

Bath waters : a rational account of their nature and use : with special reference to gout, rheumatism and rheumatoid arthritis / by Preston King. With an historical sketch by S. Baring-Gould.

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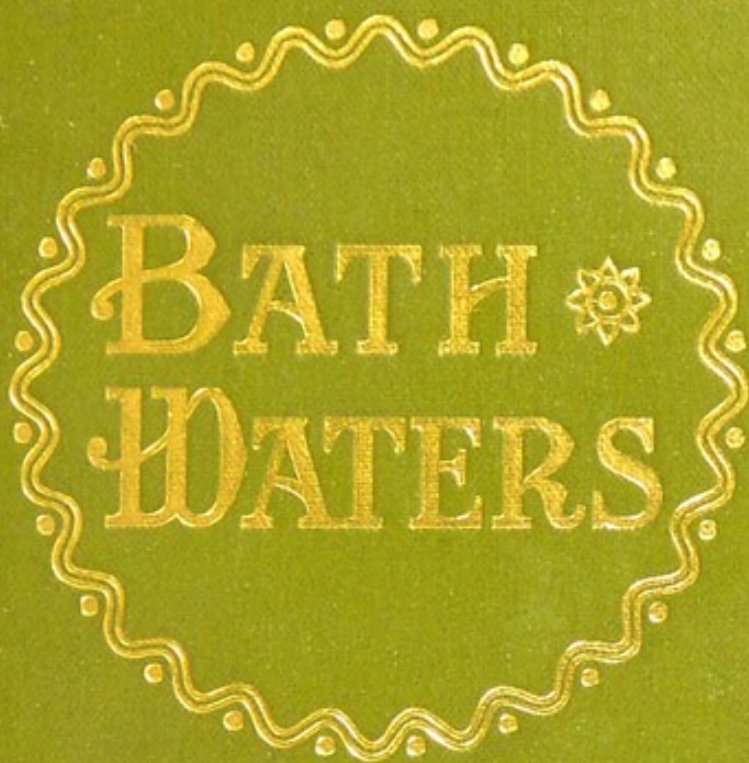
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*With special
reference to*

GOUT *///*
RHEUMATISM
& RHEUMATOID
/// **ARTHRITIS**

By
PRESTON KING, M.D.

*With an historical sketch
by*
S. BARING-GOULD, M.A.

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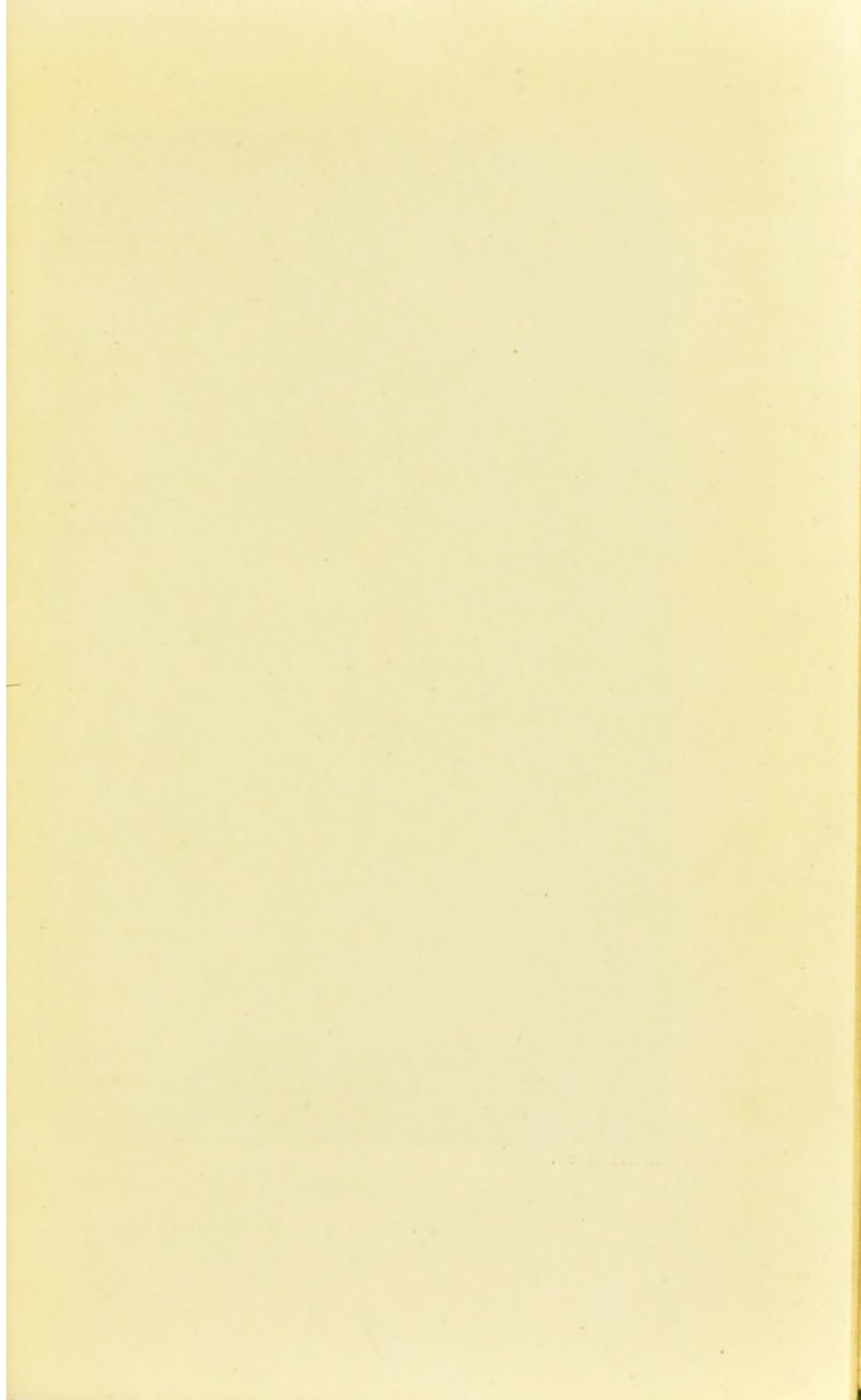
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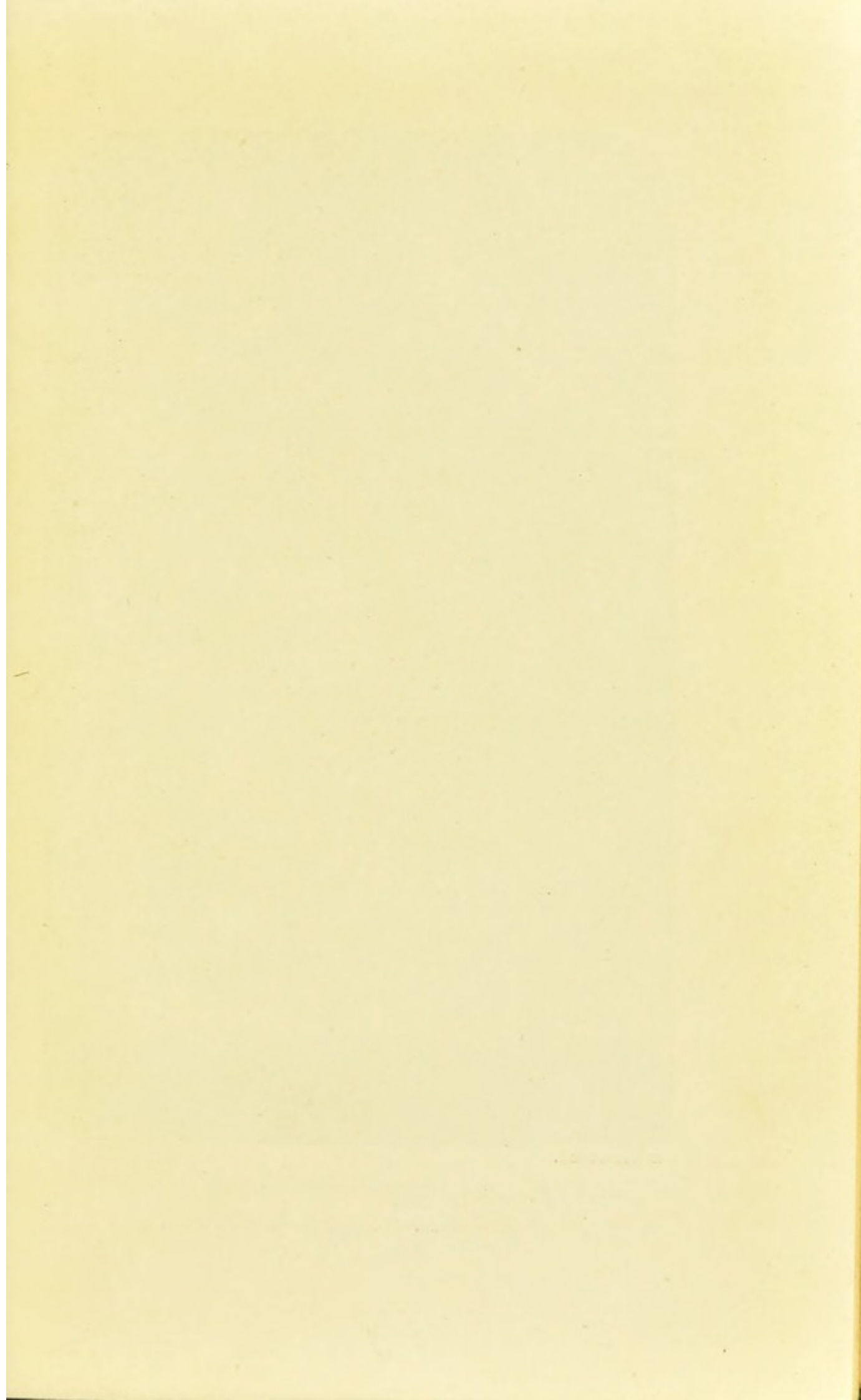


BATH WATERS.











FRONTISPIECE.

KING BLADUD.

The Traditional Discoverer of the Hot Springs.

Bath Waters

A RATIONAL ACCOUNT OF THEIR NATURE
AND USE

WITH SPECIAL REFERENCE TO GOUT, RHEUMATISM
AND RHEUMATOID ARTHRITIS

BY

PRESTON KING, M.D. CANTAB.

HON. PHYSICIAN ROYAL MINERAL WATER HOSPITAL,
HON. ASSISTANT PHYSICIAN ROYAL UNITED HOSPITAL, BATH

With an Historical Sketch by
S. BARING-GOULD, M.A.

BRISTOL: J. W. ARROWSMITH, 11 QUAY STREET

1901



"The physician must generalise the disease, and individualise the patient."

HUFELAND.

* * *

"Never mind the name of heterodoxy in medicine, what is right is right."

Letter from the late J. R. FINDLAY.

* * *

"Medicines succeed best when there is a tendency to get well."

GULL.

* * *

"Make haste, gentlemen, to use a new remedy while it does good."

A PROFESSOR TO HIS PUPILS.

* * *

"It may be a case of gout, but don't forget there is a man behind it."

MALCOLM MORRIS.

* * *

"Health is known only to the sick."

CARLYLE.



PREFACE.

MY object in the present volume is to give a short and rational account of our thermal waters, and of some of the diseases that we see here.

The experience that I gained at the Royal Mineral Water Hospital—that living museum of chronic joint affection—first as resident medical officer from 1890 to 1893, and since as one of its honorary physicians, has led me to modify many of the views and theories that I held in my pre-graduate days.

