampooing and kneading from the outset; Royat water every day in half glasses, increasing the number so as to bring the patient to take eight half glasses daily. At the end of some days, there were evident signs of returning health; his appetite and strength increased, and his spirits rose; and the tissues began to assume a much healthier colour. I then prescribed a bath of running water for half an hour daily, still continuing the drinking of Royat water and the shampooing.

At the end of a fortnight, his natural appetite and his sleep had returned. I then increased the duration of the baths to three quarters of an hour, and continued this treatment rigorously for thirty days consecutively, without having any necessity to break it off.

The results of this treatment could not have been more satisfactory, the anæmia completely disappeared and a healthy state of the stomach was re-established; and since that first season at Royat, the attacks of arthritis diminished both in frequency and intensity.

M. W... was able to go back to his business; after a second season, his good

health became firmly established, and now, after three seasons here, it is more than eighteen months since he has had the least attack of gout; although, indeed, the tophi still remain.

Here, then, is a cure which must be set down as perfect and which can only be explained by a peculiar effect of the Royat waters in cases of arthritis. In the case of this patient, I made large use of shampooing, especially on account of the stiffness and enlargement of the joints and the weak condition of the muscles in the neighbourhood thereof.

From this it would appear that shampooing; one of the most ancient remedies known, is one of those which should be most frequently employed in the treatment of certain forms of gout.

For my own part, I must congratulate myself on this method of treating gouty subjects. In the case of chronic stiffness of the joints, when the action of the muscles only comes back with difficulty, this method may be fearlessly employed concurrently with warm douches.

Now, how do kneading and shampooing act?

It is known to all physicians that a systematic shampooing often prevents the development of articular inflammation, for example, in the case of sprains; now in stiffness of the joints which accompanies an attack of gout, the blood has a great tendency to stagnate in the blood-vessels already distended by the inflammation. Therefore it is of the last importance to make the blood circulate, and the more so as when stagnant it inflames the nerve-fibres in the neighbourhood, and nothing is better fitted to bring back a healthy circulation than this practice of shampooing. Furthermore I can assert that this useful process has already been of the greatest services to many of our patients without ever injuring any one of them.

The method of treatment practised at warm springs varies not only at different stages, but also in the case of different forms of gout and rheumatism.

In acute gout, the treatment by the waters must not be commenced either during an attack or while one is pending; but some little time after the attack is over, it may be employed without danger.

However, these pains, and collections of foreign matter and stiffness generally, yield readily to Royat waters employed internally and externally, more especially when there has been no alteration in the fibrous tissues and cartilages, or when the tophus has not become too inveterate.

But when the articular surfaces of the joints have become very much altered, when the joints have become ankylosed to one another, when the tendons of the muscles that move those joints have become contracted and nodular, and the fingers accordingly tend to turn upwards, and their respective joints have become bent in abnormal directions, as in sometimes observed in the case of persons for a long time subject to gout, when gout has brought in its train such disorders as these, even then, sufferers may obtain some benefit from the use of these waters, for example, a little more mobility of the joints. However, in general, patients who are so far advanced in disease as this, ought never to hope to have their condition very much improved. The most that can be promised is, that if such patients follow the treatment strictly and perseveringly, they will succeed in preventing the return of future attacks.

With regard to the accumulations of chalky matter, I have seen some very sensibly diminish in size, and some even completely disappear. As a rule, however, they diminish very slowly, and are very difficult to be completely eradicated; unless indeed during an attack of gout, or on account of a simply local inflammation of which they are often the seat, one or more openings be formed

through which the tophaceous matter which they enclose may be able to escape. And even in this latter case, if nothing be done to assist the escape of this matter, it takes a long time to make its way out, on account of the proliferation of cells in the tissue in which it generally gathers. However, in every case, this much is beyond doubt, that once the patients have submitted themselves to a strict course of the treatment at Royat, and have observed it regularly, no more new tumours will ever appear.

And with respect to this, it is not only by their dissolving power that the lithia waters of Royat act, but also by putting an end to the local congestions which favor the deposit. This latter is then absorbed by the system and eliminated as a foreign body.

