

Clinical essay on the mineral waters of Eaux Bonnes (Pyrenees) and their value in consumptive diseases / by Lucien Leudet.

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Eaux Bonnes

Eaux Bonnes. A village in France 22
miles S of Pau, in a ravine of the
Pyrénées, celebrated for hot sulphur
springs.

Bryce's General Gazetteer 1856

Eaux Bonnes, or Asas, a celebrated watering
place, France, dep. Basses-
Pyrénées, 20 m. SSE. Oleron. It
stands at the bottom of a narrow gorge,
on which the Gave de Gabas
takes a rapid descent, and consists
rather more than 20 large and
sty hotels and lodging houses,
forming one side of a street, and
completely over ~~covered~~ and hemmed
by precipitous rocks. The springs,
in number, are strongly impreg-
nated with sulphur, and have a
temperature not exceeding 91°. They
are used only in baths, with the
exception of the one cold spring,
which is drunk, and are said to be
very efficacious in affections of the
lungs and chest, and particularly

in the early stages of consumption
During the season from June to
October, the plain is crowded
with patients and visitors.

Blackies Imperial Gazetteer


CLINICAL ESSAY
ON THE
MINERAL WATERS
OF
EAUX BONNES
(PYRENEES)
AND THEIR
VALUE IN CONSUMPTIVE DISEASES.

BY
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CONSULTING PHYSICIAN AT EAUX BONNES.

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THE MINERAL WATERS OF EAUX BONNES, THEIR VALUE IN CONSUMPTIVE DISEASES.

“Le traitement des eaux minérales employées à leur source, est, sans contredit de tous les secours de la médecine le mieux en état d’opérer pour le physique et le moral, toutes les révolutions nécessaires et possibles dans les maladies chroniques.”

The importance given to mineral waters by the above quotation from Bordeu is not exaggerated. Since the time of this learned physician, the happy results obtained from the thermal therapeutics in chronic diseases have been noticed by all medical observers; and the number of patients who repair to the different watering-places in Europe increases every year. If any of these places are worthy of notice it is certainly that of the Pyrenees.

Barèges, Bagnères de Luchon, St. Sauveur, Cauterets, and Eaux Bonnes, are as well known to all people as they are appreciated by all physicians. The Eaux Bonnes, by their limited yet special application, and the importance of the diseases which are treated by them, afford to an attentive and observing practitioner a larger, more favourable, and more certain scope for the application of his art and the development of his ideas than almost of any other mineral water. Practising as a consulting physician at this place, I am convinced of the efficacy of its waters in numerous diseases of the respiratory organs, and especially in pulmonary consumption. Well acquainted as I am with the frequency of these diseases on the English side of the Channel, and also knowing with what zeal and talent they are still the object of serious research by the principal physicians in England, I address this Essay to my professional brethren there, and purpose more particularly to call their attention to a subject already, no doubt, well known to them, but of which many resources may be possibly not altogether clearly presented to their minds. My intention is to make known in England the efficacy of the treatment of diseases of the respiratory organs by the mineral waters of Eaux Bonnes, which I believe have not been sufficiently appreciated. For this reason, I have endeavoured to make use of the English language, although inexperienced in it. If I succeed in attracting the attention of my indulgent readers, I trust that they will find in my Essay some fresh observations and useful hints in the treatment of the various diseases of the lungs and bronchial tubes.

The season at the Eaux Bonnes commences on the 1st of June, and terminates on the 30th of September. From 25 to 30 days are generally sufficient for a patient's residence; sometimes, however, two seasons, with the interval of a few days' relaxation, or one season and a half, are necessary.*

CHEMICAL COMPOSITION OF THE WATERS.—The Eaux Bonnes, as well as the other mineral springs in the Pyrenees, belong to that group of mineral waters which have been termed successively—*hydro-sulphuretted alkaline* by Anglada, *natural sulphureous* by Dr. Fontan, and *sulphuretted soda* by Mr. Filhol.

Their exact analysis has recently been obtained by Mr. Filhol, the eminent professor at Toulouse. I shall give here merely that of the "*Source vielle*," the most important spring of all, and the most employed. The other springs contain the same mineral elements, and differ only one from the other by the smaller or greater proportion which they contain.

The analysis of the "*Source vielle*," as ascertained by Mr. Filhol's last researches, is as follows:—

WATER 1 KILOGRAMME, WEIGHED AT THE TEMPERATURE OF 15° CENTIGRADE
(FRENCH THERM.)

	Decimal.
Sulphide of sodium	0·0214
Sulphide of calcium	traces.
Chloride of sodium	0·2640
Chloride of calcium	traces.
Sulphate of soda	0·0277
Sulphate of lime	0·1644
Sulphate of magnesia	traces.
Solicate of soda.....	traces.
Borate of soda	traces.
Ammonia	0·0005
Iodide of sodium	traces.
Phosphate of lime	traces.
Iron.....	traces.
Organic matter	0·0480
Free silica	0·0500
Fluoride of calcium	traces.
Total.....	0·5760

Independently of the *Source Vielle*, there are three other springs at Eaux Bonnes, namely, the *Source d'En Bas*, the *Source Froide* or *de la Montagne*, and the *Source d'Orteich*. Besides

* The term "*season*," in French, indicates the 25 or 30 days which are *generally* necessary for the stay of a patient at a watering-place. In employing the expression of "the Eaux Bonnes" throughout this essay, the mineral waters of the place are to be understood.

these, and close to the *Source Vieilles*, there are several small springs which have been collected together, and are made use of with the waters of the *Source d'En Bas* to supply the baths. The waters of the *Source Froide* are to be this year applied also in the same manner, in order to increase the number of the baths. Finally, a new establishment is being constructed at Orteich, which will contain fifteen bath rooms.

