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A

TREATISE

ON THE

NATURE and VIRTUES

OF

BUXTON WATERS.

WITH

A Preliminary Account of the External and Internal Uſe of Natural and Artificial

WARM WATERS

AMONG THE

ANTIENTS.

By A. HUNTER, *M. D.*

The THIRD EDITION.

Publica morborum requies, commune medentum
Auxilium, præſens numen, inempta Salus. CLAUD.

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PREFACE.

HAVING had frequent opportunities of examining the nature and properties of Buxton Waters, *I flatter myself that the following observations will be found of use. I have no other motive for their publication, but a sincere desire of contributing to the ease and satisfaction of the infirm.*

In order to make this treatise of general use, I have given a short history of some diseases for which the waters are prescribed; and as medical advice is not always to be had at Buxton, *I have endeavoured to make the whole as plain as possible.*

These waters, though much frequented, are little understood. If in this essay their virtues are found to be placed in a clearer point of view than formerly, the Author will think himself well rewarded.

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A

TREATISE

ON THE

NATURE and VIRTUES

OF

BUXTON WATERS.

CHAP. I.

Natural Hiſtory of Warm Waters.

I Believe I may venture to lay it down as a general rule, that there are few Diſeaſes incident to the human Body which may not be palliated, or even totally removed, by the judicious uſe of water, conſidered, according to the nature of the diſtemper, either as pure and elementary, or as ſaturated with principles of a medicinal quality.

Some of the antient Philoſophers diſtinguiſhed the element of water by the appellation of *Omniſeminaria*, or Seminary of all created things. *Diogenes Läertius* tells us, that *Thales* the *Mileſian* was the firſt who taught this doctrine, and ſince his time a few of the moderns have in ſome degree adopted his ſyſtem.

Agricola informs us that not only ſtones, but alſo ſeveral ſorts of foſſils and metals have been diſcovered in a ſoft and yielding ſtate; and from thence concludes, that water is the original baſis of every natural production. If we examine the Embryo State of nature, we ſhall find a great deal of truth in this Obſervation. The hardeſt bones of Animals were once a ſoft Jelly, and the hardeſt grains and ſeeds were once a drop of viſcid water, incloſed in a tender pellicle. *Milton* perhaps alludes to this Philoſophy of *Thales* when he ſays,

——————————— On the watry calm
His brooding wings the Spirit of God outſpread,
And vital virtue infus'd and vital warmth
Throughout the fluid maſs. ———————

If

If we conſider man in a ſtate of health, we ſhall find the whole earth productive of every thing neceſſary to keep him ſo. If we conſider him as diſeaſed, we ſhall find the ſame ſoil ready to relieve him. The bountiful earth every where offers to his hand plants of a healing nature, and from her bowels pours forth medicated ſtreams for his relief.

Every extenſive Kingdom, that we know of, abounds with medicated waters both hot and cold. Thus we may obſerve the Author of nature ſtudiouſly watching over the welfare of every nation of men. He regards not their complexion. The *Æthiopian*, the *Cherokee*, and the *Caffrarian* ſhare, with the civilized *European*, the means of reſtoring health as well as preſerving it.

Pure ſpring water has the appearance of a homogeneous fluid; but, upon examination, we find it heterogeneous, containing ſalts of different kinds and a portion of earth; principles not to be ſepa-

rated

rated from it without extreme violence. Mr. *Boyle* endeavoured to ſeparate water from its earth by repeated diſtillations, but after diſtilling it a hundred times over, it ſtill continued to depoſite ſome earthy particles; from whence he juſtly concluded that there was no ſuch thing in nature as elementary water.

Philoſophers have differed much in their opinions about the cauſe of heat in warm waters; but I do not find that any of them have as yet been able to lay down an Hypotheſis which is not liable to ſome objections. It is, no doubt, uſeful to know the different Strata through which the waters paſs; but to conclude them hot or cold becauſe they run through particular earths, is certainly too preſumptive. *Hoffman* ſays that waters paſſing through beds of the *Pyrites Aureus* become warm; but we know of waters abſolutely cold, which run through the ſame kind of ſubſtance. It is indeed true that the *Pyrites*, when laid in heaps and watered, becomes warm, and emits a great

great deal of ſmoak; but to conclude from thence that the heat of Baths proceeds from the like proceſs in the bowels of the earth, would be ſaying, in other words, that all hot waters paſs through beds of the *Pyrites*, the contrary of which is well known. Again, if the *Pyrites* was the cauſe of heat, it will be difficult to underſtand how this heat ſhould continue uniformly the ſame for ſo many ages: for when once the *Pyrites* is heated by water, as in the experiment upon it in the open air, it becomes decompoſed, and the heat ſoon after ceaſes. Now, unleſs there ſhould be a conſtant ſupply of freſh *Pyrites* in thoſe meanders through which the waters paſs, I cannot conceive how this heat ſhould be kept up ſo long, and with ſuch an equal temperature; and we know it would be abſurd to ſuppoſe ſuch a regular ſucceſſion. What then occaſions this heat in warm waters? I confeſs I know not. However, it is a ſingular happineſs that the point in diſpute does not ſeem to be any great obſtacle to our forming a true judgement of the virtues

of

of medicated waters. *Hoffman* was not the firſt who aſcribed the heat of mineral waters to this cauſe; *Berger* and *Liſter* had done it before him.

Equal parts of Iron filings and Sulphur, made into a maſs with water, will, in a few hours, grow exceedingly warm, and in time emit ſulphureous flames. This experiment has induced ſome Naturaliſts to imagine a mixture of theſe two common principles to be the cauſe of heat in all warm Springs. If the union of Sulphur and Iron were the conſtant cauſe of heat in medicated waters, we ſhould always find them greatly ſaturated with thoſe principles. We undoubtedly know that the waters of *Bath*, in *Somerſetſhire*, contain but a ſmall portion of Steel, and nothing of what really deſerves the name of Sulphur; and thoſe of *Aix-la-Chapelle*, though they contain Sulphur, give no ſigns of Steel; yet both of them are found to iſſue warm from the earth, and retain their native heat a conſiderable time. On the

contrary, the *Geronſterre* water, though impregnated, to a conſiderable degree, both with Iron and Sulphur, is, notwithſtanding, remarkably cold.

If we carefully examine all the principles impregnating hot waters, we ſhall find them ſo very different in different ſprings, and ſo little proportioned to the heat in each water, as to make it very unreaſonable to deduce the cauſe of heat from the quality of their reſpective minerals. Could we but once clearly demonſtrate the cauſe of ſubterraneous fires and volcanos, we might then, very probably, reaſon with more certainty upon the preſent Inquiry; for it is commonly obſerved in *Italy*, and in the Iſland of *Sicily*, that there are ſeveral warm ſprings near to the places where the ſubterraneous fires break out into flames and ſmoak; and in that part of *Bohemia* where the *Caroline* Baths ariſe, there were formerly eruptions of fire from the earth, as *Agricola* and *Balbinus* teſtify; and *Hoffman* tells us that the earth, in

that

that neighbourhood, was, in his time, warm, in many places, to the touch.

It will here be neceſſary to obſerve, that the heat of all theſe waters is various, in degree, from the temperate ones of *Buxton*, *Briſtol*, and *Mallow* in *Ireland*, to the hot ones in *Iceland*, which are ſaid to be equal to the heat of boiling water.