If I have varied somewhat from the paths of tradition in my account of the waters and their therapeutic use, and if I have also in my description of joint diseases not adhered strictly to the doctrines of orthodox medicine, I can only say that I have been guided simply by a search for truth.

I wish to express my gratitude to my old friend, Dr. Spender, by whom I was first led to take an interest in rheumatoid arthritis, and from whom I have

learnt so much. I would also thank Dr. Llewellyn Jones, who has given me great assistance in the collection of material; and Mr. L. H. Wilson for very kindly supplying me with a number of blocks.

Finally, my best thanks are due to the Rev. S. Baring Gould for so kindly contributing his interesting sketch upon the myths of ancient Bath.

P. K.

27, GAY STREET BATH.

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To my Father.



INTRODUCTION

BY THE

REV. S. BARING GOULD.

THE legendary history of Bath begins with Bladud, son of King Hudibras of Britain, who, afflicted with leprosy, was sent to keep swine in the forest by the town. There he noticed his bristly charge roll in the warm slime from a spring, and testing the effects of a bath in the hot water, he found himself cured of his disease.

He returned to his father, and in due time became King of Britain, when, to testify his gratitude to the healing fountains, he built Bath. As Geoffrey of Monmouth says: "He built *Caer Badon*, and made hot baths there for the benefit of the public, which he dedicated to the goddess of *Minerva*, in whose temple he kept fires that never went out nor consumed to ashes, but as soon as they began to decay were turned into balls of stone. This prince was a very ingenious man, and taught necromancy in his kingdom; nor did

he desist till he attempted to fly to the upper regions of the air with wings that he had prepared, and fell down upon the temple of Apollo, in the city of Trinorantum, where he was dashed to pieces."

Bladud was the father of Leir, the "King Lear" of Shakespeare.

We get on firmer ground when we reach the time of the Roman occupation of Britain. Then the hot springs attracted the Romans, and they made of Bath a city *Aquæ solis*.

After the Roman legions left Britain, it probably suffered from the incursions of the Scots (Irish), who levied tribute from a large portion of Britain, and made a settlement at Glastonbury.

In the struggle with the Saxons a victory was gained over the invaders on Mount Badon, which is generally supposed to have been by Bath; but whether Aurelius Ambrosius led the Britons or King Arthur is undecided. Nor can the date be fixed with certainty. Gildas says it was fought forty-four years and one month after the landing of the Saxons, which took place in 493. This would make the date of the battle 493, and it was fought under the leadership of Aurelius. But the *Annales Cambriæ* give as the date 516, and attribute the victory to King Arthur. The better authority by far is Gildas.

But the evil day was only put off. In 577 the

Saxons rolling West defeated the Britons at Deorham, about eight miles from Bath, when the city fell a prey to the foreign barbarians and was utterly destroyed.

How long it remained desolate we do not know, but probably not long. The hot springs arrested attention, and in 676 King Osric founded a nunnery at Bath; and in 775 Offa, King of Mercia, who had taken Bath from the King of Wessex, planted here a college of secular canons. He also rebuilt the early Church of St. Peter that had been destroyed, and in this Dunstan crowned Edgar King of the English in 973. By the advice of St. Dunstan, the college of secular canons was transformed into a monastery of Benedictine monks, as Dunstan could ill-brook the easy-going ways of the married canons attached to the minsters in England.

Before long, however, the Danish vessels ran up the Severn, and disembarking their piratical crew, Bath was plundered and the church and abbey destroyed.

At the time of the Domesday Survey Bath was a flourishing place; but it suffered in the reign of William Rufus, when Geoffrey, Bishop of Coutances, and Robert de Mowbray, who supported the claims of Robert, Duke of Normandy, attacked and took Bath and burnt the town. In 1090 the Bishop of Wells bought Bath of King Henry I., and built a new and spacious church there, and removed the episcopal seat from Wells to it, and there in 1107 he entertained the King. But stormy

times succeeded, and Bath suffered terribly in the wars of Matilda and Stephen, as it was alternately occupied by the adherents of both parties.

Bath continued as an episcopal seat till 1193, when Bishop Savaric transferred it to Richard I. in exchange for Glastonbury. It was then made a free borough, and began to be a manufacturing and commercial centre. In 1330, when the making of woollen cloth was introduced into England, Bath became a great place for this production, and it was then and thus that the shuttle was introduced into the arms of Bath Abbey.

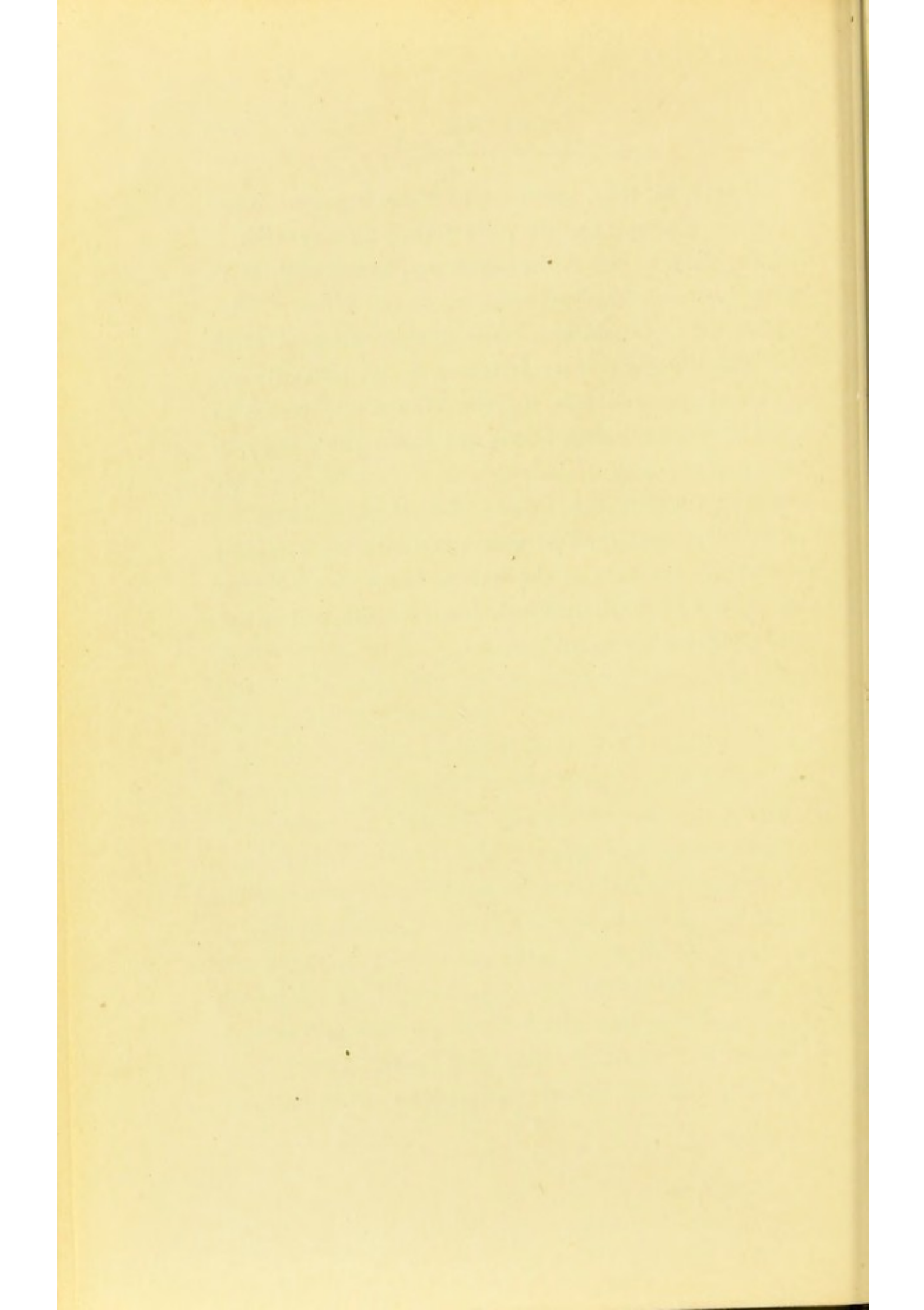
During the wars of York and Lancaster, Bath does not seem to have been much troubled. Through the Middle Ages but little attention would seem to have been paid to the hot springs, and the place fell out of repute as health restoring.

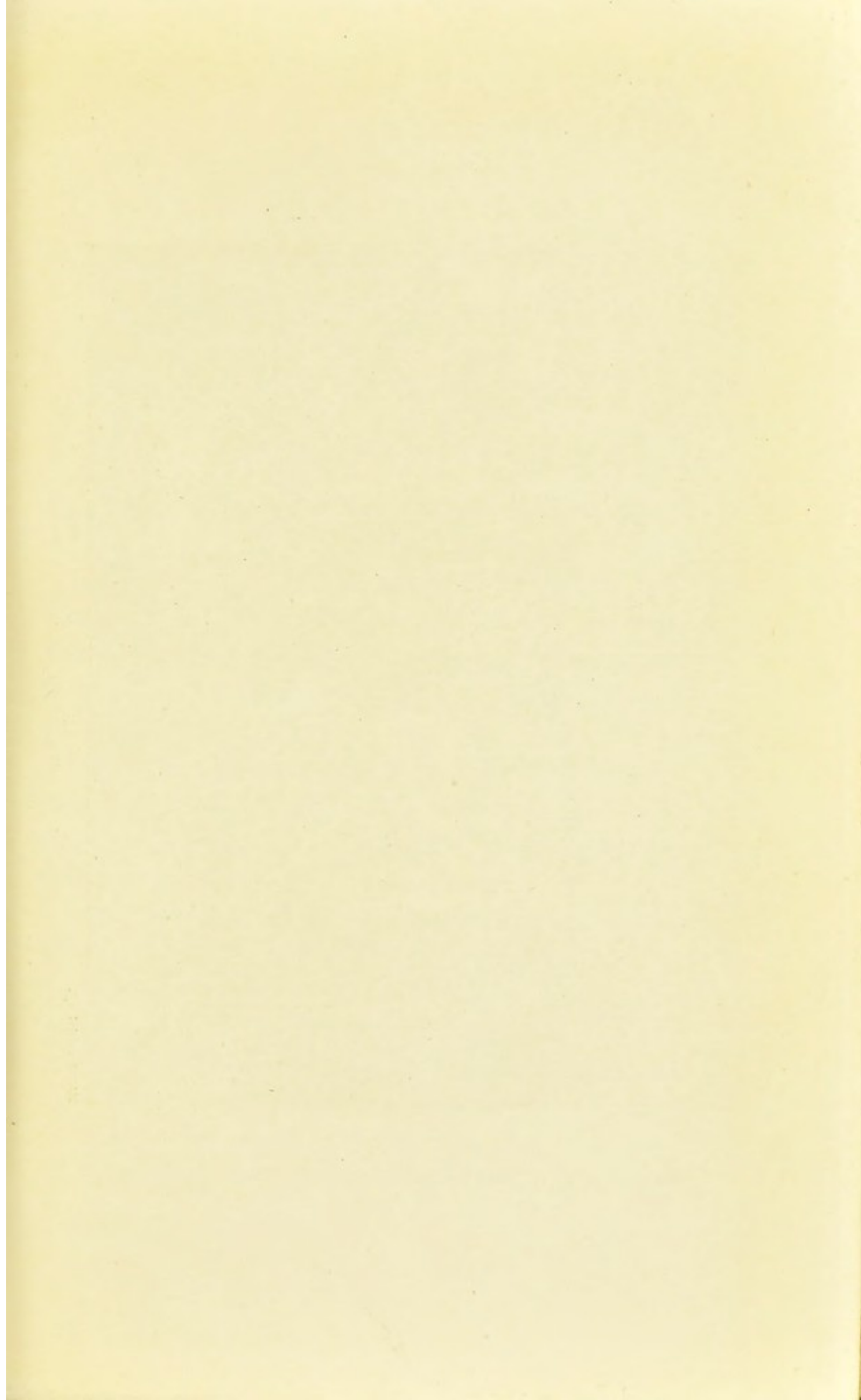
In the troubles between Charles I. and the Parliament, Bath was fortified for the King; but the Marquess of Hertford, finding that he had not sufficient troops at his disposal to hold it, retired before the "Roundheads," and it became the headquarters of the army raised by Waller in that part of the country. In 1643 was fought the battle of Lansdown, close to Bath, in which the Royalists were successful, and drove the Parliamentarians into the city, but followed and obtained possession of Bath, which they held till 1645. The revival of interest in the waters was mainly due to the visit of

Charles II. in 1663, when he tried their effects internally, as advised by his physician, and the visit of Royalty drew others to the place, and thenceforth Bath became a resort for the infirm.