As I just now remarked, the waters of these various springs are closely related in their chemical composition, and are equally gifted with nearly similar physical properties.

Our waters are clear and colourless; they have a slightly determined odour of *hydro-sulphuric acid*, and a taste similar to that of a weak solution of *sulphide of sodium*. The temperature of the *Source Vielle*, the only spring used exclusively for drinking, is at 32°, 75 centigrade. From the different parts of their surface these mineral waters are seen to emit small bubbles of a colourless gas; it is a mixture of nitrogen and hydro-sulphuric acid.

These waters are slightly alkaline. They are very steadfast in their chemical composition, and a bath at Eaux Bonnes does not present that phenomenon which is to be noticed at the other stations in the Pyrenees, that is, the *whitening* (*blanchément*) of the water, produced by the decomposition of the sulphureous water under the influence of the atmosphere.

This stability of the Eaux Bonnes, or the fixity of their chemical principles, is to be considered as an important characteristic, and was already observed by Bordeu. In fact, to this circumstance, perhaps, may be attributed the cause which produces the distinctive feature of our waters, that is to say, their slowness, but, at the same time, their certainty and depth of action. This certainty and depth of action of the Eaux Bonnes are really well observed facts, confirmed by one of our most learned practitioners in Paris, Dr. Pidoux, Physician to the "Hôpital Lariboissières," and Inspector at the Eaux Bonnes. Observations taken at all times have proved the beneficial and special action of the Eaux Bonnes on the respiratory organs. Whence do they derive this privilege which is so unanimously allowed them? Can their chemical analysis give us an explanation of it? We certainly find in their chemical composition certain peculiarities which would allow us to conceive this speciality of action. Thus Mr. Filhol says, with good reason, that the Eaux Bonnes, chemically speaking, have no other representative in all the Pyrenees. He says the Eaux Bonnes contain a large portion of chloride of sodium and of iodine, that they are rich in organic matter, that they contain sulphide of calcium, and thereby assume a still greater cause of

dissimilarity with any other of the mineral waters of the Pyrenees. But if these chemical characteristics will allow us to conceive the peculiarity of action of the Eaux Bonnes, still they cannot explain it. The nature and proportion of the mineralising principles do not altogether form the mineral water; the mode of combination, and the molecular constitution of these chemical elements may modify the properties and action of this water. Consequently, it is our opinion that the physiological action of the Eaux Bonnes does not result from its chemical composition. We consider them as a peculiar compound and complicated medicament, and yet perfectly combined. It is no pharmaceutical preparation, but a *subtle* agent almost *animate*, that unceasingly generates itself, and which the patient always takes in a nascent state. Once transported it loses the better part of its properties.

It is this agent which I purpose following up in its effects on the healthy and the diseased.

PHYSIOLOGICAL ACTION OF THE EAUX BONNES.—The immediate physiological action of the Eaux Bonnes on a healthy subject is extremely interesting to study. A physician may learn by its observation what are the successive stages which the diseased organism will have to undergo before being radically cured, as also to what diseases this agent is more particularly suited. But is it absolutely necessary to institute this inquiry on a healthy person? Are not the phenomena produced on a patient suffering from a chronic disease of any value in this physiological problem? Since these phenomena can be traced side by side with those of the disease,—since their manifestation is noticeable at the same time as the symptoms of the disease itself,—since they may be seen to replace them, and even to cause them to disappear,—it is clear that these effects of the Eaux Bonnes enlighten, to a great extent, their therapeutic action. I shall, therefore, not think of passing over Bordeu's and his successor's observations, which were all made on diseased persons; for, to commence again a fresh series of experiments on healthy persons, it would be next to an impossibility to succeed.

Shall I now mention that the Eaux Bonnes will produce sleeplessness, a certain nervous excitement and mobility, encourage perspiration, and strengthen the digestive organs. All these phenomena are not only peculiar to the Eaux Bonnes, but belong also to any other natural sulphureous water. I shall, therefore, not dwell any longer on these questions, the less so as I am anxious to mention their special and, I would fain say, their specific action on the respiratory functions and organs.

I intend, however, to say a few words on congestion of the inferior part of the intestine, that hæmorrhoidal condition so well described by Bordeu, and of which that skilful physician has taken such great advantage in the treatment and cure of anal fistula. Indeed, with patients who are suffering from anal fistula, and who are being treated by the Eaux Bonnes, the margin of the anus is attended with great pain, the borders of the fistula soon become inflamed, suppuration is observed to increase, and through these means Bordeu has obtained confirmed cures, even in cases of inveterate anal fistulæ.

This powerfully modificative property of the Eaux Bonnes on wounds will be noticed further on, with the lesions of the mucous membrane of the respiratory organs more or less impaired. I shall not either forget to mention the clear and decided property of the Eaux Bonnes in exciting the action of the kidneys, causing congestion of the liver, accelerating the movements of the heart and arteries; in a word, in acting powerfully on all those organs which are the seat of rheumatism and gout, and thus preparing the way for the development of that diathesis called the arthritic.

These characteristic effects of sulphureous waters on the circulating apparatus is of great importance in the treatment of one of the varieties of phthisis, which I shall describe further on.

I shall now allude to the changes effected on the lungs and the bronchial tubes by the Eaux Bonnes.