The Chymical examination of mineral waters has for this laſt century been much attended to, and certainly a knowledge of the component parts of any heterogeneous ſubſtance muſt greatly aſſiſt in eſtabliſhing its virtues upon a reaſonable foundation. *Hoffman*, whoſe great abilities in Phyſic as well as Chymiſtry every one is acquainted with, was amongſt the firſt who gave us a juſt and true Analyſis of mineral waters. Before his time it was uſual to attribute their Virtues to Gold, Silver, Quickſilver, Tin, Lead, *&c.* as appears from the learned *Andreas Baccius* in his book *De Thermis*,

and

and upon theſe erroneous Data the Antients founded their practice with regard to medicated waters.

CHAP. II.

The Opinion of the Antients on the external Uſe of Natural and Artificial Warm-Waters.

THE cuſtom of bathing in warm water, whether made artificially ſo, or flowing naturally from the earth, appears to have been very antient, but we do not find it uſed ſo early with a deſign to remove diſeaſes. Warm Baths were in great repute among the Eaſtern nations, as the *Jews*, *Medes*, *Perſians*, and inhabitants of the *Leſſer Aſia*, but very probably were only uſed at firſt as purifiers of the ſkin from duſt and ſweat; inconveniences to which thoſe nations, from the warmth of their climate and manner of dreſs, muſt have been greatly liable. Luxury, in a little time, made them ſtill more frequent; and we find

find that *Xenophon*, in deſcribing the effeminate manners of the *Perſians* and other *Aſiatics*, calls them *Balneatores*, *Pocillatores*, *&c.* In the time of *Hippocrates* we learn that bathing in ſprings of warm water was recommended with a medicinal intention; and perhaps this is the moſt early authority we can produce of their uſe in medicine. *Plato* recommends them in ſeveral diſeaſes, as well as for their admirable faculty of reſtoring ſtrength and vigour to bodies worn out by hard labour.

Aretaeus, who ſeems to have been prior to *Galen*, preſcribes the warm ſulphureous Baths in the *Elephantiaſis*, and, on account of their relaxing property, recommends them much in the cure of Melancholy. *Galen* in many places takes notice of the admirable effects of warm bathing in various diſeaſes, as abundantly appears in his Treatiſe *De Temperamentis*; and in *Method. Med.* he gives us very particular directions for bathing patients emaciated by a hectic fever.

A great deal more of the practice, with reſpect to bathing in natural and artificial warm waters, may be ſeen in the works of *Cælius Aurelianus*, *Oribaſius*, *Aëtius*, *Alexander Trallianus*, and *Paulus Æginetá*.

It does not appear, from any part of antient hiſtory, that the *Romans* made uſe either of natural or artificial warm Baths till they became acquainted with the *Greeks* and *Aſiatics*, among whom warm bathing, as I have obſerved, was carried to a great exceſs. At firſt the rich eſtabliſhed Bagnios in their own houſes for the convenience of themſelves and viſitors; but in a little time the cuſtom of bathing became ſo prevalent, that it was eſteemed to be as eſſential to health as nouriſhment itſelf. Hence we find the ſtate provided Baths for the uſe of the poorer citizens, where they had the liberty of bathing at a ſmall expence, as we learn from *Horace*,

——*Dum te quadrante lavatum*
Rex ibis.——

Agrippa, in his Ædileſhip, is ſaid to have built upwards of one hundred public Baths. After his example, *Nero*, *Veſpaſian*, *Titus*, *Domitian*, and other Emperors, with a view to gain the affections of the people, erected public Baths inriched with the fineſt marble, and built according to the rules of the moſt delicate architecture. At the firſt inſtitution of private Baths among the moſt wealthy citizens, it does not appear that they ſtudied magnificence ſo much as uſe and convenience; but as ſoon as the *Roman* conqueſts became conſiderable, and the practice of pillaging the Provinces began, we find they altered the original plainneſs and ſimplicity of their Baths, and vied with each other in the Elegance and Grandeur of them. Of theſe the Poet *Statius* ſays,

Nil ibi Plebeium, nuſquam Temeſæa videbit
Æra, ſed argento felix propellitur unda,
Argentoque cadit, labriſque nitentibus inſtat
Delicias mirata ſuas, et abire recuſat.

The

The moſt ſuperb Baths, however, were far inferior to the beauty and extent of thoſe called *Thermæ*, which were almoſt all built by the Emperors for the public uſe, and in which their principal view ſeems to have been to diſplay their magnificence, nothing being omitted that could heighten the idea of it.

Beſides a number of rooms and other conveniences ſet apart for Bathing, there were places allotted, in theſe extenſive buildings, for all the manly exerciſes of the body, as leaping, running, wreſtling, throwing the diſcus, *&c.* and even for thoſe of the mind, as it was cuſtomary for the Rhetoricians and Philoſophers to aſſemble daily under the Porticos for the inſtruction of the Youth. They alſo contained libraries, to which the ſtudious were invited. Witneſs the famous *Bibliotheca Ulpia*, which had been placed by the Emperor *Trajan* in the *Forum Trajani*, but afterwards removed to the Baths of *Dioclefian*.

It may not be improper to obſerve, that at theſe places perſons of all ranks met to diſcourſe upon the news of the city. Hence we may underſtand the reaſon why the Poets gave them the epithet of *Garrulæ*. Works of genius and learning, as well as wit and humour, were frequently read there.

The *Thermæ* of *Dioclesian* and *Caracalla* were the moſt extenſive and remarkable of any built by the Emperors, many parts of which ſtill remain, and are eſteemed among the curioſities of modern *Rome*. To theſe, it appears, *Ammianus Marcellinus* alludes, when he ſays the *Romans* had Baths as large as Provinces, *Lavacra in modum Provinciarum*. *Lipſius* aſſures us that thoſe of *Caracalla* were ſo extenſive that two thouſand people might bathe in them at the ſame time; and we are told that no leſs than forty thouſand Chriſtians were employed many years in erecting the magnificent ones of *Dioclesian*.

The

The pavement of theſe *Thermæ* was of marble and moſaic work, and the walls were covered with paintings of great value; but the prodigious number of marble ſtatues, figures and vaſes, brought from the conquered Cities of *Greece* and *Aſia*, conſtituted their greateſt ornament. Theſe, with the ſtriking grandeur of the architecture, the beautiful and ſtately pillars, the curious vaulting of the roofs, and the number of ſpacious apartments, ſerve conſpicuouſly to ſhew the riches and elegance of the *Roman* Emperors.

Thus much for the general account of the antient Baths, the truth of which is confirmed by the concurring teſtimonies of Antiquity. As to the parts immediately ſubſervient to bathing, we find them but very imperfectly deſcribed either by the Antients or Moderns. *Vitruvius*, amongſt the Antients, has given us their internal ſtructure; but, upon a minute examination, he will be found to differ eſſentially from other writers upon the ſame ſubject. Public buildings, erect-

ed for convenience as well as ornament, may very well be expected to differ in the diſpoſition of the parts intended for uſe; and that may account for the various deſcriptions tranſmitted to us of the internal parts of the antient Baths. *Montfaucon*, in his *Antiquities*, has given us a fine view of the inſide of a *Roman* Bath from a painting found in the *Thermæ* of *Titus*, which repreſents all the parts very diſtinctly.