Then, out of this, grew the frequentation of Bath as a fashionable resort; it was a social necessity for everyone who would be in the World of Fashion to spend at least a winter there, and there lose money in play.

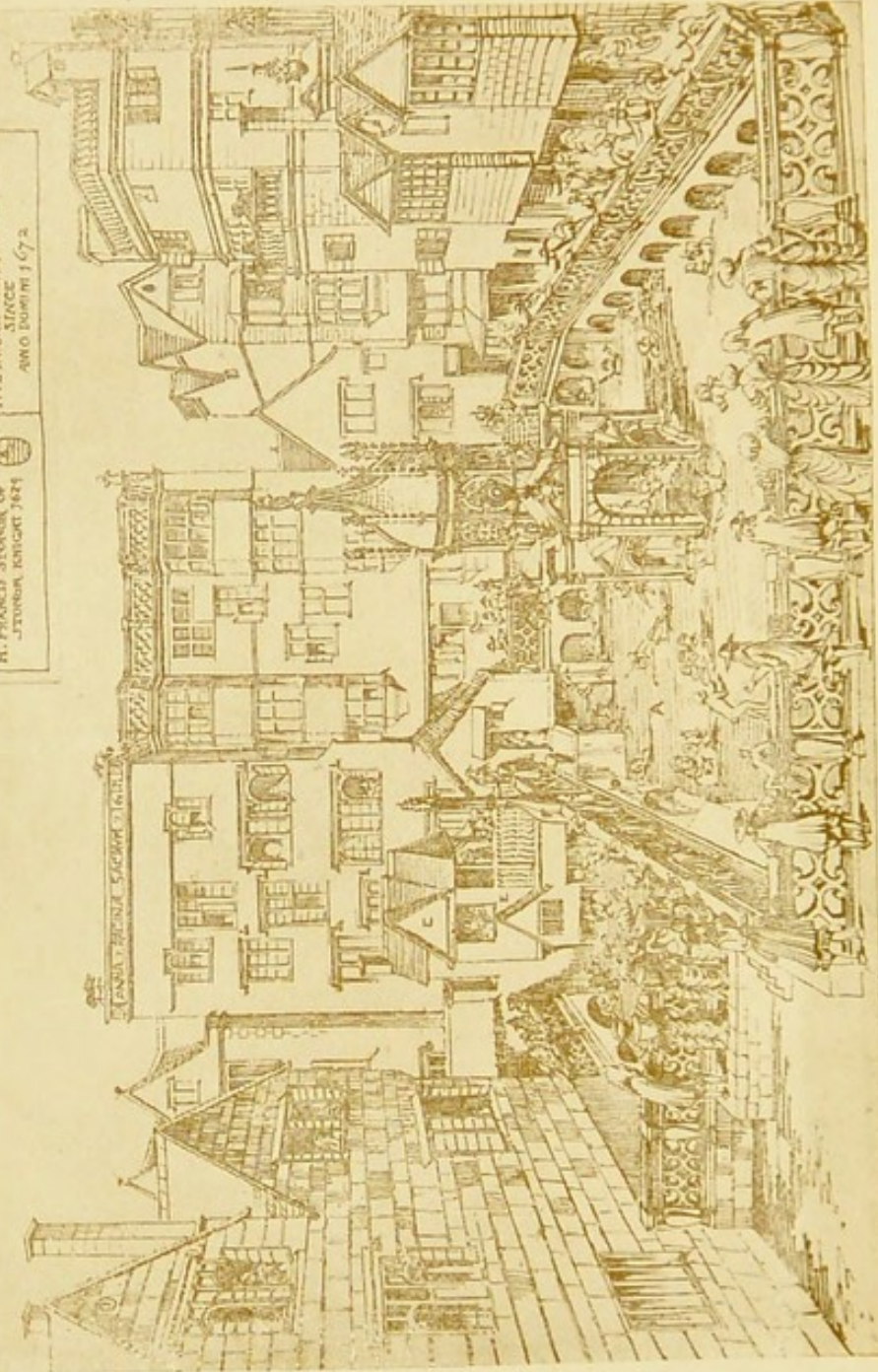
In the time of the Prince Regent it reached its climax of prosperity, and was prominent as a resort, not only for the sake of the waters, but for amusement and play. Then it declined, but is again somewhat on the move once more.





A. KING'S BATH
 B. CHURCH OF ST. JOHN
 C. THE MARKET PLACE
 D. THE TOWN HALL
 E. THE DRY POOL
 F. BLANDFORD FORT
 G. THE PARLOR
 H. FRANKLIN JONSON OF
 JONSON, KNIGHT 1624

THE BOUNTY OF THE TOWN
 FROM 1600 TO 1624
 AND RECORDS OF THE TOWN
 AND TOWNERS OF THE TOWN
 FROM 1600 TO 1624
 FIVE PAGES
 TWO DOLLARS 1672



FACE PAGE 19.

From a reproduction of an Old Engraving, kindly supplied
 by Mr. F. Bligh Bond, F.R.I.B.A., Bristol.

CHAPTER I.

GLIMPSES OF THE PAST.

"The old order changeth, yielding place to new."—TENNYSON.

BATH has long been known for her thermal waters, and as a health resort for invalids.

Back into the dim past, prior to the year 81 A.D., where we find the earliest written records, tradition tells us of her healing springs ; and romance and legend have been busy in accounting for her origin in those uncertain days.

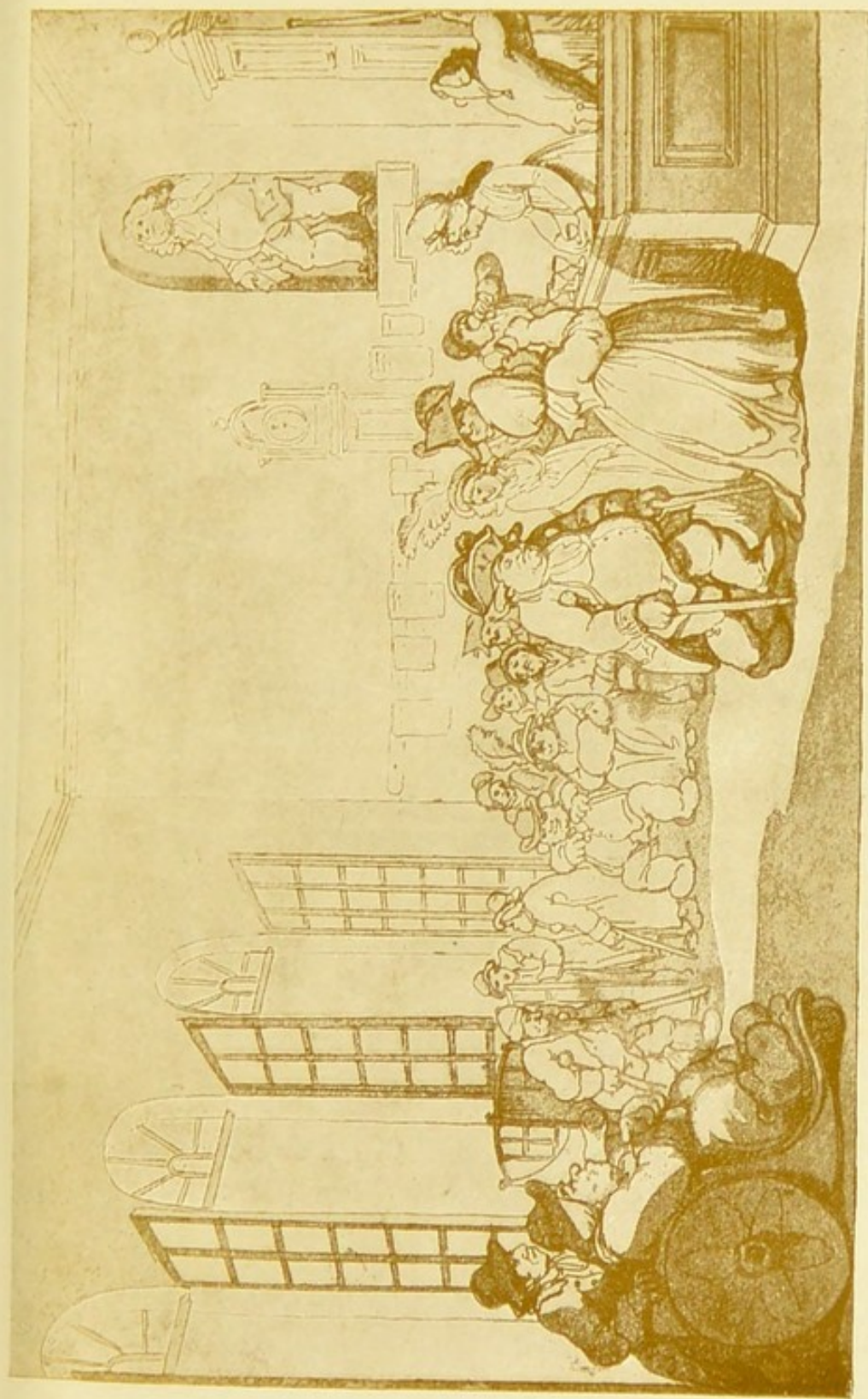
During the Roman occupation it is probable that the waters were used rather as a convenient means of luxurious bathing than for any medicinal properties that they possessed.

What the Romans thought of the lavish gifts that Nature had doled out here may be judged by the magnificence of their ruined baths. These, first discovered in the middle of the eighteenth century, have since, from time to time, been further excavated, until they now present the finest specimens of Roman remains to be found anywhere in the Kingdom. Towards the end of the 16th century Bath, as a health

resort, seems indeed to have fallen upon bad times. We read of men and women bathing together in baths open to the weather and to the public view. The water is described as being anything but pure; and, moreover, it would seem that for its internal use the patients were dependent upon the filthy liquid in which all were bathing. It truly argues much for the healing properties of her thermal springs that, with usage such as this, Bath still retained her reputation as a health resort. Dr. Turner, who, besides being a physician, also happened to be the Dean of Wells, made some attempt to improve the existing order of things. He had been exiled during the reign of Queen Mary, and had spent much of his time in visiting the various Continental spas. On his return home he applied the experience he had gained abroad, and by his efforts spurred the Corporation on towards, at least, some semblance of activity.