The principal diseases of the respiratory organs which are under treatment at Eaux Bonnes are phthisis, asthma, and a certain kind of angina or laryngitis. All the patients thus affected to a more or less degree, will soon offer the following particularities under the treatment of the Eaux Bonnes, &c. During the first days of the treatment they are more or less inclined to catch cold, cough and expectoration increase, with the presence of moderate pain; fever may even appear.

Physicians, in Paris or in London, are alarmed by the appearance of such symptoms in a patient suffering more or less serious affections of the bronchi or larynx, as they know how serious are the influences of any sanguineous congestion in the lungs of a consumptive person. But here such colds do not possess that gravity; they soon give way, and, in doing so, leave the patient in a comparative state of health.

Cough and expectoration become less frequent; the nature of the sputum is changed; at the same time the patient is less likely to catch cold again, and is better disposed also to drink a larger quantity of the Eaux Bonnes.

Here is certainly an evident action on the organs and functions of the respiratory apparatus, and a remarkable modification of their morbid signs.

Do these phenomena show themselves in all patients under treatment at Eaux Bonnes? Are they always seen to produce the same extraordinary modificative action? Are they always as tangible, as clearly defined?

With certain patients this physiological or substitutive action of the Eaux Bonnes is imperceptible, but it exists nevertheless; for these patients are cured equally as well as the others; and, certainly, no one would think of asserting that the treatment has cured the disease without passing through the organism.

In such cases the organism—the vital laws of which were in abeyance—has been brought round to a healthy condition by a slow and sure operation—silent, it is true, but not the less active. This operation, particularly felt by the general formative powers—namely, nutrition and assimilation—has modified the system in such a manner that the remaining healthy elements have overpowered the morbid, and the physiological harmony, which had been destroyed by the predominant action of the morbid elements, has been recovered. This manner of considering therapeutics and disease, and these principles of physiology and pathology, are those of my friend and colleague Dr. Pidoux, and I have no hesitation in adopting them, because they represent, in my mind, the truth; they open a fresh and wide field of observation, and in being accepted must destroy the baneful scepticism so frequent in our calling.

What will now be the THERAPEUTIC EFFECTS of the Eaux Bonnes in the principal diseases of the respiratory organs that I have mentioned? I will begin with phthisis.

Not very long ago *Pulmonary Consumption* was considered as being above all cure, and irrevocably fatal. This disheartening opinion was long professed and taught by the school of Paris: it found, no doubt, some support in the anatomical argument by which tubercle, the pathognomonic element of phthisis, was considered as an extraneous body, without any relation in the human economy, always similar to itself, having its own laws, and fatally and continually undergoing the same softening and ulcerative process. At present, however, these anatomical facts are far from being as clearly exemplified as they formerly appeared to be. Numberless discussions, more attentive investigations, and more profound studies have thrown some doubts into the question as to the real nature of tubercle, its mode of production, progression, and its transformation. Thus it is that heteromorphism of the tubercle

has of late been opposed with great vivacity ; and, although I do not pretend to decide in a question that is still open to enquiry, I believe that the opinion that tubercle is considered primitively to be a sanguineous exudation, more or less perfectly developed, is more in keeping with physiology and the clinical observations obtained on patients at Eaux Bonnes. This opinion of mine is supported by physicians of great talent : in England, by Dr. J. Hughes Bennett, Professor in the University of Edinburgh, and Dr. James Turnbull, Physician to the Liverpool Royal Infirmary ; in France, by MM. Gubler, Mandl, Delafond, and also by my friend Dr. Luys. At the same time as pathological anatomy negatived the opinion that tubercle was an extraneous body, living upon its own resources, and placed it under the general vital rules of the economy, so clinical analysis no longer supported the view that consumption is an isolated disease such as Laënnec describes it ; and we must come back to Richard Morton's opinion, that there are several varieties of phthisis. Their distinction is in our opinion one of the most important features in the treatment of this dreadful disease by the Eaux Bonnes.

I shall, firstly, call attention to that form of consumption which I term *Pure Tuberculous (Phthisie Tuberculeuse Pure)*. It originates under the influence of the *Tuberculous Diathesis*, in which tubercles deposited in the lungs may be produced and also may spread all over the economy, and in all the viscera at the same time. In this kind of consumption the general tendency is inclined to develope tubercles ; the patient is altogether tuberculous.

A second variety of phthisis, and a most important one, is that which is rooted on a scrofulous constitution, and which I term *Scrofulous Phthisis (Phthisie Scrofuleuse)*.

The *Scrofulous Diathesis* plays such a considerable part in the production of tubercles that one of our first physicians, Lugol, and Graves, the celebrated Professor at Dublin, look upon the tubercle as the exclusive produce of scrofula. This opinion, although somewhat exaggerated, proves at least the frequency of consumption among scrofulous subjects, as also the intimate connexion which exists between scrofula and tubercle. This is sufficient to justify us in admitting the scrofulous consumption of which, moreover, we have such frequent examples at Eaux Bonnes.

If consumption is often produced under the influence of two distinct conditions, such as the tuberculous and scrofulous diathesis, it also appears in patients who, although they bear no decided sign of a general morbid constitution, still are under the diluted influence of one or two degenerated chronic

diseases. It is in this class of consumption so difficult to discern, but which, however, exists, that we will place the *Arthritic Phthisis* (*Phthisie Arthritique*), so common among the wealthy, who are the ordinary visitors to our waters.