It is especially when gout presents more alarming symptoms than those of the mere diathesis, the symptoms, that is to say, of asthenic or chronic gout, where weakness is the chief characteristic, that treatment with the iron waters of Royat is the one to be prescribed; for a medicine purely alkaline, like the waters of Vichy or Karlsbad, would be in such a case, as I conceive, either actually dangerous, or without good effect.

Whatever may be the pathogenic cause of gout, the great variety of its forms and the irregularity of its progress often put one at a loss for the means of diagnosis.

However, with regard to those affections which are looked upon as symptomatic, the physician can easily distinguish between those which really belong to constitutional gout, and those which are merely rheumatic. It must also be well understood, that if gout gives a certain character to the constitution, it by no means follows that all the affections by which gouty subjects may be attacked do in fact depend on and flow from the constitutional disease. And accordingly we ought to give our attention, by a careful study of the cases as they actually arise, to distinguishing readily what in fact and truth are the diseases really attributable to gout.

Patients in whose system there was nothing to cause a suspicion of the presence of arthritis have been treated by me at Royat, and with success, for maladies which were apparently independent of any arthritic origin. Later on, by bringing the facts of the case closer together, I was easily enabled to trace back the progress of constitutional gout, acquired or hereditary, and its different manifestations. I do not think I can do better than refer the reader to the very minute details of the notes of cases published by my colleagues and by myself, the conclusion to be drawn from which is, that Royat is the touchstone of arthritis.

A few years ago, this assertion might be taxed as being singularly bold, but the truth of it is better accepted now that certain therapeutic agents employed for the cure of gout have been found in relatively considerable quantities in the waters of our thermal station.

Since the gout is a constitutional disease, we must act on the whole human economy rather than on the outward manifestations of disease. If by a special regime, and by our knowledge of hygiene, we can succeed in changing the state of the constitution, we shall succeed equally well in making ourselves masters of the symptoms and of the malady itself; and we shall be able successfully to contend against those very serious disorders which often supervene, without risk.

Still it would be a grievous mistake, and I hasten to say so, to judge of the intensity of the gout, and the difficulties attending its cure, by the violence of the pains of which it is the cause, and the alterations it leaves behind it in the system. For the development of these phenomena of pathology very often depend either on the inveteracy of the disease or on the peculiar sensitive nature

of the patient, or further, on the injudicious means which have been employed to alleviate his pain. Therefore the careful physician who from the earliest moment applies a judicious treatment is most agreeably surprised when he sees the disappearance, with the greatest readiness, of affections which seem to be completely beyond the resources of his art.

Of affections connected with arthritis, the chief are properly to be ascribed to nervous inflammation : — neuralgic pains, and notably sciatica and asthma, are those which specially affect old gouty subjects : — the large class of stomach disorders also, among which particularly may be cited those which have their seat in the alimentary canal, such as dyspepsia, pains in the stomach and intestines, and those which have their seat in the urinary passages, as nephritis, strangury and gravel : — also, local paralysis, aphonia, laryngitis and bronchitis, which latter are always so easily affected by a gouty state of body; partial paralysis accompanied by choreiform convulsions, nervous hemiplegia, and more frequently and more particularly skin diseases.

Injuries to the kidneys have occupied the attention of all physicians from Aretæus down to Sydenham; since then Hoffmann and Van Swieten have proved the coexistence of maladies seated in the urinary passages and gout. Later still, Chomel and Civiale gave their special attention to the troubles produced by renal lithiasis, and finally, thanks to researches lately made by Todd, Johnson, Duckworth and Garrod in England, and by Rayer, Castelneau, Charcot, Cornil, etc., in France, we have arrived at a perfect knowledge of the nature of the kidney diseases which occur concurrently with gout.