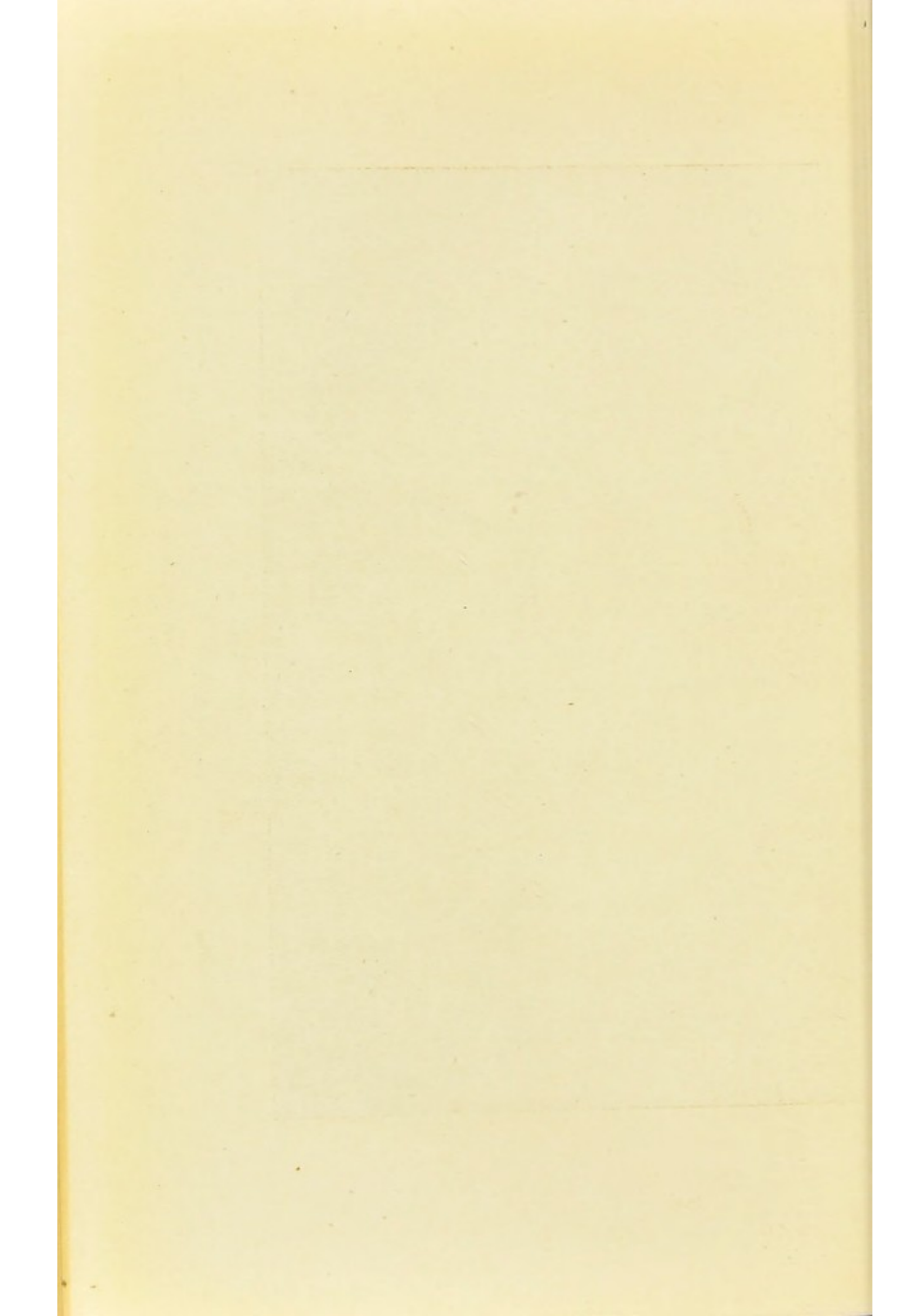
His work was carried on a century later by Dr. Guidott, who in about the year 1668 introduced the use of "pumpings," which were the prototype of our modern douches, and in other ways further improved the bathing arrangements.

Still, Bath was far from being an ideal place; for we are told that in 1700 "it was neither town nor country, yet goes by the name of both. Five months



FACE PAGE 20.

REPRODUCED FROM ROWLANDSON'S SKETCH OF GRAND PUMP ROOM,
XVII. CENTURY.



of the year 'tis as populous as London, the other seven as desolate as a wilderness. . . . During the season it hath as many families in a house as Edinburgh; but when the baths are useless so are their houses. . . . In a word, 'tis a valley of pleasure, yet a sink of iniquity; nor is there any intrigue or debauch practised at London but is mimicked here." This is not a pleasing picture; but a new era was at hand, and Bath was shortly to arise from a decaying, ill-built, badly-smelling country town, till it became the most beautiful, as well as the most fashionable, health resort of our times.

Modern Bath may be said to date from the arrival of Richard Nash. Coming by chance as a casual visitor, a lucky evening at cards induced him to stay longer than he intended; and thus it was, that being here when Webster, the Master of Ceremonies, was killed in a duel, he was appointed in his stead. Beau Nash was possessed of a marked individuality, and of that peculiar, almost mesmeric, power which makes a man a ruler among men. His word was law, the wilder spirits bowed before him, all submitted to his sway, and in the little society in which he reigned he was indeed an uncrowned king.

As M.C. he quickly brought a certain amount of order upon a scene which had lately been disorder and almost chaos. It was owing to his exertions that

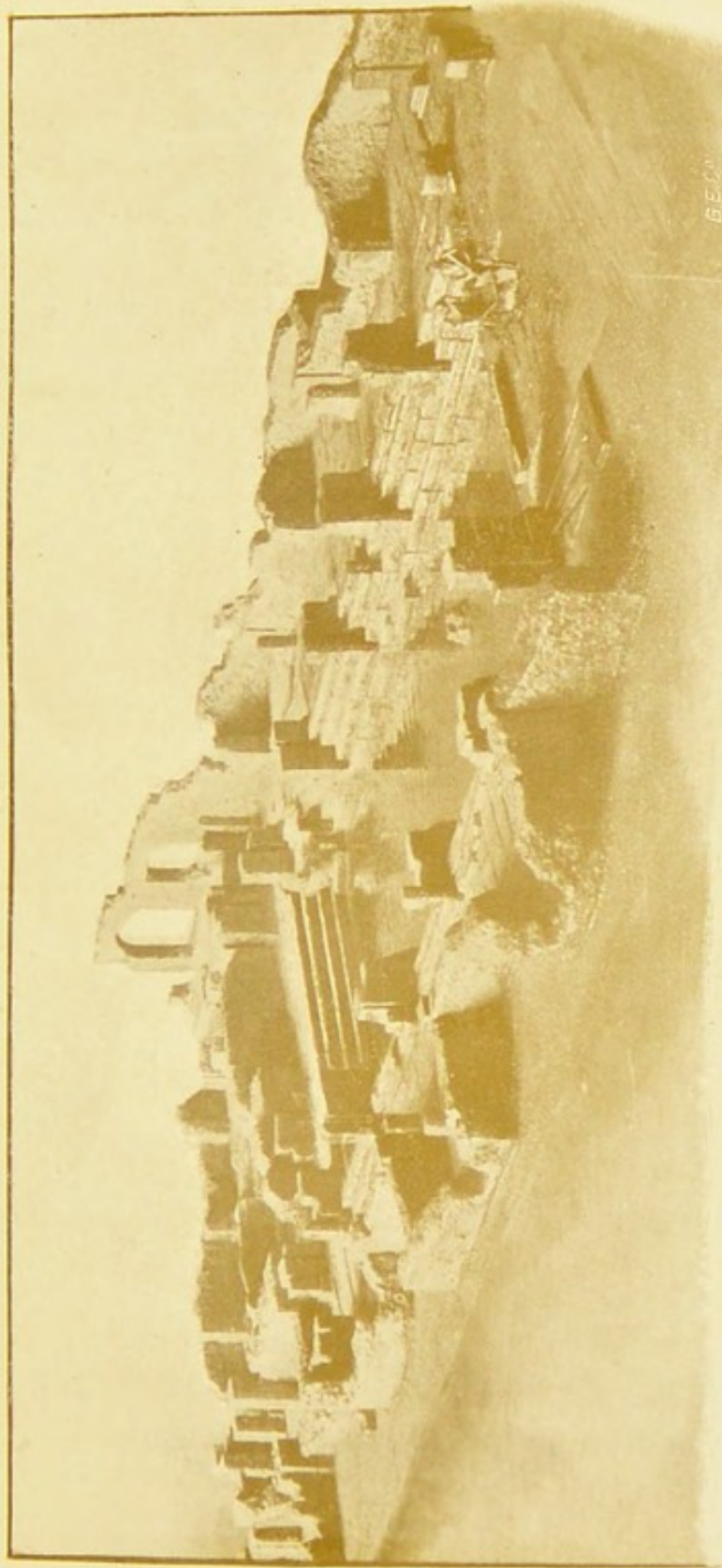
the Assembly Rooms were provided—the old Assembly Rooms in Orange Grove, which have long since passed away—where dances, card-parties, and concerts could be held. If some of his ways do not commend themselves to our modern ideas, we can afford to forget them and remember only the work he did in helping Bath to become the city she now is.

With Beau Nash must be mentioned the names of Ralph Allen and John Wood, the latter of whom was an able architect, and came “in time to impress upon the city which was to spring up the stamp of his rare genius.”

One work of special note achieved by these three men was the establishment of the Mineral Water Hospital. The foundation-stone of this institution was laid in 1738, and the names of two of its founders are still perpetuated in the Nash and Allen Wards.

During the present century Bath has felt the influence of the spirit of the times; the work of progress has been here, as elsewhere through the land. Especially has this been the case during recent years. Large sums of money have been, and still are being, expended to make the use of the waters more convenient and more effective, and the city more attractive to its visitors.