We must not, however, expect to find in arthritic consumption all the attributes of the gouty and of the rheumatic. In the patient who is suffering from this form of consumption, the arthritis is degenerated; it is old, as Dr. Pidoux says, and it is through this very fact that tubercles have been produced. In this form, therefore, will not be found the plethoric constitution peculiar to the gouty; and yet where is the physician who has not met with some consumptive patients with wide and powerful shoulders and ruddy complexion? Gouty attacks, the gravel, and the characteristic diseases of the joints, more or less acute, will not be noticed in these cases of arthritic phthisis. But the patient will have had among his progenitors a gouty subject; he will either be dyspeptic, or will complain of vague and erratic pains; he will be inclined to attacks of hemorrhoids, or his lungs will be emphysematous.

These are decided elements of Arthritis. They give a physiognomy to consumption, the nature of which will be better revealed to us by the effects of the treatment of the sulphureous waters.

Are the Tuberculous Diathesis, the Scrofulous Diathesis, and the Arthritic Diathesis, more or less modified, the only causes by which consumption may originate and increase?

I am inclined to agree with several writers that phthisis is a disease intended to eliminate the degenerate vices of the system. It may, therefore, be found to exist in such individuals as will be under the influence of any constitutional disease with a cachectic tendency. Cancerous parents have been known to give birth to phthisical children. In the same manner Syphilitic cachexy is transmitted in the shape of scrofulous affections, and we have observed how close is the connection between scrofula and consumption.

Lastly, we come to the *Herpetic Diathesis*, which affection has been already so much discussed in France, with a view of ascertaining whether it was a general primitive disease or only a derivative—a degeneracy of two other decided diatheses, scrofula and arthritis.

The herpetic diathesis, when once it has taken possession of the human economy, is frequently observed to act on the lungs; and many patients can be found in whom, in the absence of any constitutional disease clearly discernible, one might be induced to consider the consumptive affection under which they are suffering as a manifestation of the herpetic diathesis itself.

These difficult points have not yet been elucidated; but it is to be hoped that some valuable facts may be collected from attentive observation of the numerous patients at Eaux Bonnes, and that they may in time serve to throw some light into these questions.

This preamble on the different varieties of phthisis is far from being foreign to my purpose, it is, on the contrary, particularly related to the subject I am treating. It is not, in my opinion, to the different degrees of local distress in the lungs that the physician's attention should be directed in recommending or dissuading from the use of the Eaux Bonnes for a consumptive patient, but rather to the diathesis that governs the patient, and also to the pathological connection between this diathesis and the local state of the diseased part.

Several authors who have written on the Eaux Bonnes have stated that they were only efficacious on tubercle in its first stage, and that, on the contrary, in the second and third stages of phthisis, when the tubercle is softened and caverns are to be found, these waters, instead of being beneficial to the sufferer, would in the generality of cases be dangerous, and calculated to increase the progress of the disease. Certainly in a patient whose lungs are ulcerated and cavernous, who has arrived at the second or third stage of consumption, and whose organism is as low as the disease itself; in whom not only the lungs are subjected to the incessant evolution of tuberculation, but whose general constitution is under the influence of continual tuberculous productions, and cannot overcome them; when there is fever, *hectic tuberculous fever*; in such a case it may be correctly said that the use of the sulphureous waters at Eaux Bonnes might be dangerous and even fatal. For these waters not meeting in the organism with any element capable of combating the morbid invasion of the system, may add to the disorganising action, and increase and give a fresh impulse to the progress of the disease. But this is only an example of the description of that form of phthisis which I have termed *pure tuberculous*; there is an exact pathological relation between the local affection and the general chronic constitutional disease. The cachexy and the organic disturbances have both proceeded to the second or third degree in the tuberculous evolution, and not a single element in the economy has retained its vitality in a sufficient degree to combat the progress of this evolution. In such cases the Eaux Bonnes, far from being beneficial, would be dangerous, and would, unless in a very few instances, produce unfavourable results.

Let me now take an example of *scrofulous phthisis*.

The patient possesses a pale complexion, flabby muscles, impoverished blood, large articulations, etc., in whose lungs tubercles exist in more or less abundance, and have attained the first, second, or third degree of their evolution. If the local affection of the lungs has merely arrived at the first stage, and can only be discerned upon auscultation by weakness or roughness of the breathing, with prolonged expiration and great resonance of the voice; if on the other hand the general state of the patient is good, that is to say, if the digestive organs are sound, and if the patient's strength is unimpaired, the Eaux Bonnes will be particularly advantageous in effecting a cure. It is in these cases of scrofulous or torpid consumption that the Eaux Bonnes will produce the silent cures, unaccompanied by any of those phenomena of substitutive irritation which I have previously mentioned.

If the affection of the lungs is in a more advanced state, should softened tubercles, nay, even caverns be found to exist; if the ear can detect mucous rales and other signs, the Eaux Bonnes will still prove successful, providing that the organism, perhaps weakened and bordering on cachexy, is still strong enough to resist, even but slightly, against the tuberculous tendency.

In support of this opinion I could produce numerous observations, the length of which alone prevents me from publishing them. In this case again the patient will offer during the course of his thermal treatment, few, if any, physiological phenomena. His cough and expectoration will hardly afford any symptoms of modification. It is true that the digestive functions have been powerfully strengthened, and the general constitution greatly improved. But even at the ultimate period of the treatment the same morbid sounds may be heard on applying the ear to the lungs. Has then no local modification taken place? One, two, or three months after his thermal treatment, should this patient be again under our observation we shall find him grown stouter, stronger, with little or no cough at all, and with hardly any expectoration. The ear will no longer perceive any mucous rales. Weakness or roughness in breathing, prolonged expiration, and a slight dulness on percussion will be substituted for them. The Eaux Bonnes, indeed (and this is their principal characteristic), do not produce their curative action during the progress of the cure itself. As they penetrate deeply into the organism, they act slowly and protractedly. Six weeks, two months, or even three months may often elapse before the effects of the thermal treatment can be observed.