According to the beſt Authors, the place ſet apart for bathing conſiſted of ſix rooms, which had a ready correſpondence with each other. There was firſt the *Frigidarium*, where the Bathers undreſſed and rubbed; then the *Tepidarium*, or warm room, where they remained till the pores of the ſkin were gently opened; from thence they went into the *Laconicum*, which was ſome degrees warmer; and after ſtaying there a ſhort time they paſſed into the *Sudatio*, or ſweating-room, where they were again rubbed, and ſometimes anointed with

with oil; from thence they directly entered the hot Baths. The floors of theſe hot rooms were hollow on account of the *Hypocauſtum*, which was a large furnace underneath, ſupplied with wood, the heat of which was communicated to the ſtoves by means of the vacuity. The ſame furnace alſo heated another room, called *Vaſarium*, ſituated near the ſtoves, wherein were placed three large veſſels, called *Milliaria*, by reaſon of their capacity, one for hot water, another for warm water, and a third for cold; being ſo contrived that the water might be readily diſtributed by pipes and cocks into the neighbouring Baths, according to the occaſion of the Bathers.

I muſt here obſerve, that the room called *Laconicum* is wanting in the painting above-mentioned, and the word is wrote over a kind of furnace; but *Vitruvius* expreſsly mentions it not as a furnace, but as a ſweating-room. Some pretend that it was the ſame as the *Tepidarium*; but I have ventured to proceed upon the

authority of *Vitruvius*, who expreſsly ſays that the *Laconicum* and *Sudatio* are to be joined to the *Tepidarium*. *Laconicum Sudationeſque ſunt conjungendæ Tepidario.* Vitruv. v. x. by which he plainly diſtinguiſhes theſe three places.

The method of bathing was there very different from what is practiſed at our Bagnios, for they never had their whole bodies immerſed in water, unleſs by direction of the Phyſician. They uſually ſeated themſelves in the Bath upon a low ſeat, or ſtool, called *Solium*, with their legs, and ſometimes their thighs, covered by the water. In the mean time the water, tempered according to their inclination, was poured upon their heads and ſhoulders, by ſlaves, from urns made for that purpoſe. Their bodies were well rubbed with a ſpunge, and ſcraped with a crooked inſtrument called a *Strigil*. This operation being finiſhed they returned to the *Sudatio*, where they remained a ſhort time; and paſſing through the *Laconicum* went into the *Tepidarium*.

From

From thence they repaired to the *Frigidarium*, where they uſually received a ſprinkling of cold water; after which they were conducted into a room called *Elæotheſium*, where they were wiped dry, and anointed with perfumed oils, and then diſmiſſed to ſupper.

The veſſel in which they bathed ſeems to have been contrived to receive only one perſon at a time, and was either of marble, oriental granate, or porphyry, though of an extraordinary ſize, as may be judged from thoſe which have been found in the ruins of the antient *Thermæ*. Beſides theſe large bathing veſſels, there were reſervoirs of cold water for ſuch as deſired to exerciſe themſelves in ſwimming; ſo that nothing was wanting that could add to the grandeur of the founder, or contribute to the health or amuſement of the citizens.

At the firſt eſtabliſhment of public Baths, there were diſtinct ones for the men and women; but in a little time they became

became common, with this difference, that each was waited on by ſlaves of their own ſex. *Adrian*, perceiving the indecency of this cuſtom, publiſhed an edict, prohibiting the promiſcuous bathing of the ſexes. *Marcus Aurelius* did the ſame; but *Heliogabalus* ſuppreſſed thoſe ordinances, which were again revived, but with little ſucceſs, by *Alexander Severus:* ſo that this indecent cuſtom ſubſiſted a conſiderable time, even among the Chriſtians, notwithſtanding the many remonſtrances of the miniſters of the church, and was not entirely aboliſhed 'till ſome time after the death of *Conſtantine* the Great.

CHAP. III.

The Opinion of the Antients on the internal Uſe of natural Warm-Waters.

IN the laſt chapter, I have given a conciſe account of the antiquity of bathing in natural and artificial warm waters: I ſhall now examine into the opinion of the Antients concerning the internal uſe of medi-

medicated waters, and in the courſe of this Inquiry I ſhall take notice of what they ſay concerning the cold ſprings, as well as thoſe which are hot.

Strabo, in his fifth book, makes mention of ſeveral ſprings which were ſerviceable when drank as well as bathed in; and *Athenæus* tells us of a fountain in *Paphlagonia* which had an inebriating quality, to which the inhabitants of the country frequently reſorted.

Vitruvius has a whole chapter on warm and cold ſprings, wherein he deſcribes their medicinal virtues when uſed internally. He ſays that bituminous waters are of great ſervice in many diſorders of the body, and in ſeveral places abundantly ſhews that the internal uſe of medicated waters was much attended to by the Antients.

Scribonius Largus, who lived in the reign of the Emperor *Claudius*, recommends the uſe of warm water, in which

ſteel

ſteel has been quenched, in ſeveral diſeaſes of the bladder, and informs us that he learned this practice from obſerving the good effects of a certain chalybeate ſpring, famous for curing diſeaſes of that part.

Seneca, ſpeaking of warm and cold medicated ſprings, has theſe remarkable words, *Quædam enim oculos, quædam nervos juvant, quædam inveterata et deſperata a medicis vitia percurant. Quædam medentur ulceribus, quædam interiora fovent potu, et pulmonis ac viſcerum querelas levant. Quædam ſupprimunt ſanguinem.*

Quæſt. Natural. Lib. III.

The waters of *Spa*, are certaintly very antient, for *Pliny* ſpeaks of them, and particularly mentions the chalybeate taſte which they leave on the palate after drinking. He alſo takes notice of a great many other medicated ſprings in *Italy*, *Syria*, *Æthiopia*, *Greece*, *France*, *India*, *Arabia*, *Phrygia*, *Germany*, and other countries, and beſtows a vaſt deal of pains in deſcribing their virtues as well

when

when externally applied, as when drank at the fountain. It is not quite clear whether *Galen* ever made uſe of medicated waters in any other manner than as Baths, though *Le Clerc*, from a very obſcure paſſage, is inclined to think he did. *Cælius Aurelianus* recommends the internal uſe of warm medicated waters, and gives us very particular directions concerning them. Thoſe who are deſirous of being more fully ſatisfied upon this ſubject, may conſult the works of *Oribaſius*, *Aëtius*, *Alexander Trallianus*, and *Paulus Ægineta*.

From all theſe concurring teſtimonies we may venture to conclude that the Antients held the uſe of mineral waters in ſome eſtimation, though, from their ignorance of Phyſiology and true Philoſophy, their practice with regard to them appears imperfect. In general they took experience for their guide; but whenever they attempted to reaſon upon the nature and cauſe of diſeaſes, they were ſure to err; the functions and uſes of the

different

different parts of the human body being, in thoſe diſtant ages, but imperfectly known. And here it may be proper to obſerve, that the divine *Hippocrates* ſeldom made uſe of Phyſiological reaſoning in the cure of diſeaſes; he truſted to obſervation and experience, and it is amazing to what certainty he brought his practice. How happy would it have been if his immediate Succeſſors had followed his footſteeps! Inſtead of bewildering themſelves with idle Theories, built upon the moſt ridiculous foundations, they ought to have followed nature, and, like the divine *Sage*, traced her through her different meanders. She would have taught them wiſdom; but in medical, as well as metaphyſical inquiries, *profeſſing themſelves wiſe they became fools*. Happily for us, the illuſtrious *Harvey*, in the year 1616, diſcovered the circulation of the blood. In conſequence of this important diſcovery a new Theory of diſeaſes was eſtabliſhed, and Medicine, which for many ages had appeared as an occult ſcience, inſtantly became more clear and demonſtrative.

Theory

Theory and Practice are now happily united. *Nihil eſt quod hæc conjuncta non efficiant, cum interim disjuncta parum proſunt.*

Keil. Tentam.