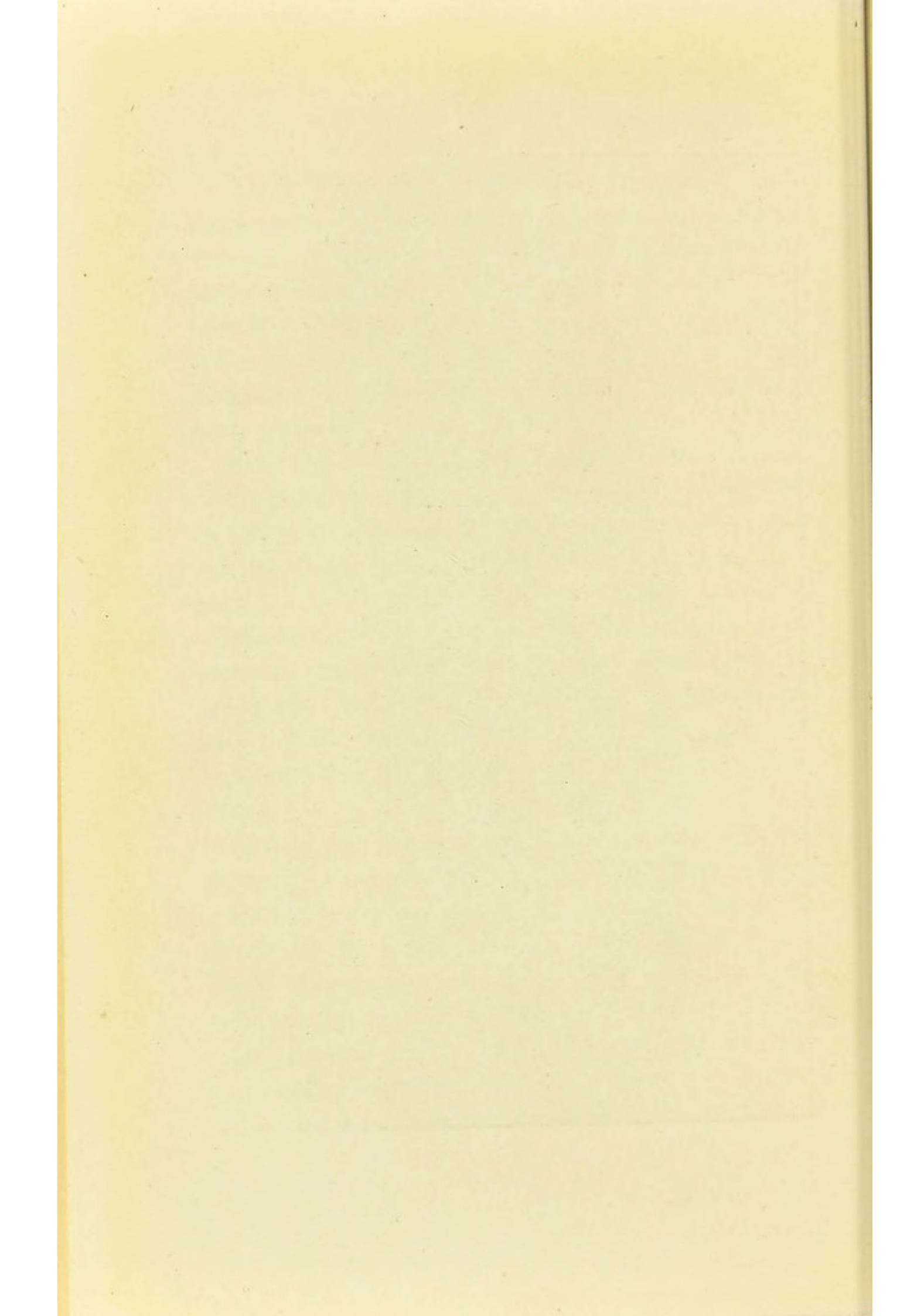
The history of these last years cannot be alluded



FACE PAGE 22.

*From a Photograph of a Model of the Roman Thermae
shown at the Paris International Exhibition.*

ROMAN BATHS AT BATH (AS DISCOVERED).



to, even briefly, without mentioning the name of the late Mr. H. W. Freeman, who, both on the Baths Committee of the Corporation, and also in his private capacity, did so much to advance the prosperity of Bath. It is, to a great extent, due to his efforts that our city stands to-day foremost among all the health resorts of England.

CHAPTER II.

BATH AS A MODERN HEALTH RESORT.

"Better to hunt in fields for health unbought,
Than fee the doctor for a nauseous draught."—DRYDEN.

BATH—Queen of the West; the City of the Warm Vale—situated in the valley of the Avon, within two hours of London. Principal produce, water; imports, cripples; exports, convalescents. So might our city be described in the language of some old work upon geography with which we were familiar in our boyhood days.

Nestling in one of the prettiest parts of the Avon Valley, surrounded by hills which protect it from the extreme cold winds of winter, Bath may well lay claim both to her title of Queen of the West and also to her established reputation as a health resort for invalids.

The surrounding country, at whatever season we may see it, is remarkable for its beauty. In spring, which is earlier by a fortnight here than in the eastern counties, it perhaps is at its best; but when the green of summer is changing upon the wooded slopes

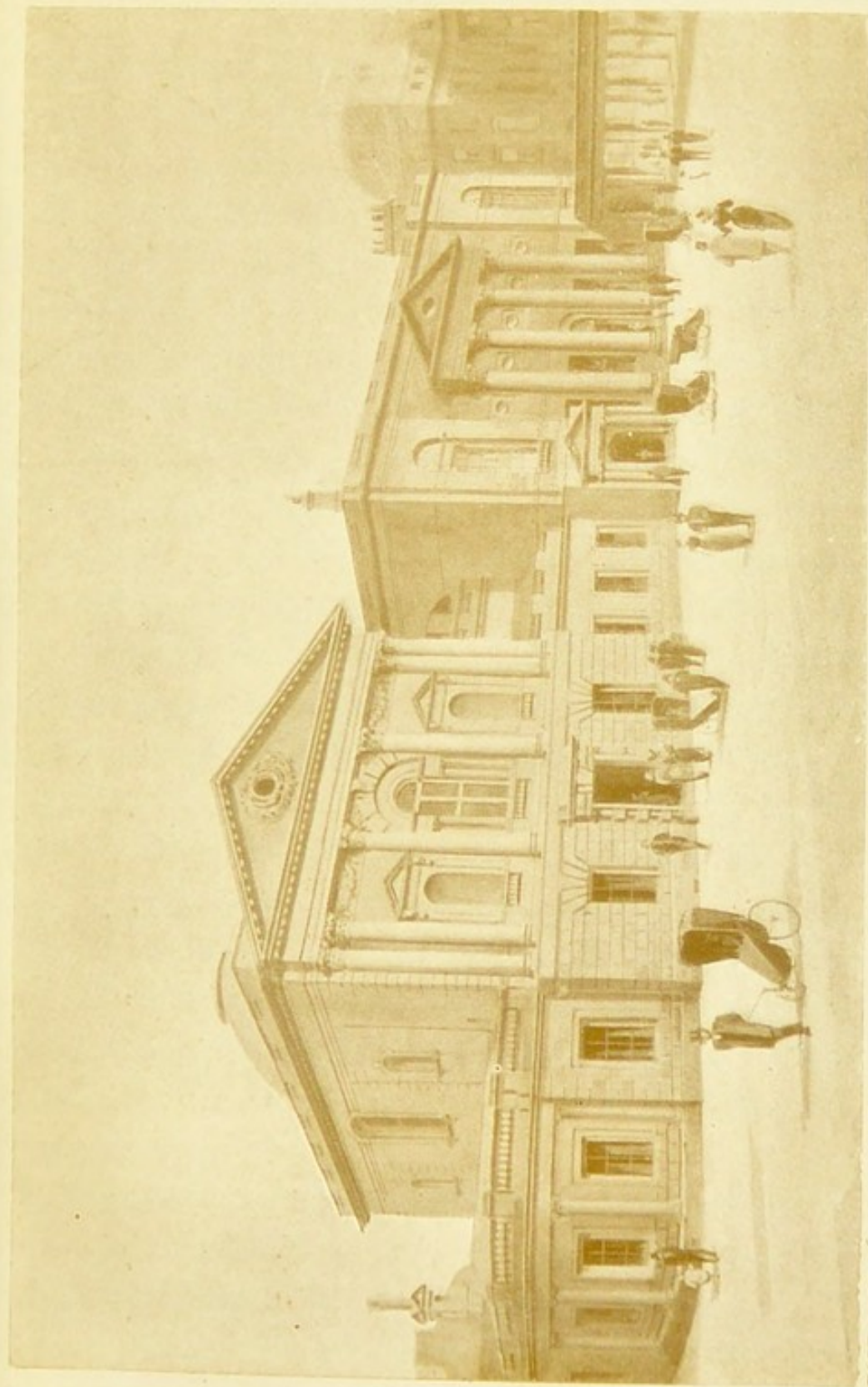
into the rich and many-coloured hues of autumn, or in the depths of winter, when the naked trees, clad in hoar frost, stand out upon the snowy background, offering welcome shelter to the little farms and homesteads they surround, it equally presents a lovely landscape, and gives us some of the prettiest views of perfect English scenery. The city itself is specially happy in the possession of pleasure grounds and ornamental gardens. The Victoria Park, which was opened in 1830 by her late Majesty, then Princess Victoria, covers an area of forty-nine acres, and contains ornamental plantations, stately promenades of great beauty, and a carriage drive a mile and a quarter in length. The ornamental water, with its rustic bridge and surroundings, beautifully designed and laid out, forms one of the most charming features of the Park. During the summer months, from April to September, the band plays here daily, on alternate afternoons and evenings; and that this is appreciated may be judged by the large number of residents and visitors who come together, either walking or in chairs or carriages, to listen to the music. At the other end of the town, at the bottom of Pulteney Street, are the Sydney Gardens; these, about sixteen acres in extent, were opened in 1796, and though the character of the entertainments that are held there has changed with the changing times, they still retain a foremost

position as a place of fashionable resort; the band plays there also daily during the summer, and it is the place of flower shows, fêtes, and firework displays. The North Parade and Institution gardens, though small in comparison to the others, form no slight attraction, owing to their central situation and the ease with which they can be reached from the Baths and Pump Room.

The Assembly Rooms, which form an important adjunct to a fashionable health resort, were built in 1771 at the cost of £20,000. Externally heavy, disappointing, and even gloomy in appearance, we are struck on entering them with the manner in which the architect has understood his business. Built as they are with perfect taste and genius, in proportion, beauty, and elegance, these rooms are allowed still to be, what they were a century ago, the finest suite in the kingdom.

Next, and perhaps of more importance, if not of equal grandeur with the Assembly Rooms, must be mentioned the Pump Room.

The present building—the second on this site—was built in 1796, and is situated in the Abbey Yard adjoining the King's and Queen's Baths. Its architecture is Corinthian, and it offers ample space as a promenade for those who drink the waters, and is furnished with comfortable lounges for those to whom walking is a



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GRAND PUMP ROOM, NEW CONCERT ROOM, AND ROMAN PROMENADE.



luxury or a pleasure only to be looked forward to in the future. At the south end, opposite the main entrance from the Abbey Yard, is an apse containing the mineral water fountain, which is presided over by a marble statuette of the Angel troubling the waters.

Close by the Pump Room, to which it is connected by a short corridor, is the new Grand Concert Room, where the band plays throughout the season; and leading from this is the Roman Promenade. This was built with the concert room about two years ago, partly from necessity to protect the priceless Roman remains from the action of the weather, and partly for convenience in order to afford a sheltered retreat where invalids might walk and rest. In this promenade, when the weather permits, semi-open-air concerts are held in the evenings, and the visitor sits listening to the sound of music mingling with the splash of water, in a place eloquent with memories of the past.

The climate of Bath varies within certain limits with the different parts of the town; for even in the heat of summer there is a cool and bracing air on the slopes of Lansdown which quite rewards the extra toil of getting there.

The weather is very much like that of the rest of England: constant chiefly in its variations, and remarkable mostly for its frequent surprises.

Taking all the year round, the thermometer records a

temperature in Bath which, compared with Cambridge, Oxford, Greenwich, and Gloucester, shows a 5° lower maximum and higher minimum than in those places. It has frequently been noticed, moreover, that during the recent hot summers London has been favoured with ten degrees more heat than Bath.

The season for "taking the waters" is generally recognised as being a winter one. There are some things to be said in favour of this custom, but more probably against so artificial and arbitrary an arrangement. The waters are equally efficacious at any season of the year.

At the Mineral Water Hospital, where fashion does not intrude, we find that "cures" are effected equally well in summer as in winter.