What I most particularly wish to impress on the mind of

my reader is, that the Eaux Bonnes can act in a most beneficial manner, not only in the first stage of scrofulous phthisis but in the second, and even in the third stage; providing always, that in such cases a sufficient amount of healthy organic elements are to be relied upon to obey the action of the sulphureous water, which fortifies their physiological resistance. The Eaux Bonnes, in fact, are more particularly suited to the scrofulous diathesis; they are more apt to modify it and to cure it: and in doing this they are in the same condition as all the sulphureous waters of the Pyrenees, with this advantage over them, that they are peculiarly endowed with a powerful action on the respiratory organs, and therefore invaluable in combating scrofulous or torpid phthisis.

I have now arrived at that variety of phthisis which I term the *arthritic consumption*, a variety so frequently met with at Eaux Bonnes. Some consumptives are found with softened tubercles or even large caverns at the summit of their lungs, who have undergone frequent and abundant *hæmoptysis*, and who yet have all the external aspects of excellent health. They enjoy the use of all their powers, and bear with their malady without any very serious or frequent manifestations. I know many such patients who every year visit Eaux Bonnes, some of whom have done so even for ten or fifteen years. This annual return is of material necessity to them: they themselves feel the want of it. They come to our waters with the view of acquiring renewed strength, so as to be able to resist and combat their disease. I was not a little surprised at first in finding such a prolonged resistance in consumptive patients so deeply affected, and when called upon to advise such patients, I was then little disposed to indulge in bright hopes of their recovery. My fears were however soon dispelled by the results of the treatment, which requires to be employed with the utmost prudence in the cases of such sufferers. It is truly in this variety of consumption that the Eaux Bonnes are seen to produce, in an immense degree, their very remarkable substitutive action on the lungs. It is in the course of the treatment here that pulmonary congestions appear, and frequent cough, abundant expectoration, and fever not to be mistaken for the hectic fever of consumption; for this fever does not proscribe the use of sulphuretted waters.

These accidents must be allowed to pass by, and although they should be properly observed, yet they should not cause too much anxiety, as the patient will acquire, after they have receded, a greater amount of resisting power, thus enabling him to resist the morbid influences which act on his bronchial tubes.

He will also be better able to support the Eaux Bonnes and their effects. In this variety of consumption, however, a symptom is more frequently to be observed than in any other description of phthisis: this symptom is *hæmoptysis*. Will not the Eaux Bonnes give rise to this, increase its production, and, in consequence, aggravate the disease?

Such is, in fact, a reproach often applied to the Eaux Bonnes, and with many they are considered as being too active: they are said to cause a great congestion of the lungs, and frequently to produce spitting of blood. Is this reproach deservedly acquired? A larger experience than my own would be necessary to answer the question. To explain it I have applied to my fellow physicians at Eaux Bonnes, and particularly to our learned Inspector, Dr. Pidoux. I have often conversed with them on this important subject, and as a general rule, my fellow physicians have declared that the reproach that the Eaux Bonnes were stated to promote hæmoptysis was unfounded. Dr. Pidoux has gone further into the question, and from the facts which he has observed since his nomination as Inspector, that is to say, during two years, he has been enabled to recognise two varieties of hæmoptysis with consumptive patients under treatment at the Eaux Bonnes. According to his opinion there would be the ordinary hæmoptysis such as is observed in all tuberculous subjects, whether in Paris, in London, or at the watering places in the Pyrenees; and also the thermal hæmoptysis, which bears the imprint of the waters which have produced it. The prognosis of the thermal variety of hæmoptysis would be quite different to that of the common hæmoptysis. The former would not, after all, be of any greater importance than the bronchitis I have previously shown to be grafted on the tuberculous inflammation of the bronchi. In reality, they are not refractory, nor are they often seen to relapse. To arrest it, it is not necessary to have recourse to an astringent or revulsive medication: it will be found sufficient to suspend the treatment for a few days, and to prescribe asses milk for a short time. The patient once relieved of his hæmoptysis is able to resume with impunity his treatment by the Eaux Bonnes; he may even imbibe a greater quantity without running the risk of a renewed spitting of blood, and will derive just as great a benefit from his treatment as heretofore.

I have observed similar facts in some of my own patients, which might confirm Doctor Pidoux's opinion. But here, again, I would require a longer series of observations and a greater extent of practice to pronounce myself on such a subject. After all, if it were demonstrated that hæmoptysis

is promoted by the Eaux Bonnes, it would be a further proof that they have an eliminative action on the lungs, and it is this very action which constitutes the great value of our waters. It now rests with the physician to decide whether the patients be in a fit condition to ensure on their lungs and bronchi the favourable effects of this specially eliminative and substitutive action of the Eaux Bonnes.