CHAP. IV.

The Virtues of Buxton Waters.

HAVING thus premiſed a general account of warm waters, with their external and internal uſe, as preſcribed by the Antients, I ſhall now begin to examine into the nature and virtues of thoſe of *Buxton:* and firſt I propoſe to aſcertain, as near as poſſible, their component parts; after which I ſhall give an account of the different diſeaſes for which they may be preſcribed as an internal remedy; and laſtly ſay ſomething upon the Warm Bath, with proper obſervations upon its uſe, and in what diſeaſes it ought to cooperate with drinking the waters.

The waters made uſe of by the company who reſort to this place, are taken from a well dedicated to St. *Ann*. From ſeveral remains of *Roman* antiquity which have lately been diſcovered, it is probable that theſe waters were uſed very early as a bath; but the preciſe period when it became cuſtomary to drink them remains, as yet, unknown. The water that ſupplies the bath ſeems to be of the ſame nature with that of the well. The bath is under cover, and is well provided with every thing neceſſary to render it perfectly convenient and uſeful.

Experiments made upon the waters by the Thermometer, ſhew them to be ſome degrees warmer than thoſe of *Briſtol*, and colder than thoſe of *Bath*. With reſpect to *Briſtol*, they are as 59 to 52; and to *Bath*, as 59 to 90.

I ordered four gallons of the water to be carefully evaporated over a gentle fire, and obtained five ſcruples of a mix'd compoſition, whereof one drachm was a light blue-

blue-coloured earth, and the remaining two ſcruples, by all the trials I could make upon them, appeared to conſiſt of a native alkaline nitrous ſalt, with about an equal portion of marine ſalt. I know Dr. *Short*, as well as the ingenious Dr. *Rutty*, who ſeems to proceed upon his authority, calls the ſalt truly nitrous; but I am very confident that the ſalt in theſe waters is not ſo neutral as the common nitre of the ſhops.

As to the earth, I could not perceive any principles in it, either ſulphureous or chalybeate, ſo that I think it may be juſtly eſteemed an inert abſorbent earth.

I alſo tried the waters freſh from the ſpring, and found them of a temperate warmth, quite clear and tranſparent, and not in the leaſt betraying to the taſte any ſigns of heterogeneous particles. Upon trial with ſeveral ſorts of liquors they gave no ſigns of ſteel or ſulphur in their compoſition, nor of any kind of acidity;

on the contrary, they raiſed a gentle effervescence with ſpirit of vitriol; but that I eſteemed more as a proof of their abſorbent earth, than alkaline ſalt; which laſt, as I before obſerved, bore but a ſmall proportion to the quantity of water and calcarious earth.

The Rev. Mr. *Mellar*, the preſent worthy incumbent of the pariſh of *Buxton*, informed me that ſome years ago he evaporated, at the deſire of the late Lord *Lonſdale*, about 100 gallons of theſe waters down to three quarts, which were ſent to *London*, and there chymically examined; the reſult of which examination was, that they were found to contain, beſides earth, marine ſalt, and nitre, a portion of bitumen, which had an aromatic ſmell, ſomewhat reſembling the balſam of Guaiacum. However I was not able to obtain the leaſt appearance of ſuch an ingredient; neither could I apprehend any reaſon to ſuppoſe the exiſtence of what Dr. *Short* calls impalpable ſulphur.

The

The experiments I made upon theſe waters were conducted with the greateſt accuracy and attention; but as I have no great opinion of Chymical learning in theſe things, I have purpoſely omitted a detail of them. I am ready to acknowledge that the ſeparation of the component parts of any unknown body, appears a rational method of arriving at the knowledge of its virtues; but after we have ſeparated the different ſalts and other principles latent in mineral waters, we ſhall find, after all our labour, but very ſlender proofs from whence we ought to draw any practical inferences. For a hundred and fifty years paſt the waters of *Bath* were ſuppoſed to contain ſulphur and nitre; but we are now told, and perhaps with truth, that they contain neither; yet, notwithſtanding this important diſcovery, we do not find the practice, with reſpect to them, either altered or amended. Chymiſtry may aſſiſt our inquiries, but experience muſt determine our opinions; and this obſervation bears the

ſtrongeſt application, when made to thoſe waters commonly called calcarious, whoſe principles, every one conſidered ſeparately, are but very inactive. Beſides, it may be proved, from reaſon and experiment, that the conſtituent principles of moſt natural bodies, when ſeparated, are found to act upon the human body very differently from what they would have done, if they had been permitted to remain united by the Chymiſtry of nature.

I am as ſenſible as any man of the great advantages that medicine has received from Chymiſtry within theſe laſt fifty years: I do not mean to reflect upon the Art or the Profeſſors of it, I only blame them for ſhewing ſo much of the Chymiſt and ſo little of the Phyſician; for if we examine the writers upon mineral waters, we ſhall find, in general, near two thirds of their works taken up in experiments and corollaries, as if the practical part of medicine were of little or no ſervice to the community.

Not-

Notwithſtanding what the Chymiſts may ſay to the contrary, I am convinced that a juſt repreſentation of caſes, with proper obſervations upon them, will be found, after all, to be the moſt rational method of arriving at the true knowledge of the virtues of mineral waters.

I have therefore endeavoured to avoid what I here cenſure, by barely mentioning the contents of the waters as they appeared to me from experiments; and by that ſhort method I have made thoſe pages ſubſervient to Medicine, which are uſually devoted to Chymiſtry. An exchange, I hope, for the better.

Buxton waters, in common with a great many others, are obſerved, upon firſt drinking, to affect the head with a ſort of inebriating giddineſs, attended with a ſenſe of univerſal fulneſs and drowſineſs; but after uſing them a few days theſe ſenſations go off, and are ſeldom or never perceived afterwards. This

quality in waters does not ſeem to have eſcaped the attention of the Antients; *Athenæus* and *Vitruvius* make mention of it, and *Ovid* poetically deſcribes it.

Cui non audita eſt obſcœnæ Salmacis undæ
Æthiopeſque lacus? quos ſi quis faucibus hauſit,
Aut furit aut mirum patitur gravitate ſoporem.
Metamorph. L. XV.

This ſpirit is different in different waters, and in moſt appears ſo extremely fugitive, that it immediately flies off when expoſed to the air; for that reaſon all waters muſt be beſt when drank at the fountain. I am inclined to think that a great deal of the virtue of medicated ſprings proceeds from the grateful ſenſation produced upon the tender coats of the ſtomach by this volatile ſpirit, beſides what may ariſe from its increaſing the motion of the blood, and forwarding the circulation of the fluids in thoſe veſſels which naturally feel but little from the impulſe of the heart and arterial ſyſtem.

This

This highly volatile and ſubtilized ſpirit is moſt apparent in thoſe waters which are commonly, though improperly, termed *Acidulæ*, and in a ſmall degree is obſerved in the calcarious kind, ſuch as thoſe of *Buxton*, *Matlock*, *Briſtol*, and *Mallow* in *Ireland*. I do not find that Philoſophers are yet determined in their opinions about the nature of this ſpirit, ſome diſtinguiſhing it by the name of a volatile mineral ſpirit, while others ſuppoſe it to be the *Acidum Vagum* which penetrates all bodies. Some have endeavoured to collect it from the *Briſtol* water, by a careful chymical proceſs, but were not able to obtain any thing ſpirituous. The Sieur *de Clos* alſo attempted to ſeparate this principle from the reſt, by repeated experiments on many kinds of mineral waters, but was in like manner diſappointed.