There are, moreover, obvious reasons why certain sufferers should prefer the summer for their visit. For the old, and for those who are especially susceptible to changes in the temperature, the advantages of such a course are self-apparent; not only can they use the waters with less risk, but, quite as important, they can get out into the air, either walking or for drives, and enjoy the parks and country round as they could not do in winter.

For the ordinary visitor the best time, for a course of the baths, is during the latter part of spring or the early autumn, and the experience of recent years

shows that this fact is beginning to be more fully recognised.

Many who have been in the habit of going to some Continental spa for treatment—and to whom so long a journey is no light matter—are finding more and more that in Bath there is an equally effective means of cure lying almost at their doors.

“English waters best suit English bodies,” was the saying of an old physician; and if the slavish observance of fashion, which decrees that sufferers must seek health abroad, were only broken through, many, who are now unable, would attest that those words are true.

CHAPTER III.

THE THERMAL WATERS : THEIR NATURE, SOURCE, AND HEAT.

"It is troublesome and deep digging for pure waters."—FELTON.

THE thermal waters rise to its surface at three points, supplying respectively the King's, the Hetling, and the Cross baths. These springs are all within a narrow area, and, though at the surface they are quite distinct, they doubtless have a common origin within the ground.

Their temperature varies slightly; that of the two first-named, which supply the bathing establishments, being about 117° F. to 120° F., whilst at the Cross bath it is only 114° F. This bath, it may be remarked in passing, though having had a more exalted past, is now only used by small boys, who enjoy the luxury of a warm plunge for the sum of one penny if they bring their own towels.

The waters on first rising are quite clear, of a greenish colour, and sparkle slightly as the gases dissolved in them escape. In taste they are chalybeate and slightly

saline; or, as Mr. Sam Weller puts it, "They've a wery strong flavour o' warm flat-irons."

After cooling, there is noticed a pale ochrey-yellow precipitate, formed chiefly of carbonate of iron, which slowly settles down, and forms the well-known deposit which may be seen encrusting the glasses used for drinking.

The chemical constituents of the water from the different springs are found to be alike, though differing somewhat in their relative amounts.

The following is the analysis of the water of the King's Bath Spring, taken from the *Lancet* report:—

Calcium Sulphate	...	...	102.880	grains per gallon.
Strontium Sulphate	...	...	2.030	" "
Sodium Sulphate	...	...	23.500	" "
Potassium Sulphate	...	...	0.207	" "
Calcium Carbonate	...	...	8.750	" "
Magnesium Chloride	...	...	15.800	" "
Sodium Chloride	...	...	9.080	" "
Lithium Chloride	...	...	0.120	" "
Silica	...	...	1.960	" "
Bromine	...	...	Traces	
Nitrates	...	...	Traces	
Carbonate of Iron	...	...	1.600	" "

Analysis of the gases (Cross Spring):—

						Parts per 10,000
Carbonic Acid Gas	...	...	...	...	...	220
Oxygen	...	...	...	...	...	120
Argon and Helion	...	...	...	...	...	161
Nitrogen	...	...	...	...	...	9499

"It is interesting to note that the combined amount of argon and helion in the gases of the Cross Spring, found by our Commissioners, agrees very closely with that found by Professor Dewar, in the King's Bath Spring, by means of liquefaction and freezing."*

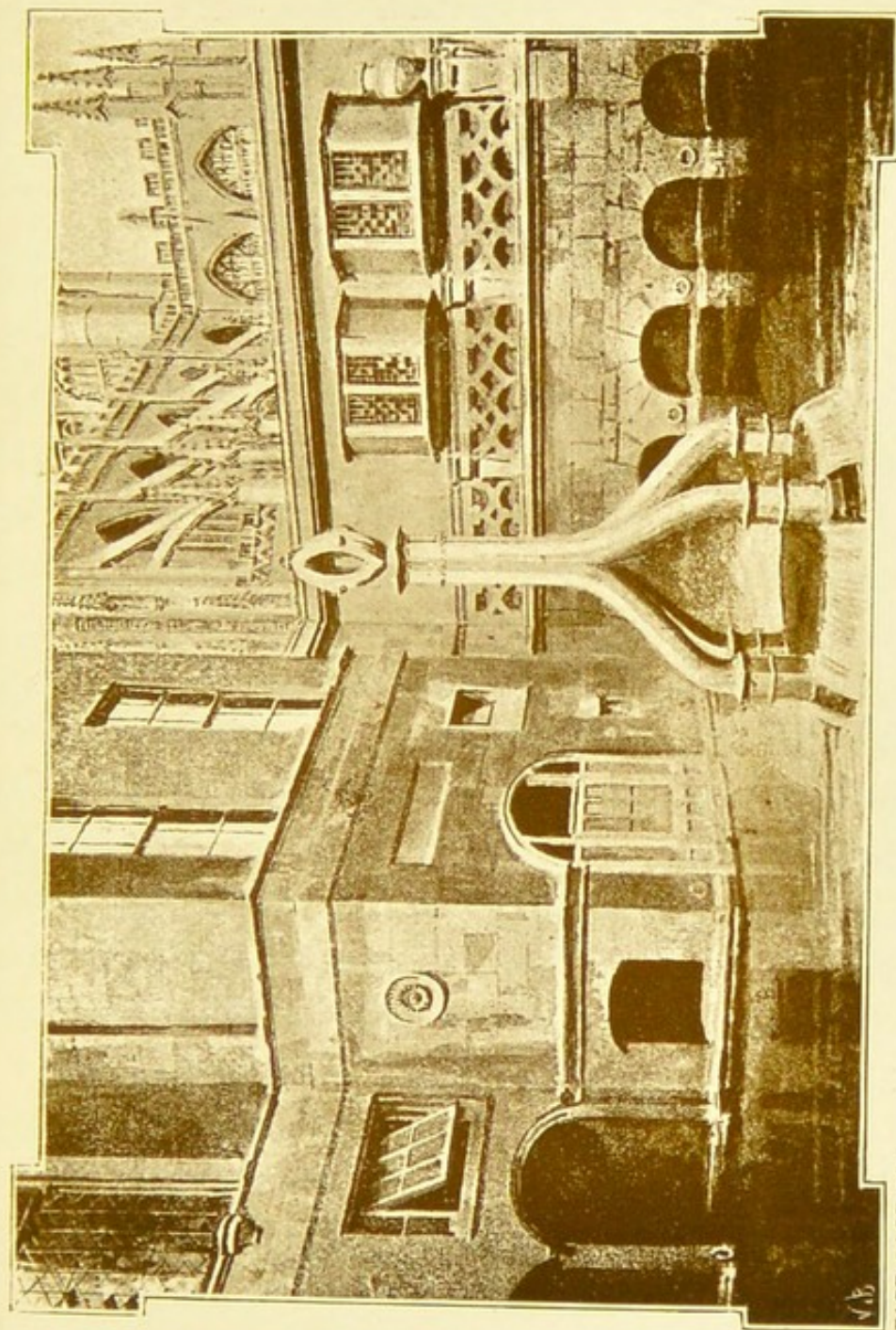
There is nothing weird or unnatural about the Bath waters, though, when we see it stated that they take longer to cool, by virtue of their telluric heat, and find it suggested that in "natural" vapour there is something quite apart from the steam of an ordinary kettle, we might be led to think there was.

SOURCE AND HEAT OF THE WATERS.

The source from which the waters come, and the nature of their heat, have been from early times the subject of much discussion. In speaking first of the origin of the heat, it is interesting to find that Aristotle held that the heat of thermal waters was due to "subterraneous fire." Why so simple and apparently obvious an explanation should not have been more commonly accepted is not very clear; but the fact remains that it was not.

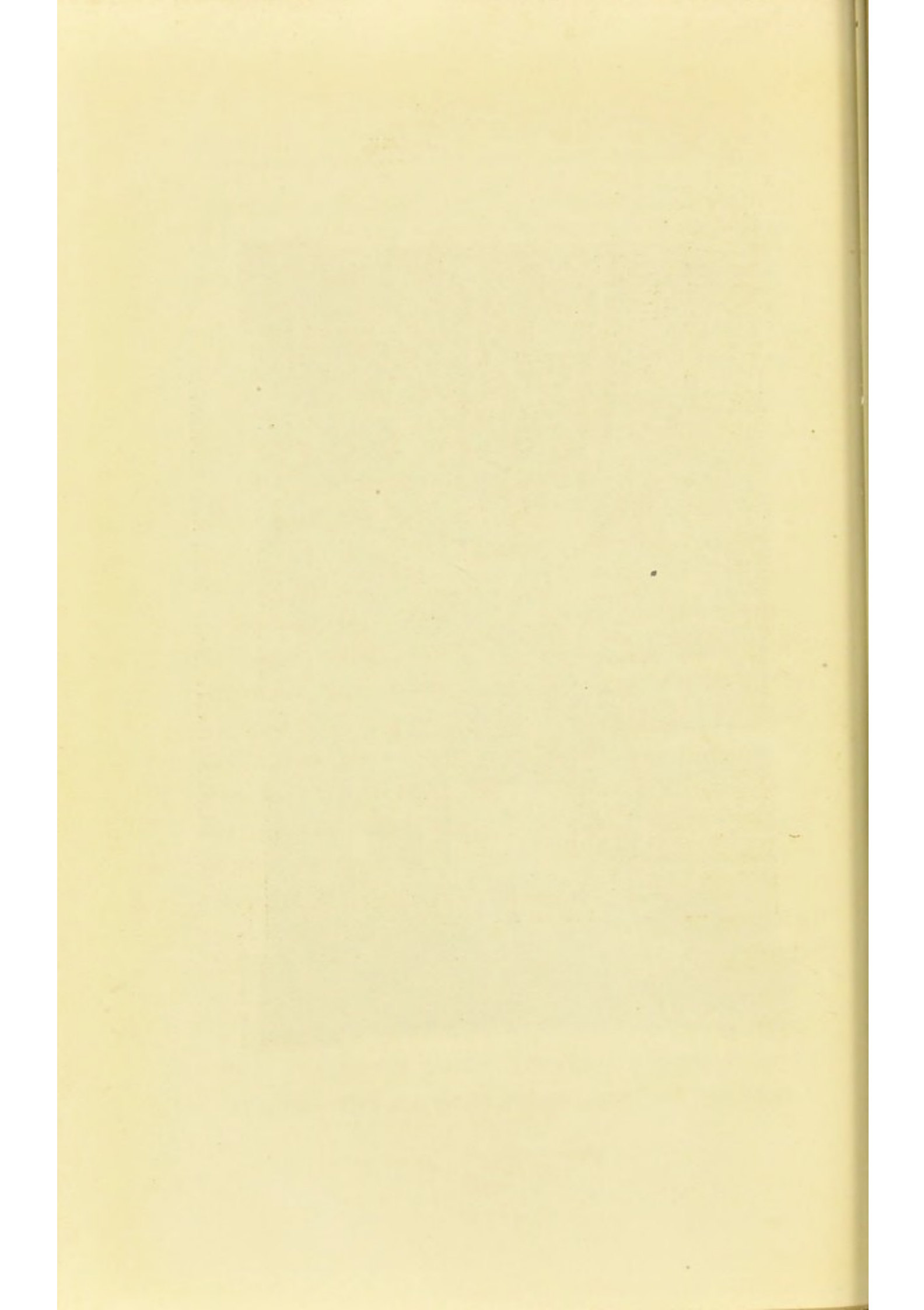
Some of the various theories that have, from time to time, been advanced as to the origin of the heat of thermal water in general, and of the Bath waters in particular, are indeed wild and fantastic; whilst others, if they are nothing else, may at least claim to

* Report on Bath as a Health Resort.—*Lancet*, Oct. 14th, 1899.