Urinary affections, then, are frequently met with in gouty subjects, and at a certain stage of gout they become almost the rule; whilst, on the other hand, they are very rare in the different forms of chronic articular rheumatism. The Englishman's « irritable bladder » is nothing else than gout in the bladder. Erasmus wrote thus to a friend of his : « You have nephritis, I have the gout : we have married the two sisters. »

Further, there is a proverb : « Gout produces stone. » The fact is that gravel and stone are both often met with in gouty subjects; however they do not belong exclusively to such subjects. Nevertheless the greater part of the gouty patients who have come under my observation here speak to me as if it were quite a matter of course that they should have the gravel, and I have found the internal use of the Cæsar spring to be a valuable adjunct to their treatment.

No affections connected with gout are more frequently met with than skin diseases attacking the face or other parts of the body, and which obstinately resist purely local treatment, or the old treatment of arsenic internally and sulphur externally.

In fact, these abnormal eruptions sometimes succeed articular gout, and demonstrate the intimate relation that exists between gout and eruptive disease.

The « arthritides » are those varieties of dermatoses classed by the eminent professor of St. Louis near scrofulous, syphilitic and herpetic or serpiginous eruptions.

Year after year a great number of cutaneous affections come under medical observation at Royat : papulæ, acne, pityriasis, psoriasis, and especially dry eczema — all of which are subject to rapid modifications when they depend upon a rheumatic origin. Eczema is undoubtedly the most common affection, as well as the most obstinate; still, of the whole family of skin complaints, it is the one which best bears witness to the curative effect of the treatment at Royat.

Madame L... from B... (Doubs), of sixty years of age, of a strong and hale constitution and a very lymphatic temperament.

Slightly inclined to corpulency and gout, she was attacked some time since by eczema round the ears with a remarkable thickening of the skin, and intertrigo, accompanied by a kind of oozing in the places where the skin lies in contact with itself; the same appearance was noted in the inguinal folds.

This eczema, which appeared already to have pointedly manifested itself from the time she was twenty or five and twenty years old, had completely disappeared during the early portion of her married life; still, however, on the borders of that part of her skin which was covered by her hair there remained a constant desquamation of the skin as in pityriasis, which in the end caused great injury to a magnificent head of hair.

The use of mineral waters, prescribed for six years back, had been attended by no satisfactory results either at Uriage or at St. Gervais or at Aix. In 1877, madame L... was brought to Royat by her husband Dr. L..., and there obtained, in a three weeks, treatment of a very gentle nature, such an improvement that she made up her mind to come back again. « She is now », her husband wrote to me, « assured of a recovery which leaves little to be desired. And that, notwithstanding the shocks which her health had received during the year through those anxieties and troubles which too often assail the old age of parents in the persons of their grandchildren. »

M. de P..., forty years of age, of a strong constitution, a temperament both lymphatic and sanguine, and whose father and brother had suffered from gout, had, since he was thirty years of age, felt wandering pains in different parts of the body, specially in the knees. His condition was as follows. He was covered with pimples, large pustules of acne, and for a year back, pustules of ecthyma on the back of the feet, on his left arm, on the back of his neck, and on his forehead. The pustules on his feet impeded his walking and prevented him from wearing a boot, whilst those on his forehead, rosy or purple, and full of sero-sanguinolent fluid, were much more seriously troublesome, for they attracted the attention of all : the contact with his hat irritated them and made them suppurate and produced an intolerable itching. M. de P... could not accordingly sit at table. As he was a young man full of strength and had fully made up his mind to undergo a strong treatment, I had no hesitation from the first day in submitting him to a complete hydro-mineral treatment. I prescribed a bath of still water in the morning, a bath of running water in the evening, the Eugénie and St. Mart springs to drink, and an application several times in the day of mineral water.

Under the influence of this treatment continued for ten days rigorously, an astonishing improvement was produced. The pustules exfoliated and proceeded rapidly to cicatrize, and when M. de P... left us, after twenty eight days, the eruption had completely disappeared from his forehead, his neck, and his arm. Even his skin scarcely showed any cicatrices.

I may here remark that M. de P... was able to sit at table after his tenth bath. My patient spent a second season here the following year, and I have had an opportunity of seeing him since, and his cure is perfect.