For my part, I do not propoſe to engage in the controverſy among authors, concerning the nature of this ſubtle and elaſtic fluid, as I look upon it to be only

a matter of ſpeculation: it is therefore ſufficient that we are able to know it from its effects.

As *Buxton* waters, and thoſe of the calcarious kind, ſeem to have no operation different from common water, except in being a little more diuretic, we may reaſonably ſuppoſe them to produce their good effects more by the elementary water which is their baſis, than by any other of their principles.

It is uſual to attribute the virtues of mineral waters to their ſpirit, ſalts, and earth, having little regard to the pure element; but I am of opinion that as the contained quantity of theſe principles is ſo ſmall in each doſe of the waters, they ought in general to be conſidered only as aſſiſtants, and not as very active agents in themſelves. *Hoffman* tells us that the waters of *Schleuſingen*, in the principality of *Henneberg*, are of admirable ſervice in the Stone and Gravel, Gout, Rheumatiſm, and Scurvy; yet they are found to contain

not

not the leaſt portion of mineral matter. The ſame may be ſaid of the baths of *Teoplitz* in *Germany*, of the waters of *Pfeffer* in *Switzerland*, and of thoſe of *Piſa*, *Tetuccia*, and *Noceria*, in *Italy*, whoſe contents no way differ from thoſe which are obſerved in pure ſpring water. The waters of *Malvern*, *Ilkley*, and perhaps *Briſtol*, may be conſidered in the ſame light. All theſe, notwithſtanding, are found to be effectual remedies in many diſeaſes. Whence then proceeds their efficacy? Certainly from the elementary water which is their baſis.

Pure water, as it betrays neither taſte nor ſmell, muſt be admirably calculated to correct the acrimonious ſtate of the fluids, from whatever cauſe it may ariſe; and if any thing upon earth can be conſidered as an univerſal remedy, it muſt be water.

A ſteady and uniform courſe of this pure element, aſſiſted by exerciſe and a proper regimen in diet, will do more in removing

removing ſome diſeaſes than all the pharmaceutical preſcriptions that we know of.

The ſubtilty of the parts of water is viſibly ſhewn by the famous *Florentine* experiment of preſſing it through the pores of gold, and from thence we muſt ſuppoſe it very capable of paſſing through the minuteſt veſſels of the body; but it muſt be forcing and deterging in a more particular manner, when it happens to be impregnated with foſſile ſalts and the volatile principles of different minerals.

The blood of a perſon in health betrays no ſigns either of an acid or alkaline nature; but is perfectly mild and neutral, containing ſalts reſembling *Sal Ammoniacus*; however, in many diſeaſes it is known to incline to an alkaline nature, though it is much doubted whether it ever approaches towards an acid: for my part I am inclined to think it does, and believe that an univerſal aceſcency, though leaſt ſuſpected, is frequently the

cauſe

cauſe of many chronic diſeaſes. Thoſe people who have long lived on a crude farinaceous diet, and indulged in the free uſe of fruits of every kind, are conſtantly obſerved to have their bowels weak and full of wind, which is evident from their ſour eructations. Now when once the chylopoietic organs are become weak, and rendered unfit to ſubdue and concoct their vegetable contents, no wonder they are carried into the blood with a ſtrong taint of their own nature, which is an acid; and ſo in proceſs of time there is reaſon to ſuſpect that the blood will become more aceſcent than is conſiſtent with the welfare of the individual. It is a common and juſt obſervation, that in ſuch perſons the bile, which is by nature prone to putrefaction, has become watry and inactive, ſo that it has little or no power over the aceſcent diet. And that this correction of aceſcency is one of the material uſes of the bile, is evident from the common experiment of mixing bitter herbs with malt liquors, to prevent their growing ſour. In ſome diſeaſes the ſweat

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has been obſerved to ſmell remarkably ſour; and I remember ſome years ago, during my attendance upon a patient who laboured under a nervous diſorder, attended with a great inactivity of body and dejection of ſpirits, that the bed-cloaths, every morning, ſmelt truly acid. *Van Swieten* confirms this obſervation, when he ſays, *In morbis languidis aliquando ſudor acidum ſpirans obſervatur.*

A long and continued uſe of vegetable acids is known to melt down the red part of the blood. Hence young ladies who have indulged in the free uſe of vinegar and other acids, with an intention to keep themſelves thin, are frequently obſerved to fall into a bad habit of body, which is often not to be corrected by the moſt judicious management. In them we obſerve an univerſal laxity and paleneſs, occaſioned by the diſſolving power of the acids. As the whole method of cure conſiſts in reſtoring the broken texture of the blood, and removing the obſtructions in the glands and ſmall veſſels, there may be

reaſon

reaſon to expect great advantages from the uſe of mild alkaleſcent and abſorbent remedies, ſuch as the waters of *Buxton*.

I have endeavoured to ſhew that the blood may ſometimes be of an aceſcent nature; and when that is the caſe, in whatever ſhape the diſeaſe appears, I believe nothing can be of more ſervice to remove it than theſe waters, if continued a proper time.

Buxton waters are of particular ſervice to people who are ſubject to bilious cholics; but the patient muſt be careful to aſſiſt them by obſerving a ſuitable regimen in his diet, avoiding all things of a hot ſtimulating nature, or ſuch as have a tendency to exalt the humours. In this diſorder they ſeem to operate by diluting the acrimonious bile, and thereby abating its ſtimulus; but as the retention of that humour, in its acrimonious ſtate, may be attended with bad conſequences, the Phyſician ought frequently to interpoſe gentle doſes of rhubarb.

There

There is a cholic which attacks people of a ſcorbutic habit, and which ſeems to derive its origin from the acrimonious ſtate of the humours. *Buxton* waters are found to be of ſingular ſervice in that diſorder, eſpecially when accompanied with ſuch remedies as tend to correct the impurities of the blood. In the flatulent cholic they are not much to be depended on, unleſs aſſiſted by warm ſtrengthning remedies: other waters of a more ſtimulating quality are therefore to be preferred.

In the habitual Cardialgia, commonly called the Heart-burn, they are found to be very uſeful; but to prevent a return of the diſeaſe after the waters are left off, the patient ſhould have recourſe to ſuch remedies as are known to ſtrengthen the coats of the ſtomach.

Theſe waters, in the gentleſt manner poſſible, reſtore the tone of the Stomach and Inteſtines, after ſevere Diarrhæas and Dyſenteries, contracted at ſea, or upon land; but the patient ſhould be adviſed to

begin with ſmall doſes, increaſing the quantity as they are found to agree. A few grains of rhubarb, every third or fourth day, will be proper.

They are much recommended in habitual vomitings from too great irritability of the coats of the ſtomach, and in all diſorders of the ſtomach and bowels, where gentle abſorbent and ſtrengthning things are proper, they may be preſcribed with advantage: but as they ſometimes prove too cold upon the ſtomach at firſt drinking, they may be corrected by mixing a tea-ſpoonful of tincture of cardamoms in each doſe, until they are brought to agree without its aſſiſtance.

The fluor albus and immoderate fluxes of the menſes, whether from laxity or an impoveriſhed ſtate of the blood, are gently and ſafely reſtrained by the uſe of theſe waters. In theſe complaints the warm bath muſt be abſolutely forbid, and the patients ſhould be adviſed to bathe in cold water: but as there is no cold bath

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fitted up at *Buxton*, it will be neceſſary to uſe a tub, or any convenient veſſel, filled with ſpring water.