FACE PAGE 32.

THE KING'S BATH AND MINERAL SPRING.



be ingenious. Democritus thought that the heat was the result of the water passing over a bed of quicklime; he does not seem to have been troubled by the reflection that if quicklime existed in the natural state, it would only do so by the action of fire, which by itself would have been sufficient to heat the water without the aid of any second cause.

In the 15th century Paracelsus supposed the waters created hot from the beginning by the Almighty fiat; and he ought to have known, since he boasts that "he held converse with Satan at the gates of Hell." Guidott writes that "the minerals contained in the earth acted upon the various springs, and generated heat by ebullition and fermentation." It is very much this view that was held by Dr. Falconer and others, and still seems to have its supporters; viz., that the water is heated by passing over beds of iron pyrites. Dr. Oliver, whose fame, made in water, lives on in the Bath biscuit, had a beautiful conception. He speaks of the mineral waters as possessing "body and soul"—the "soul" that warms. As soon as the water reaches the surface, this "spiritus rector," as he calls it, "breaks through its watery prison and takes flight, leaving the water cold and lifeless."

Dr. Barlow, whilst allowing that volcanic heat accounts for some of the world's hot springs, opposes the volcanic theory here: first, because "we see no

fire or smoke"; and, secondly, because we have plenty of coal in the neighbourhood, which would not be the case "if it had served as fuel to the Bath cauldron."

It would almost seem as if these various writers were anxious to wrap a cloak of mystery about their subject. They appear to speak with bated breath, as though they feared that the virtue of the water might be lost if, in the light of truth, its warmth, its nature, and its source should be too clearly known.

Aristotle's explanation is sufficient to account for the heat of our waters; and there seems no necessity to seek another.

Bath stands on what was once the scene of great volcanic action; the activity of the forces once at work has ceased; but the waters, rising from some unknown depth, tell us of the heat that still remains below.

Then as to the origin of the waters, and whence they come. Here, again, the simplest explanation is probably the best. It is only necessary to suppose that there exists a channel in the ground, formed, as Mr. Winwood says, "by some fracture or fissure in the Palæozoic rocks which lie beneath the horizontal covering of New Red and Lias."* A channel such as this would form a natural artesian well, through which, from some great depth, the waters could be carried to the surface.

* *Handbook to Bath*, 1888, p. 233.

The lower part of Bath is only sixty to seventy feet above the level of the sea; on Lansdown the land rises to about 700 feet; whilst away towards Gloucester and Cheltenham it is upwards of 1000 feet above sea level.

Thus it will be seen that the feeding area for these deep springs, which supply the artesian well, is of great extent; and we find, as we should naturally expect, that the flow is constant, independent alike of seasons dry or rainy.

There seems very little doubt, however, that our waters do not reach us pure from their source in the hills around. There is evidence so strong as to amount practically to proof in favour of their being, or at least having been, contaminated by water from the sea. Mr. J. W. Morris, of this city, to whom alone belongs the credit for this suggestion, has been led to that conclusion by the careful investigation he has made into the nature of the sands which rise in the water of the King's bath.

By the aid of the microscope, he has demonstrated the presence of the following objects:—

1. Fragments of species of minute echini (sea urchin), which are fairly frequent.
2. Instances of what appear to be the mandibles of arachnidæ (sea spiders), resembling in form the claws of crustaceæ.

1. Fragments of shell are of constant recurrence, but so worn as to admit of no identification.
4. Certain thin plates symmetrically punctured, and the punctures filled up with pyrites.
5. Somewhat similar plates suggestive of compound molluscs.
6. Certain fluted columna fragments the grooves filled with pyrites, probably parts of the spines of echini.

These specimens seem to point almost conclusively to the fact that sea water in the past—even if it does not do so now—found access to the sources of our thermal springs. The shells, the crustacea claws, and the fragments of spines can hardly have had any other origin.

The investigations into the sands, however, do not stop here. Besides the abundance of iron which he has found in his “magnetic gatherings,” Mr. Morris has also demonstrated the presence of numerous pieces of lava, like those we meet with on Vesuvius. “Blistered and bubble-blown,” he writes, “these fragments often contain pebbles of quartz, clasped and imprisoned by the molten metal as it cooled, precisely as the coins, deposited by the enterprising visitor, are clasped by the cooling lava of our volcanos. Sometimes the nodules are beautifully burnished, sometimes they resemble the specular iron ore of Elba, and not

unfrequently they glow with all the varied colours of a peacock tarnish." Here then, is distinct and visible proof of volcanic action, which should be sufficient to dispose forever of any other theory as to the origin of the heat of the waters.

The conclusion to which Mr. Morris comes is: "That the mineral waters have their origin in some volcanic region to which marine sources have made contribution."

CHAPTER IV.

THE BATHING ESTABLISHMENT AND BATHS.

"An honest tale speeds best being plainly told."—SHAKESPEARE.

THE whole of the bathing establishment is under the management of the City Corporation, and in this respect Bath has a distinct advantage over Continental spas; for these, as a rule, are in the hands of the Government, and it is easy to understand what that means.

The Corporation rightly realise that it is not their aim to make the baths a source of income—and this the ratepayers know full well—and they spare no expense in order to provide proper accommodation, and to render the baths, not only as efficient, but also as luxurious as possible. The result is that, in the excellence of its bathing arrangements, Bath holds the first position among all the spas of Europe.

The three chief sets of baths—"The King's and Queen's," "The New Royal," and "Hetling"—are close together in, or just off, Stall Street, and the

approaches are so arranged that, when necessary, a Bath chair can take the patient to the bath-room door. Each establishment is provided with a cooling-room, furnished with easy-chairs and lounges, where the bathers sit for half an hour or more, till the skin has ceased to act overmuch, and they can return home with safety.

Opening out of the rooms in which the baths are contained are comfortably-furnished dressing-rooms—in most cases two to each bath-room—in each of which is a couch, where the patient lies during the “pack” which usually follows bathing. The baths are lined throughout by glazed porcelain tiles, and so also are the dressing-rooms. These rooms at the King’s bath have for a floor a beautiful tessellated paving, copied from fragments of old Roman pavements that have been discovered. In each room this paving is different in design, and its artistic beauty is somewhat lost under the necessary Turkish mats which partly cover it.

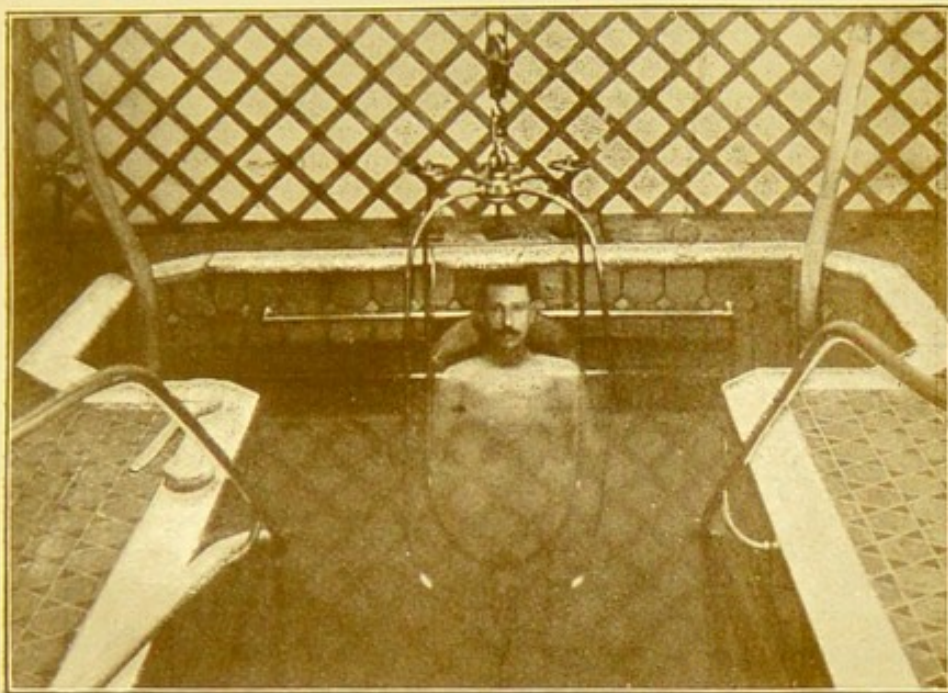
In the “spray room” at the King’s bath there is an elaborate arrangement for applying atomised, medicated, or plain thermal water to the throat and eye, and also for douching the ear and nasal passages. In some cases of gouty affection, the throat spray has been of distinct use. In this room, too, there are arrangements for the gymnastic exercise of the arms and legs by means of weights and pulleys.

It is probable that before long this system will be further developed, and that a room will be fitted up as a sort of gymnasium, where, by means of more perfect appliances, patients will be enabled to exercise their various muscles.

These baths are entered by a flight of steps, on either side of which are brass hand-rails; *The Deep Baths.* they each contain about 800 to 900 gallons of water. The depth is about 4 ft. 6 ins., so that the bather is practically immersed, and the bath is large enough to give free movement to the limbs. Usually the temperature of the water is 99° F. to 104° F., but it can be had much hotter if required.

The "wet" or "under-current" douche, by means of which a powerful stream of water—generally at a higher temperature than the bath—is directed upon some special joint, is used in conjunction with these baths. As a rule, this bath is followed by the "pack," and when it can be taken it is the most useful form of bathing in chronic gout or rheumatism.

This is merely a modification of the Deep *The Chair Bath.* Bath, intended for those who are unable to walk down the steps. By means of an ingenious arrangement, a wooden chair, in which the patient is seated, is lowered by hydraulic power into the water. The movement is wonderfully easy and perfectly under control, and compares very

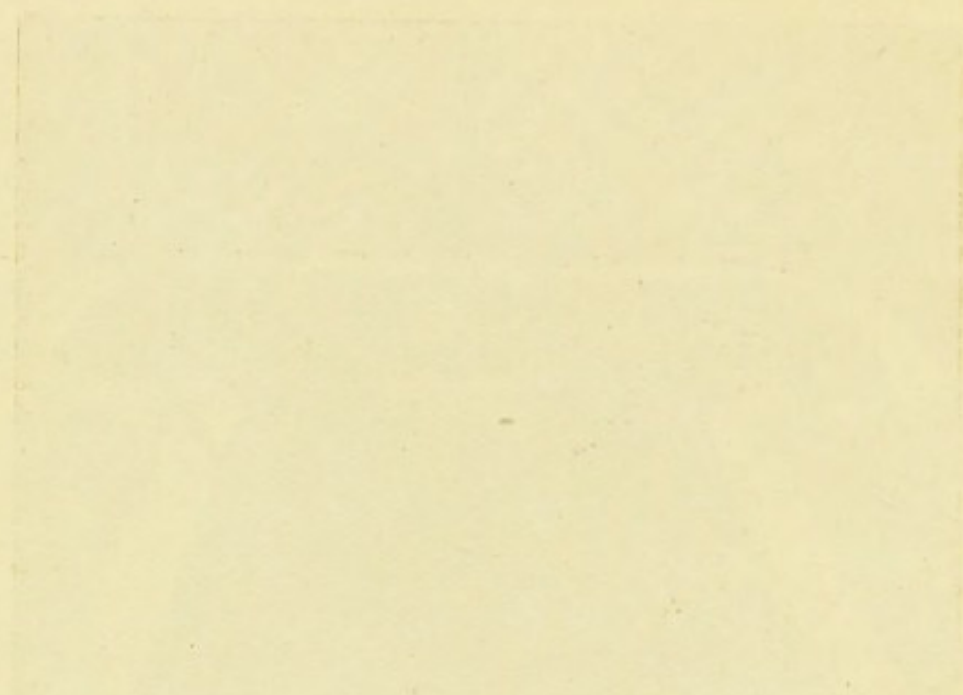


DEEP OR CHAIR BATH.