NOTICE

The hot springs of Royat are in a charming valley in the neighbourhood of Clermont-Ferrand (Auvergne), a short distance from La Bourboule, Mont-Dore and Vichy. It is about 1,476 feet above the level of the sea. The temperature is mild and equable. There are four springs used for medicinal purposes at Royat, arsenical, alkaline, chalybeate and chlorinated. The resources of Royat have been much increased during the past ten years; and from small beginnings is now in a fair way to become one of the most important watering places in France. The four springs are : I. The *Source Eugénie*, which springs out of the earth with a force equal to that of the Sprudel at Carlsbad. Its temperature is 95° F. and the out put is 316,800 gallons in the 24 hours. The natural warmth of this spring is exactly equal to that of the human body in health; and consequently the water can be used for baths with a running stream, sedative and highly fortifying, which have produced admirable results and in no small degree contributed to the high reputation what Royat has already so justly acquired. II. The *Source Saint-Victor*, the most chalybeate, .056 of iron *per cent.* It is especially useful for young or chlorotic girls, or for those who suffer from amenorrhæa, dysmenorrhæa, leucorrhæa, neuralgia, weakness and debility. III. The *Source Saint-Mart*, with a temperature of 90° F., or *Fontaine des Goutteux*, containing .035 *per cent.* of lithia, is the most aerated of all the springs at Royat. It is useful in gout, diseases of the air-passages, bronchitis and laryngitis, diseases of the skin of a rheumatic character. IV. The *Source César*, about 84° F. in temperature, is the least mineral of all, although it possesses a slightly acidulous taste.

This water excites the mucous membrane of the stomach, increases the appetite, renders digestion more easy, and also increases the flow of urine. There is no more agreeable mineral water known. It is successfully used in all cases of dyspepsia, or disorders of the liver which are connected with disturbed digestion, diabetes, gravel, uterine and vesical catarrhs, leucorrhæa, spermatorrhæa, nervous conditions, long convalescences, and diseases of the urinary organs.

The Pump-room, or, as the French call it, the Establishment at Royat, has every means at hand for carrying out the treatment by means of mineral waters. There are a large number of private rooms for bathers, and each bath is supplied by a constant running stream of mineral water. There are douches, a large swimming bath, rooms for treatment by aspiration and pulverisation, as well as baths and inhalations of carbonic acid. There is a school for swimming and a gymnasium. There are concerts during the season, two Casinos with reading rooms and theatre.

The complaints which are most successfully treated at Royat are those which are connected with an arthritic state or with anæmia. There are three groups of diseases in which treatment at Royat may be said to be indicated : I. Diseases of the respiratory organs (bronchitis, catarrh, laryngitis, aphonia, angina, coryza, asthma, emphysema, dyspnæa, phthisis). II. Arthritic symptoms (gout, sciatica, gravel, inflammation of the kidneys, rheumatism whether of the joints or muscles, diseases of the skin, eczema, impetigo, acne and psoriasis). III. Uterine diseases (leucorrhæa, metritis, amenorrhæa, chronic congestion, sterility) and chlorosis (dyspepsia, hysteria, hemicrania, chorea, neuroses, diabetes, old standing neuralgia, pains in the Bowels), etc.

WORKS ON HYDROTHERAPEUTICS

BY THE SAME AUTHOR.

GOUT, RHEUMATISM, and the various forms under which constitutional arthritis makes its appearance. — Their treatment by means of natural mineral waters. Paris, 1875.

AN ESSAY OF CARBONIC ACID, — its origin, and uses in medicine. Paris, 1876.

MAP OF THE NATURAL MINERAL SPRINGS OF THE PUY-DE-DÔME (with their geologic and hydrotherapeutic use), showing each spring of the central group of France, their chemical analysis, and the therapeutic qualities of the different watering-places, etc. Bronze medal, Paris, 1878.

SOME OBSERVATIONS ON CHRONIC DISEASES recently treated at Royat. Paris, 1879.

MEDICAL GUIDE TO ROYAT, « Splendide Guide », Vichy, 1880.

ON THE ACTION OF THE ROYAT WATERS in affections of the respiratory passages. Clermont, 1880.

POCKET MAP of the thermal springs of Auvergne. 3^d edition.

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