I shall again refer to the therapeutic effects produced by the Eaux Bonnes on the arthritic phthisis. The tuberculous and arthritic diathesis are contending with one another in the patient. What will be the action here of our waters? They will stimulate the arthritic elements, will strengthen the capillary vessels of the skin, and will give rise to a kind of factitious sanguine temperament, which will powerfully counterbalance the cachectic state that leads to tubercles. Under their influence the haematosiis will receive renewed energy; the economy will increase in strength, and will no longer produce tubercle or cancer, those effects of a reduced vitality. In a word, the sulphureous waters of the Eaux Bonnes will invigorate the arthritic element to such a degree that the tuberculous element will be conquered by it; it will be obliged to cease, to recede, and to disappear. Here the nature of the phthisis is revealed by the treatment itself.

What becomes now of the tubercle in the different forms of consumption which I have reviewed? Directly or indirectly modified by the Eaux Bonnes, what changes, what modifications will it present under the effects of the sulphureous treatment? Will the result be the favouring of its transformation into calcareous or cretaceous matter? Will expectoration bring together the walls of the tuberculous cavity, and the cavern be replaced by a cicatrix? Or will the tubercle be modified in such a way as to be absorbed?

All these are difficult problems, which I do not pretend to solve.

Microscopic research would be required to obtain a complete answer to these questions, and the impossibility of such researches being made at Eaux Bonnes is easily understood. We shall, however, soon be possessed of an hospital containing seventy-five beds. The first stone was laid last year by her Majesty the Empress, whose presence every year is the occasion of fresh improvements of all kinds at Eaux Bonnes. Thus the needy will enjoy very shortly the benefit of a treatment till now only to be procured by the wealthy. Science will be gifted with new means of investigation, and the clinical art will derive new arguments from the anatomical pathology.

Such are the considerations which I had purposed to notice

respecting consumption and its treatment by the Eaux Bonnes. They may be summed up in a few words:—

1. Phthisis *may* be cured, and *is* often cured: it *may* be cured in all its stages.

2. Phthisis must be considered as the last manifestation of all constitutional chronic diseases with cachectic tendencies, *i.e.*, it is no local perturbation, but, on the contrary, a general disease localised in the lungs.

3. It is liable to assume many shapes; it may present divers varieties, the nature of which is frequently indicated by the treatment itself. The most important are pure tuberculous phthisis, scrofulous phthisis, and arthritic phthisis.

4. Sulphureous waters, and especially the Eaux Bonnes, are, thanks to their eliminative action on the lungs, the most powerful medication that can be applied against the ravages of consumption; for they act not only on the local manifestation, but also upon the general morbid habit.

5. They are most particularly suited to scrofulous or torpid phthisis, whether at the first, second, or third stage, indiscriminately, subject to the reservations which have been previously made.

6. They equally succeed in arthritic phthisis, by creating a factitious temperament, counteracting that which produces the tubercle.

7. They are not to be used in pure tuberculous phthisis, especially when an exact pathological connection exists between the local and general habit.

Sincerely convinced of the great efficacy of the Eaux Bonnes in cases of phthisis, I have dwelt at some length on this cruel disease and have tried to throw some light on its historical features. I shall now advert more briefly to the other diseases which I have yet to notice.

I will mention first *Chronic Bronchitis*.

There are many persons who cannot bear the slightest change of atmosphere without, as it is usually called, catching a cold. It will either be a manifestation of *cold in the head*, or *pharyngitis*, or *tonsillitis*, or *laryngitis*, or at last an attack of *bronchitis*; and what is remarkable, all these affections take place without the slightest fever, and assume at the onset a chronic aspect. This singular tendency to contract inflammation of the respiratory organs, this predisposition to be affected by atmospheric changes, and at the same time an equally great affinity of temperament lead us to consider such patients

as being under the influence of what is termed a *catarrhal habit*. The Eaux Bonnes counteract this with great success. They act locally, according to Bordeu, by irritating the affected parts and producing a slight fever that speedily ripens, and brings on expectoration. They increase at the same time the action of the skin and render it less liable to feel the different variations of temperature. They also powerfully modify the predisposition which facilitates the invasion of catarrhal diseases. A radical cure is, in fact, the rule, and our waters could in such cases be considered as next to a specific medication.

When the catarrhal element has taken possession of the bronchi, and remains there for a long time, it produces what is called *chronic bronchitis*, or *chronic pulmonary catarrh*. The existence of the catarrh, its persistency, and its progress, meet with a ready explanation, in the temperament of the patient himself, and his general morbid habit. In one patient we shall find, as it were, behind the catarrh, the scrofulous diathesis; in another, the arthritic diathesis will be seen to play the greatest part in the production and protractedness of the bronchitis; in a third, the herpetic diathesis is present, to explain the cause, and give its stamp to the catarrh.

At Eaux Bonnes these different kinds of catarrh are seen to diminish, and to be cured. Here, again, our waters have a double action, *local* or *substitutive*, and *general* or *reconstitutive*. What I have stated on their mode of action in scrofulous and arthritic phthisis renders it unnecessary for me to dwell on their effects in the treatment of scrofulous and arthritic catarrh. We know that scrofula has found a specific cure in the use of sulphureous waters. As for arthritic catarrh, it is seen to arise frequently from the suppression of cutaneous perspiration, or else from the sudden disappearance of an hæmorrhoidal flux. The Eaux Bonnes will recall this hæmorrhoidal discharge, induce perspiration, and will create a happy modification in the rheumatic diathesis. It is the same with herpetic catarrh. An *eczema* or *herpetic psoriasis* disappearing, the patient begins to cough, he has a bronchial affection. In such a case is not the first step indicated to recall to the skin the disease that has flown to the bronchi? Our waters used internally, and in the form of baths and shower-baths, are the most capable of producing this effect. They act on the diathesis itself, and thus insure a radical cure.