The waters of *Buxton* are found to be of uſe in the cure of the Diabetes. In this diſeaſe the waters have a double effect; at the ſame time that they correct the morbid diſpoſition of the blood, they brace up the ſecretory veſſels of the kidnies. At firſt the patient ſhould drink ſparingly of them, leſt, by their quantity, they ſhould weaken the relaxed papillæ, which evidently would increaſe the diſeaſe. When the diſorder is nearly ſubdued, and we are ſure that the blood is reduced to a good ſtate, we may then venture upon a courſe of aſtringents, ſuch as the *Peruvian* bark, *&c.*

Thoſe who are ſubject to fits of the gravel frequently find great benefit from theſe waters, for they gently deterge the ſecretory veſſels of the kidnies, and at the ſame time ſtrengthen their tone, which is generally weak in ſuch people, as *Hoffman* judiciouſly

judiciouſly obſerves: *Toni renalis nimia reſolutio, morborum qui renes occupant, potiſſima cauſa et origo eſt. Qua de cauſa, temperata aſtringentia et roborantia, in calculo tam preſervando quam curando, palmam cæteris arripiunt.*

It is an opinion commonly received, that the waters of *Buxton* are ſimilar in their nature and effects to thoſe of *Bath*, and on that account many gouty people endeavour to ſeek relief at *Buxton*, influenced by the vicinity of the place to their own habitations: but I am well aſſured that there is a moſt eſſential difference, both with reſpect to the drinking waters, and the bath. For in theſe waters we do not find any of the principles ſufficiently heating, or of force enough to haſten the formation of the gouty matter, in order to its being thrown upon the extremities; neither are the waters of our bath ſufficiently warm to relax the veſſels for receiving it when it is formed. I have indeed, more than once, obſerved people to have a fit of the gout during their reſi-

dence at *Buxton*; but then they were ſuch as had a great deal of it in their conſtitution, and needed but little aſſiſtance to bring it on. I would be underſtood to mean this only as a general obſervation; for there is a kind of inflammatory gout, for which the waters of *Bath* are by no means proper. In ſuch caſes thoſe remedies which have a leſs degree of ſtimulus are always found to anſwer beſt. In that ſpecies of the gout the waters of this place are excellent.

Though the waters of *Bath* have greatly the advantage over thoſe of *Buxton*, in almoſt all diſeaſes which require a briſk motion of the blood and a powerful relaxation of the ſolids, they are, notwithſtanding, much inferior to them in the cure of other diſtempers, as I ſhall endeavour to ſhew in a ſubſequent part of this treatiſe.

Theſe waters have been famous, from the moſt early accounts, for the cure of rheumatic complaints, and in ſeveral kinds

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of the palſy they are deſervedly to be preferred to *Bath*. There are two kinds of rheumatiſm, the acute and the chronic; but as the acute rheumatiſm does not require the uſe of the waters, I beg to be underſtood, throughout this treatiſe, as ſpeaking of the chronic kind. This diſeaſe, both in its acute and chronic ſtate, was known to the antient *Greek* and *Arabian* Phyſicians, but is better deſcribed by the Moderns, for this plain reaſon, that their climates were warmer than ours, and conſequently not ſo apt to produce the diſeaſe. Obſtructed perſpiration is the moſt frequent cauſe of this diſeaſe, and whatever gently opens the pores of the ſkin, muſt be expected to contribute to the cure; hence we may plainly ſee in what manner warm bathing produces ſuch remarkable good effects. In the chronic rheumatiſm the blood is obſerved to be ſizy and thick, but not ſo membranous and glutinous as the *Pituita inflammatoria* in pleuritic patients, nor ſo ſoft and yielding as what the Antients called *Pituita mucoſa*, obſerved in the blood of

ricketty children. As I am deſirous of introducing as little Theory as poſſible, I ſhall not attempt to explain the particular manner by which theſe waters attenuate this lentor. I ſhall therefore only take notice of it as a fact ſupported by experience, which muſt be allowed to be the ſtrongeſt evidence.

It is obſervable that thoſe who go to *Buxton* on account of rheumatic complaints, find their pains increaſe after bathing, and drinking the waters for a few days, and perceive a ſenſation of fullneſs and uneaſineſs all over their bodies; but this is no unpromiſing ſign, as it denotes that the impacted matter is attenuated and again abſorbed into the circulation, which before had been obſtructed in the ſmall veſſels running between the fibres of the muſcles, and upon their aponeurotic expanſions. They ought therefore to perſiſt in bathing and drinking, taking care to avoid cold, which might prove of bad conſequence, and endanger an attack of a rheumatic fever. If any

particular

particular joint be more affected than the reſt, it muſt be well pumped and rubbed with a fleſh-bruſh, in order to attenuate the impacted matter; but if, notwithſtanding this treatment, the joint ſhould continue rigid, it will be adviſable to bathe it in the waters made warm by an artificial heat; and as the benefit of the pump cannot be obtained under ſuch circumſtances, the water may be poured upon the afflicted member from a tea-kettle. When the ſwelling happens to be of a cold and indolent nature, it will be proper to rub it with ſome penetrating application, ſuch as the *Linimentum ſaponaceum*; at the ſame time a decoction of Guaiacum, with a few drops of any volatile alkaline ſpirit, may be uſed with freedom: but the moſt ready method of reſolving rheumatic ſwellings, and relaxing contracted ligaments, is to expoſe the limb to the ſteam of boiling water, and afterwards rub the parts affected with the ſofteſt oils. By this penetrating fomentation I have obſerved many rigid members reſtored to a great degree of

 mobility,

mobility, after they had reſiſted the uſual emollient applications. When the patient is freed from all his complaints, and the muſcles and joints are become ſufficiently moveable, he ſhould be adviſed to bathe for a week or ten days in the ſea, or any cold ſpring, in order to brace up the weakened veſſels, without which there is no ſecurity againſt a relapſe.

The electrical ſhock is a remedy much recommended for the cure of fixed rheumatic pains, and, within theſe few years, I have ſeen ſome remarkable cures performed by that operation. The *modus operandi* of electricity has not hitherto been fully explained; but if we may venture to form any judgment of it from its effects, we muſt ſuppoſe it to be one of the moſt rapid and penetrating things in nature. Experiments teach us that the texture of metals may be diſſolved by its impulſe, and how much more readily muſt the viſcid rheumatic matter be agitated and attenuated? A ſpring and oſcillation is at the ſame time given to the

obſtructed

obſtructed veſſels, by which means they more readily free themſelves from the impacted load, and ſend it back again into the common courſe of the circulation.

Thoſe who are ſubject to the rheumatiſm ſhould conſtantly obſerve to keep the pores of their ſkin ſufficiently open; for which intention there is nothing better than the frequent uſe of the fleſh-bruſh. I have known many rheumatic people receive great benefit from wearing a flannel ſhirt next their ſkin, which we know, from reaſon and experience, is a powerful promoter of inſenſible perſpiration. I would alſo adviſe thoſe who are afflicted with ſciatic pains, never to have their breeches lined with leather, as it diſcourages perſpiration by its natural dampneſs. They ſhould therefore make uſe of ſoft flannel. This I have known practiſed, in many caſes, with great ſucceſs.

Theſe waters are ſerviceable in the ſcorbutic rheumatiſm, a diſeaſe which commonly attacks women, and men of a

weakly conſtitution. It differs from the genuine rheumatiſm, being more irregular in its attacks; is ſeldom or never attended with any degree of fever, and rarely occaſions any ſwelling. The judicious *Sydenham* has given us an excellent hiſtory of this diſeaſe. As it appeared, in many ſymptoms, ſimilar to the ſcurvy, he found it yield to antiſcorbutic remedies, after bleeding, purging, and a milk diet had been preſcribed without effect.