ASTHMA.—Another very important disease I shall allude to, treated at Eaux Bonnes, is *asthma*, and frequently derives from the sulphureous treatment a most salutary effect. Here,

again, the various diatheses will hold a prominent part. The herpetic and arthritic diathesis are the two general diseases of which asthma is most often the manifestation. Asthma then assumes the characteristics of the diathesis to which it relates. Its three constitutive elements—*pulmonary spasm*, *catarrh*, and *vesicular emphysema*, are combined in different proportions, according to the influence of one or the other diathesis; at the same time asthma itself alternates with other morbid manifestations governed by the same diathesis. Thus it is that in its arthritic shapes asthma will coincide with *arthrosial* phenomena; or as it disappears will be replaced by attacks of articular or wandering gout, by attacks of gravel or rheumatism, or by hæmorrhoidal affections. When it is the herpetic diathesis that predominates in the asthmatic subject, cutaneous eruptions alternate with the fits of asthma: this latter disease has then a more continued habit; the catarrh overrules the two other elements—spasm and emphysema, and in this form it would seem as if the pulmonary mucous membrane was subjected to a similar herpetic eruption as that which so frequently affects the other mucous membranes of the skin.

Asthma very often also borrows its characteristics from the association of several chronic diseases, and particularly from the association of *Arthrosia*—gouty or not gouty—and with lymphosis, that first degree of a scrofulous constitution.

Lastly, asthma may be a manifestation of the tuberculous diathesis. Some phthisical patients are also asthmatic; and their lungs, at the same time that they are tuberculous, are also emphysematous. Happily for these patients, as we have previously remarked, *arthrosia*, very much modified and diminished it is true, coexists with the tuberculous diathesis. For the *Eaux Bonnes* are most advantageously used in this constitutional morbid habit, caused by the connexion of arthritic and tuberculous diatheses. It is, as I have already stated, by increasing and extending the action of the arthritic element in opposition to the tuberculous element, that the *Eaux Bonnes* act in such cases, and work unhoped-for cures.

Whichever may be the diathesis under which asthma has been produced, the immediate effects of the *Eaux Bonnes* in their cure are frequently to induce a return of the fits, and sometimes with exacerbation of these, bronchial secretion increases; mucous rales are audible all over the chest, in the small and large bronchi; fever may even appear. But all these symptoms are fugacious; and the consecutive results of the treatment are almost always beneficial: the fits become less frequent, and disappear altogether if the patient has been able to continue the treatment for several seasons together;

one alone has sometimes been seen to effect a radical cure in cases of well-marked asthma.

I have still to bring under notice such affections as *sore-throat*, *pharyngo-laryngitis*, for which the Eaux Bonnes are also perfectly adapted and frequently used.

GRANULAR SORE-THROAT.—I shall more particularly allude to that class of *sore-throat* called *granulous* or *glandular*; or again *granular pharyngitis*, *papillary sore-throat*, *clergymen's sore-throat*; and lastly, that termed by Dr. Green, of New York, and Dr. Gibb, of London, *follicular disease of the pharyngo-laryngeal membrane*.

In these numerous denominations must be included all chronic inflammations of the upper part of the digestive or the respiratory organs. In such cases not only the pharynx and the larynx, but also the soft palate and the tonsils are affected by the same inflammation. Dr. Noel Guéneau de Mussy, physician to the Hotel Dieu in Paris, himself a witness of the marvellous effects of the Eaux Bonnes in these kinds of sore-throat, has mentioned them in an excellent monograph on glandular sore-throat.

The local action of the Eaux Bonnes in these affections is always stimulating and substitutive by irritation, as I have already stated when alluding to the other diseases of the respiratory organs. Thus, the pharyngo-laryngeal membrane becomes redder, the granulations larger and more injected, the patients complain of dryness in the throat and in the larynx, of prickings and a certain difficulty of deglutition. Nevertheless, these are not constant phenomena, and patients can be completely cured without any immediate or perceptible aggravation of their disease.

As for the general action of the Eaux Bonnes, it is directed most particularly to the diathesis, which produces and encourages these kinds of sore-throat.

The *herpetic diathesis* takes therefore a large share in the appearance of these anginae. Dr. Guéneau de Mussy considers it as the general efficient cause of granular angina, and he is disposed to regard this sore-throat as a specific affection. The frequent coincidence of herpetic eruptions with this sort of angina seems to afford a certain amount of probability in favour of their pathogenic connexion. Whilst Dr. de Mussy at the same time inclines to this opinion, he does not, however, conclude that the granular condition of the pharynx or of the soft palate is always and necessarily an herpetic manifestation; still in the eyes of this learned physician, the greater number

of cases of granular angina should be considered as governed by the herpetic diathesis.

I believe that, even with this reservation, the opinion of the physician to the Hôtel-Dieu is still too arbitrary. In my opinion, the lymphatic and scrofulous are the most likely diathesis to cause granular sore-throat. The greater number of patients affected by this disease, for whom I had occasion to prescribe, offered an eminently lymphatic constitution, or some evident signs of a scrofulous temperament. In many patients I have also noticed the joint presence of two diatheses, the *scrofulous* and *arthritic*.

An attentive observation of the patients at Eaux Bonnes has also brought before me the proof of different anatomical signs in the glandular sore-throat. In lymphatic subjects the pharyngeal granulations are paler and larger; in the arthritic, on the contrary, they are smaller, more closely spread, more numerous, and the general colour of the mucous membrane in the throat is brighter. These two kinds of granulations are sometimes met with in the same patient, when his constitutional disease is produced by arthrosia modified by scrofula.

Whatever may be, however, the different forms of glandular angina, or the numerous diatheses that may have brought it on, the Eaux Bonnes are certainly the most active medication which can be used against this affection.

I have now given a rapid sketch of the principal diseases of the respiratory organs, in which the special beneficial action of the Eaux Bonnes is evident. But there are many other general and local affections, which are treated by different kinds of mineral waters, and in which the Eaux Bonnes are particularly likely to succeed on account of their power, their chemical composition, and their well regulated application.

The action of our waters on *lymphosis*, *scrofula*, on certain forms of *arthrosie*, and certain descriptions of *herpetic eruptions*, is clearly shown from what I have previously said.

CHLOROSIS will also find a successful modificative agent in the use of the Eaux Bonnes.

SYPHILITIC DISEASES, of long standing, which have lapsed frequently, and—if I may thus express myself—have exhausted all specific treatment, will, by the use of the Eaux Bonnes in shower-baths, general baths, and internally, disappear of their own accord, or will assume a modified condition, easily curable by mercury or iodide of potassium.

DISEASES OF THE UTERUS, providing they bear no acute feature, nor exist on the side of the organ involving the

ovaries and *fallopian tubes*, are the more likely to be improved by the use of the *Eaux Bonnes* with those in their vicinity, the *Eaux Chaudes*, which thus allow of the combined application of an energetic external treatment, and of an internal treatment with the *Eaux Bonnes*. The *Eaux Chaudes* are truly a great auxiliary to the treatment by the *Eaux Bonnes*, especially when we have to deal with such diseases of the womb so often accompanied by all sorts of nervous disturbances. The *Eaux Chaudes* have a sedative and composing influence, and, moreover, are particularly active on the genito-urinary organs of women. These waters are very abundant and are principally used as baths, general shower-baths, and local vaginal or rectal baths.

Such is the clinical enumeration of the principal diseases treated by the *Eaux Bonnes*. However incomplete and defective it may be, I dare trust that it will prove of some use to my fellow physicians in England.

HYGIENIC RECREATIONS AT EAUX BONNES.—I cannot close this "Clinical Essay" without briefly mentioning the hygienic and salutary recreations which our patients experience at *Eaux Bonnes*. The valley of *Eaux Bonnes* is sheltered on all sides by a range of lofty mountains, and the air is clear and pure, and is never disturbed by those atmospheric changes caused by violent storms. These are excellent conditions for patients suffering from any diseases of the respiratory organs. The absence of goitre, so frequently seen in other valleys, is another proof of the healthiness of *Eaux Bonnes*. The thermal establishment is situated in the midst of the town, closely surrounded by the hotels and private lodgings. These our patients do not require to climb, as at *Cauterets* (where there is a steep road half a mile long), to seek for their baths and waters. Pleasant walks are numerous in the vicinity of *Eaux Bonnes*; the *Jardin Anglais*, with its large shady trees and beautiful flowers; the delightful windings of the "promenade Gramont and Jacquemonot;" the new "promenade de l'Imperatrice," and several others besides, permit of very delicate patients taking necessary and agreeable exercise. I may particularly mention the short and shady walk that leads to an eminence called *Butte du Trésor*, from whence is enjoyed every variety of view of *Eaux Bonnes*. On their way visitors stop and admire the elegant Protestant Chapel, in which service is performed twice a week. The tourist will find ample scope for rambles of all kinds, and the majestic and delightful "Promenade Horizontale," which is on the declivity of the mountain, looks over the picturesque valley of *Laruns*,

and will continually afford an agreeable and varied walk, and certainly deserves to be considered as one of the wonders of the Pyrenees. Here the numerous visitors assemble after an early dinner, to enjoy the balmy emanations of mountainous vegetation, and the grandeur of the panorama.

For those patients but slightly affected, the environs of Eaux Bonnes are the source of numberless pleasant excursions. Riding is much in favour among our visitors, and is greatly encouraged by the consulting physicians, who apply in this case the precepts of Sydenham, that a life in the open air, and daily riding, act heroically in the cure of diseases of the chest, and especially in that of consumption.

Numerous cavalcades are therefore every day seen to start from Eaux Bonnes and spread abroad in all directions. Some ascend the mountains, the "Col de Torte," "Pic du Ger," &c.;" others follow the magnificent road leading to the Eaux-Chaudes, which they may reach in half-an-hour. Further on, and within two hours' ride more, they will arrive at Gabas, close to the frontiers of Spain. Some others more daring will undertake the difficult ascent of the "Pic du Midi," and d'Ossau. But here I shall stop in my description, for the beauties and wonders of the Pyrenees are well-known and delightfully remembered by all.

At the end of one or sometimes two thermal seasons, each of five-and-twenty or thirty days, our patients leave the Pyrenees, and to many the use of sea-bathing can be usefully recommended.

The proximity of Biarritz and its temperate climate render this bathing-place a most appropriate and convenient one for our purpose. Our patients, still under the influence of bronchial susceptibility, many of them having, perhaps, some difficulty in resisting the sensation of cold, and who require a warm and quiet temperature, will meet with all these requisites at Biarritz, which they would not obtain in any other sea-bathing town on the coasts of Brittany or Normandy. The shore at Biarritz is sheltered in such a manner as to be completely out of the reach of any winds, during the months of July, August, and September. With these advantages a season at Biarritz in succession to one at Eaux Bonnes has in many cases produced most salutary results.