It is uſual for the gout, after a ſevere attack, to leave a great weakneſs upon the afflicted joint, which, if not properly braced up when the pain is gone off, is ſometimes attended with inconvenience. The Baths in *Somerſetſhire* do not ſeem calculated for this intention, on account of their too relaxing quality. *Buxton* Bath is always found to anſwer in caſes of this nature, which may very reaſonably be expected, as it has a ſufficient degree of coldneſs to brace up the relaxed fibres. If any gelatinous matter has ſettled under the vaginæ of the tendons, or upon the

ligaments,

ligaments, which is very common, it may be attenuated by remaining in the bath a longer time; and thus, according to the nature of the caſe, the patient may gradually ſhorten the time of bathing, till he arrive at a ſingle immerſion.

Buxton waters are in great repute on account of their ſucceſs in paralytic diſorders. I am afraid Phyſicians do not always ſufficiently attend to the nature of the palſy: for, without ever conſidering the cauſe of the diſeaſe, they are apt to recommend the frequent uſe of the cold bath as the only means of recovery. It may be generally ſaid that the hot baths are better adapted to the cure of paralytic complaints, though, in many caſes, the cold bath may be preferable to the hot. However, this neceſſary diſtinction is ſeldom made, as moſt people are fond of repairing to the ſame place where their friends have received relief, not conſidering that though the diſeaſe be the ſame, yet it may proceed from an oppoſite cauſe, and conſequently muſt require

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an oppoſite treatment. This practical error, as well as a great many others, is owing to an imperfect knowledge of the phyſiology, which often prevents Phyſicians from diſtinguiſhing the remote from the proximate cauſe of a diſeaſe, ſo that they are obliged to preſcribe to the name only; a practice as common as erroneous. Dr. *Mead* obſerves, that paralytic patients are often ſeized with fits of an apoplexy immediately upon coming out of the warm baths, which indeed may be readily accounted for. If the palſy be of that kind called a *Paraplegia* or *Hemiplegia*, both which are commonly the criſis of an apoplexy, there is reaſon to apprehend a return of the original diſeaſe from the rarefying power of the water, and more eſpecially if the patient be of a plethoric habit. I can hardly be brought to think that the celebrated author above-mentioned meant abſolutely to condemn warm bathing in every ſpecies of the palſy, and in all its ſtages, though I muſt confeſs that what he ſays in his *Monita et Precepta Medica*, will bear no other interpretation than that

warm

warm bathing is hurtful to all paralytics. His words are, *Immerſiones calidæ paralyticis omnibus nocent.* Leſt the ſeverity of this ſentence, pronounced by ſo great a man againſt *Bath* waters, might have too powerful an influence over many paralytic people, Dr. *Summers* thought it neceſſary to produce the account of the General Infirmary at *Bath,* wherein he made it appear that a great number of patients labouring under every kind of the palſy, had received relief from the warm baths. For my part, I believe much may be ſaid on both ſides; but as this performance will not admit of diſcuſſing the point in its full extent, I ſhall therefore leave it to be determined by others, and content myſelf with enumerating a few cauſes from whence palſies proceed, and leave the intelligent reader to his own judgment in the choice of the hot, temperate, or cold baths.

I may venture to ſay that moſt palſies proceed either from a retention of the natural perſpiration, or from ſome morbid

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or critical matter falling upon the brain, *medulla ſpinalis*, or vaginal coat of the nerves, inſtead of being regularly expelled through ſome of the emunctories. The laſt kind frequently ſucceed acute diſeaſes, as *Van Swieten*, in his commentary, obſerves. The ill effects of retained perſpiration we may learn from *Hippocrates*, who ſays that during a continued moiſture of the air, with a northerly wind, Paraplegias were almoſt epidemical; and *Sanctorius*, in his 67th Aphoriſm, explains the above obſervation, when he tells us that the natural perſpiration flies off faſter in cold dry weather, than when the air is cold and moiſt.

Daily obſervation informs us that palſies are often produced by lying in damp beds, or upon the ground expoſed to a moiſt air; and in ſuch caſes it is apparent that a retention of the perſpirable matter is the cauſe of the diſeaſe. The indication of cure directs us to open the pores of the ſkin by means of warm bathing, and cordial ſudorific remedies. What could

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be expected from cold bathing in ſuch caſes?

It ſometimes happens that palſies proceed from an abſolute relaxation of the muſcular parts, without any previous obſtruction in the brain, nerves, or blood-veſſels. This kind of palſy is generally hereditary, and attacks the patient by ſlow degrees, and for the moſt part is partial either to the upper or lower extremities. In ſuch caſes warm bathing would be certain deſtruction, while, on the contrary, the cold bath is plainly indicated.

The gout is ſometimes obſerved to throw a little of the critical matter upon the brain or medulla oblongata, and ſometimes upon the vaginæ of the nerves, at ſome diſtance from their origin. In ſuch caſes it may be judicious practice to preſcribe the hot baths in *Somerſetſhire*, with an intention to attenuate the gouty matter, and to ſolicit its expulſion upon the extremities; but if ſo long a journey

ſhould

ſhould be inconvenient, the patient may, with nearly the ſame advantage, make uſe of a Bath of *Buxton* water made ſome degrees warmer than natural, by means of an artificial heat, according to the improvement which I ſhall propoſe when I come to ſpeak of the mechanical action of warm water upon the body.

When the bleeding piles have been imprudently ſtopped by topical remedies, the viſcid blood, inſtead of being regularly thrown upon the hæmorrhoidal veins, ſometimes falls upon the origin of the nerves, and produces an Apoplexy, Paraplegia, Hemiplegia, or a Palſy of the upper or lower extremities. The Menſtrua, when obſtructed, have been known to produce the ſame diſeaſes; and it is a common obſervation that palſies do frequently riſe from imprudently repelling ſome eruptions of the ſkin, as, for example, the Itch. In the above caſes it evidently appears that cold bathing would be highly injurious, while, on the contrary, warm bathing, by its relaxing

property,

property, would prove of the greateſt benefit.

As I have frequently made mention of the word Paraplegia, it will not be amiſs to obſerve that the Antients did not receive it in the ſame ſenſe that we do. With us, an inability of motion of all the voluntary muſcles below the head, is called a Paraplegia; but by the Antients, a Palſy of any of the members of the body was diſtinguiſhed by that name. Thus *Aretaeus*, after obſerving that Apoplexies, Paraplegias, and Palſies were much of the ſame nature, ſays, *Paraplegia autem eſt tactus motuſque remiſſio, ſed in membro uno, utpote manu vel crure.*

It is a common practice to apply warm ſtimulating things to paralytic muſcles; but theſe can be of little or no ſervice, as the cauſe lies at the origin of the nerve. Thus, if the inferior extremities are affected, all our topical applications ſhould be made to the lower Vertebræ; but if the upper extremities are paralytic, then our applications

tions ought to be made, as near as poſſible, to the origin of the fifth, ſixth, and ſeventh cervical nerves, and firſt of the dorſal. The whole of this practice is diſtinctly laid down by *Alexander Trallianus*; his words are, *Si igitur ex ſuperioribus partibus quædam affectæ fuerint, nempè oculus, naſus aut lingua, aut quædam in facie, conſtat, quod ipſum cerebrum habeat morbum, illique primario ſuccurendum ſit; ſi ergo nulla ex prædictis partibus ſenſu aut motu aut utroque læſa fuerit, neceſſe eſt ſpinalem medullam laborare, aut aliquem nervorum ex ipſa prodeuntium affectum eſſe, ſtatuere. Attendito igitur diligenter, quæ ſit pars affecta, aut unde initium trahat, aut a qua vertebra id aut nervo recipiat, atque illi curationem adhibeto: non autem, ut vulgo, ſymptomatibus tantum abſiſtito. Itaque reſolutas partes ſic internoſcere oportet, animum ſcientiæ anatomicæ adhibendo.* Lib. 1. cap. xvi.

The waters of *Buxton* are of ſo happy a temperature that they may be uſed either as a warm or cold Bath. The inſtant a perſon plunges into the water he receives

a ſhock, nearly equal to what is felt upon going into river water in a hot ſummer's day. In a few minutes, the ſenſation of coldneſs goes off and a moſt agreeable warmth ſucceeds, and if the patient remains in the Bath long enough, a relaxation of the veſſels and muſcular parts will enſue. This may juſtly be eſteemed among the chief properties of *Buxton* water, in which it very widely differs both from *Bath* and *Briſtol*; for in one, the waters are too hot, and in the other, too cold to enjoy this advantage. When any obſtructed matter has ſettled upon the Vaginæ of the nerves and occaſions a palſy, or upon the ligaments, *&c.* ſo as to bring on rheumatic pains, the ſudden ſhock from the coldneſs of the water, and the rarefaction and relaxation that afterwards ſucceed, will do more in removing it than any of the hot Baths, which are only capable of relaxation and rarefaction. This practice, with reſpect to alternate contraction and relaxation from cold and heat, is not of modern date, having been ſucceſsfully uſed by the antient *Greek* and

Arabian Phyſicians. As ſoon as we are ſenſible that the obſtructing cauſe is removed, we muſt then diſcontinue the uſe of the warm Bath, and adviſe the patient to have recourſe to the cold Bath, with an intention to brace up the relaxed muſcles. Upon this obſervation depends the whole cure of paralytic complaints.

Let us now, in a more minute manner, attend to the effects of the Bath upon the body, and we ſhall from thence be able to determine in what diſeaſes it ought to be preſcribed, and in what it ought to be forbid. By the ſudden ſhock the blood is inſtantaneouſly driven from all the veſſels which are near the ſurface, and of conſequence is impelled upon the internal parts, which it continues to load as long as the external veſſels are contracted by the cold. The muſcular fibres are made to approximate to one another, and the ſmalleſt veſſels, as well as the largeſt, are made to embrace their contents with a ſudden ſpring. The heart labours, by frequent and ſtrong contractions, to pro-

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pel the ſudden torrent of blood thrown upon its right Auricle and Ventricle, and the lungs, through which it muſt paſs, receive it with difficulty. Hence, it is obvious that thoſe who have weak lungs ſhould proceed with great caution in the uſe of the Bath.

In a few minutes, an agreeable warmth ſucceeds the former ſenſation, and the blood, which before had been impelled upon the heart, lungs, and abdominal viſcera, is now forced back again towards the ſurface, by the increaſed action of the heart and arterial ſyſtem. By theſe reciprocal actions the blood is increaſed in volume and momentum, and as the ſolids, at this time, are evidently in a ſtate of relaxation, the red globules are enabled to paſs through ſome veſſels which before were only pervious to thoſe of the ſerous order. During this univerſal relaxation the bibulous veins upon the ſurface of the ſkin have an opportunity of drinking up the moſt elementary parts of the water, and the exhalent arteries, for the ſame

reaſon, are encouraged to breathe forth their contents with freedom. At the ſame time ſome part of the water muſt be ſuppoſed to inſinuate itſelf between the fibres of the muſcles to ſerve as a foftning fomentation to them, and thereby aſſiſt in removing diſeaſes ariſing from a rigid fibre. I do not find that the pores of the ſkin can at any time be ſo much relaxed, by theſe waters, as to be the means of producing ſuch copious ſweats as are uſual after coming out of the Baths in *Somerſetſhire*. In many caſes this may be the great advantage of the waters of *Buxton*, and yet a greater degree of relaxation is frequently required. However, this inconvenience might be eaſily remedied by conſtructing a ſmall bath contiguous to the large one, in ſuch a manner that it might receive a quantity of boiling water to make its contents of any determinate heat. I am ſatisfied that an improvement of this kind, in the hands of a judicious Phyſician, might be made to anſwer moſt, if not all the external purpoſes of the waters of *Bath*.—Here it will be proper

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to obſerve, that the medicinal virtues of the drinking-waters may alſo be increaſed. At preſent the well is expoſed to the open air, and every time the well-woman fills her glaſs the waters are inevitably agitated, and the volatile ſpirit, inſtead of being carefully retained, is in ſome degree diſſipated. A pump is an eaſy remedy for this inconvenience.

There are few diſeaſes which require bathing above once in twenty-four hours, and, according to the nature of the caſe, the time of remaining in the bath muſt be ſhortned or protracted. If it be ſhort, it operates much after the manner of a river bath in the height of ſummer; but if the patient chuſes to remain in the water above four minutes, the relaxing power of the bath will then begin to take place. The morning, about an hour before breakfaſt, is the beſt time for bathing; though any time of the day may be proper, if not too ſoon after eating. Few people drink above three pints of the water in a day; but if their ſtomachs

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can well bear it, and the nature of the caſe requires it, they may ſafely increaſe the quantity. The only ſenſible operation of theſe waters is by urine; and as it ſometimes happens they do not paſs off freely, it will be adviſable to take a tea-ſpoonful of ſweet ſpirit of nitre in a glaſs of the water, and afterwards take the air on horſeback, or in any other manner, ſo as to ſhake the abdominal viſcera. This method ſeldom or never fails of ſucceſs.

The beſt way of drinking the waters is to begin with ſmall quantities, and increaſe the doſes as they are found to agree; but as it is impoſſible to lay down rules which can be abſolute, either with reſpect to their external or internal uſe, the Patient ſhould always conſult his Phyſician before he enters upon them.——It is a very good method to drink the waters for a few days before bathing; and as they are apt to occaſion coſtiveneſs, it would not be amiſs to uſe a little lenitive electuary, or any other ſuitable laxative, to pre-

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vent that inconvenience. In very plethoric habits bleeding ought to be premiſed.

There is one thing I moſt earneſtly recommend, and that is, not to indulge the appetite which theſe waters give; for though the ſtomach be ſufficiently ſtrong to receive its contents, and the chylopoietic and ſanguifying organs able to aſſimilate them into good blood, yet there is reaſon to fear that a fullneſs too ſuddenly induced may prove of dangerous conſequence. *Semel multum et repente vel evacuare vel replere periculoſum.* Hippocr.

It is a common practice at *Buxton* for people to indulge themſelves with the free uſe of butter in a morning; but I would adviſe them to be more moderate in that article, as it is apt to grow rancid upon weak ſtomachs, and may prevent the good effect of the waters upon that organ; a thing much to be attended to.

The uſual ſeaſon for drinking the waters, is from the beginning of *May* to the latter

latter end of *October*; but if the patient requires a longer perſeverance, he may ſafely uſe them all the winter, as they are found, upon repeated trials, to be equally good in all ſeaſons.

I ſhall conclude this account of *Buxton* waters with obſerving, that there, as well as in moſt other places of public reſort, much of the patient's recovery depends upon the change of air, diet, and company, and on that account every one ought to make thoſe neceſſary aſſiſtants contribute, as much as poſſible, to his advantage.

F I N I S.