FACE PAGE 40.

AIX MASSAGE.



favourably with the clumsy and antiquated cranes seen elsewhere.

The Reclining Baths. These are in form like ordinary baths, only larger. They contain about 150 gallons of water, and are preferred on account of the recumbent position for those with weak hearts, and for others to whom the exposure to so large a volume of water as is contained in the deep bath is undesirable. The douche, when ordered, is also used in these baths, and massage is sometimes employed in conjunction with them.

Aix Massage Baths. In these the combined process of massage and douching which is used at Aix-les-Bains is carried out. The patient, seated on a wooden stool, is douched and rubbed by one or two attendants as directed; if by only one, then a stream of water is also kept playing on him to prevent unpleasant cooling.

It is either followed by the usual "pack" or by a "rain spray" douche of required temperature and a lighter pack. This bath is one of the most useful forms of bathing we possess.

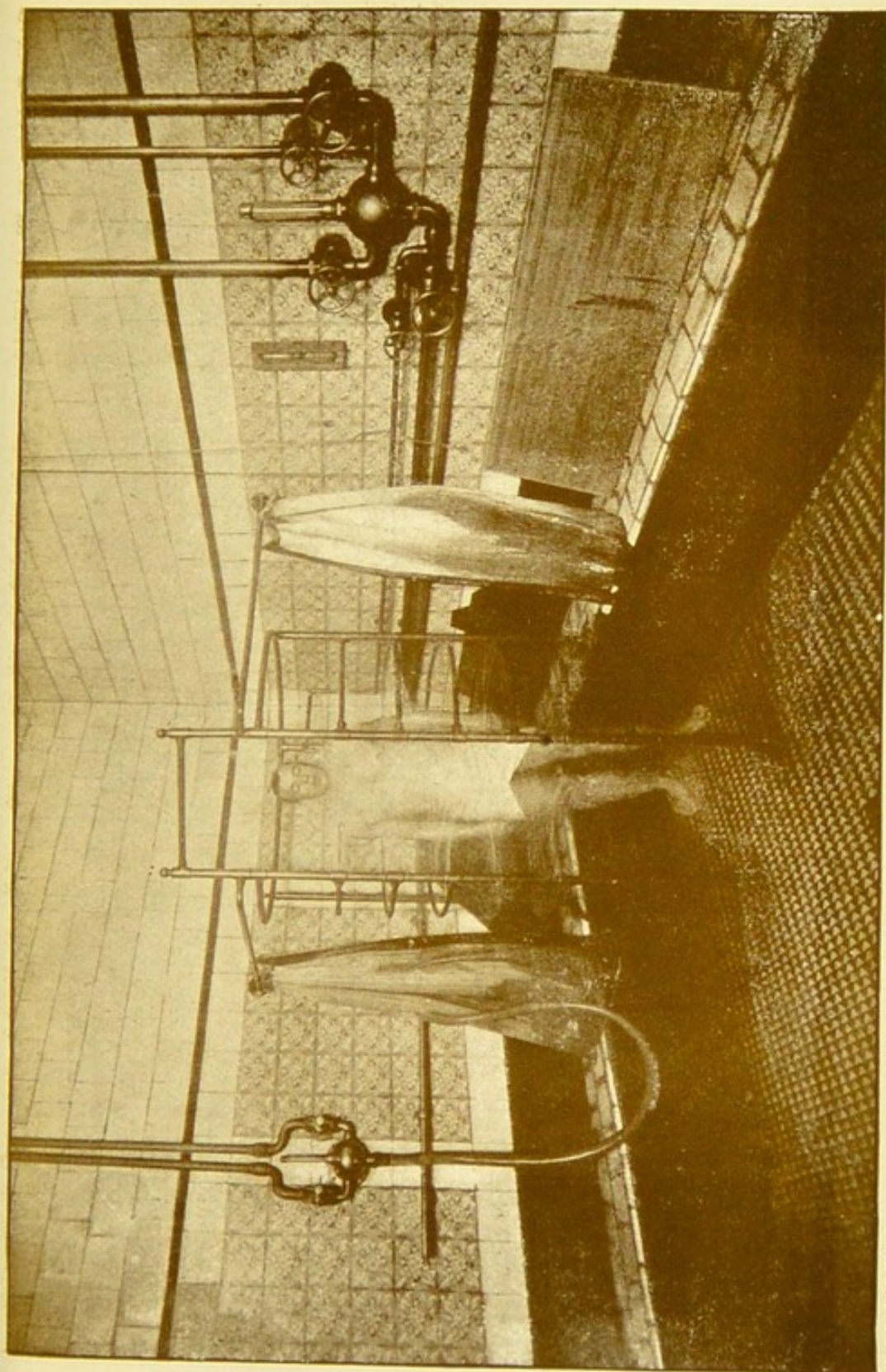
Needle, Spray, and other Douches. The "Needle," "Rain Spray," and other forms of so-called "dry" douches, supply a means of using the water either locally or to the whole body without general immersion. The temperature can be arranged exactly,

as the hot and cold waters meet in the "mixer," and the force, like that of the "wet" or undercurrent douche, is controlled by the taps. Generally these sprays are used at a higher temperature than the ordinary baths; and, like them, they are most usually followed by the "pack."

By this, from two nozzles, powerful streams of alternating hot and cold water are turned on to the patient, who stands about half a dozen yards away. It is useful in neurasthenia, and is also said to cure lumbago, but for this latter disease we should prefer a milder form of treatment.

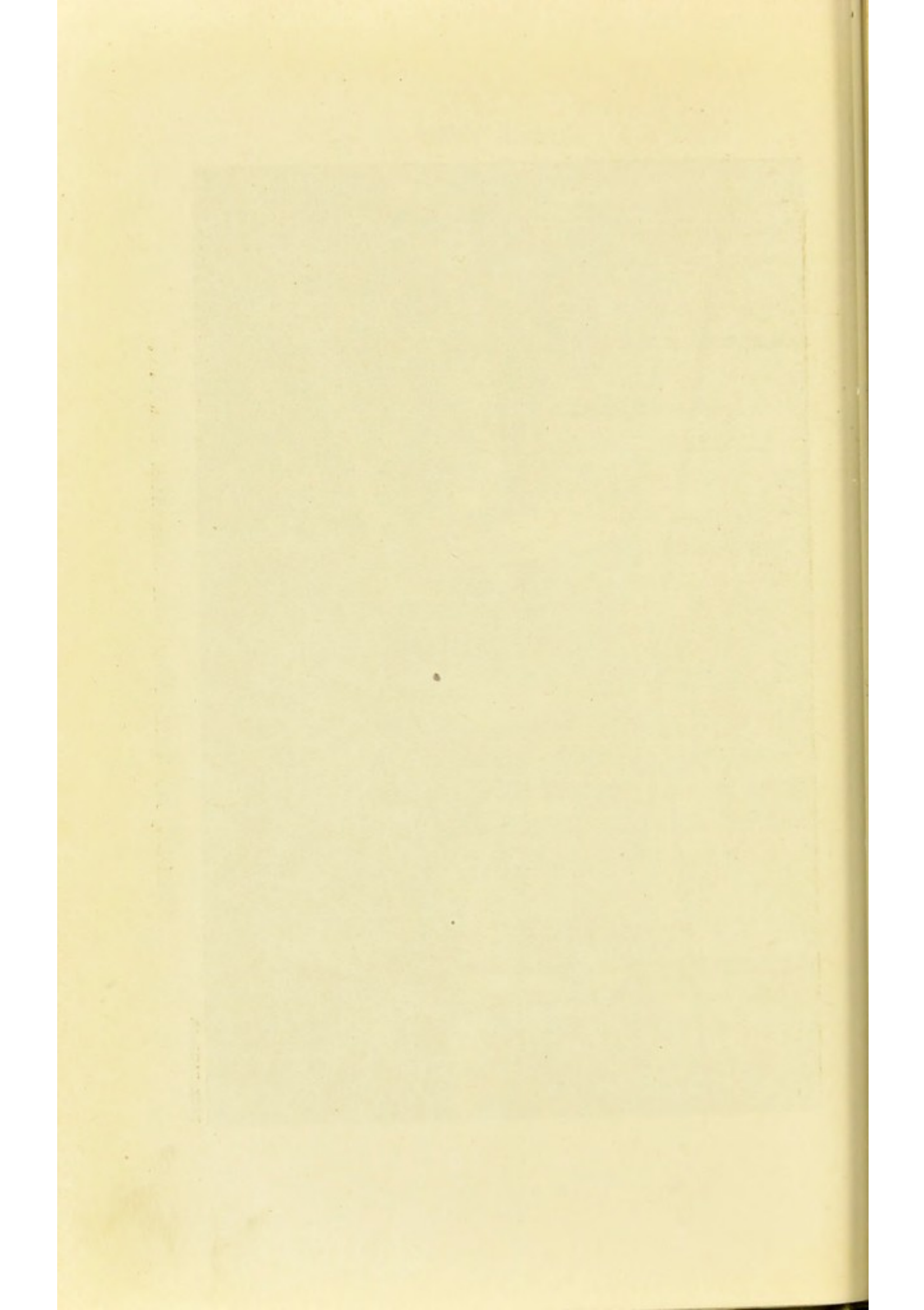
This, as its name implies, is an apparatus for directing the water on to the back. Seated in this, and kept warm by a "rain spray" douche of moderate temperature in front, the patient receives a strong form of needle douche, at about 105° F. to 110° F., to his back and loins. It is of use in the subacute and chronic forms of lumbago.

By means of this, either one or two limbs, or the whole body, can be exposed to the action of hot vapour. The temperature is generally about 110° F.; and the "rain-spray" douche is usually employed as a final process before the pack.



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NEEDLE DOUCHE AND AIX MASSAGE ROOM.



By this bath, without immersion in water, the patient can receive the outward benefit of moist heat. For some forms of eczema and other skin diseases immersion in the water causes too much irritation, and for these the steaming process is most useful. For gouty and rheumatic hands and feet, also, it is frequently preferable to bathing.

*The
Sulphur
Bath.*

By adding sulphide of potassium to the ordinary reclining bath a sulphur bath is produced, which, in cases of skin disease, especially eczema, is very useful. It is usually taken at the body temperature, and is followed by a light pack.

*Other
Medicated
Baths.*

These are made by adding pine and pumiline, etc., to the water, and it can only be said that they may produce some psychic influence upon the neurasthenic, but beyond this they might be the ordinary water.

*The
Greville
Baths.*

A very useful addition to the bathing establishment has lately been made by the erection of the Greville hot-air system at the Queen's and King's baths. The heat is obtained by the passage of electricity through fine wires, which, owing to the resistance they offer to the current, become red hot.

The heat can be applied, either generally to the

whole body, or locally to some particular limb, as is shown by the accompanying photographs.

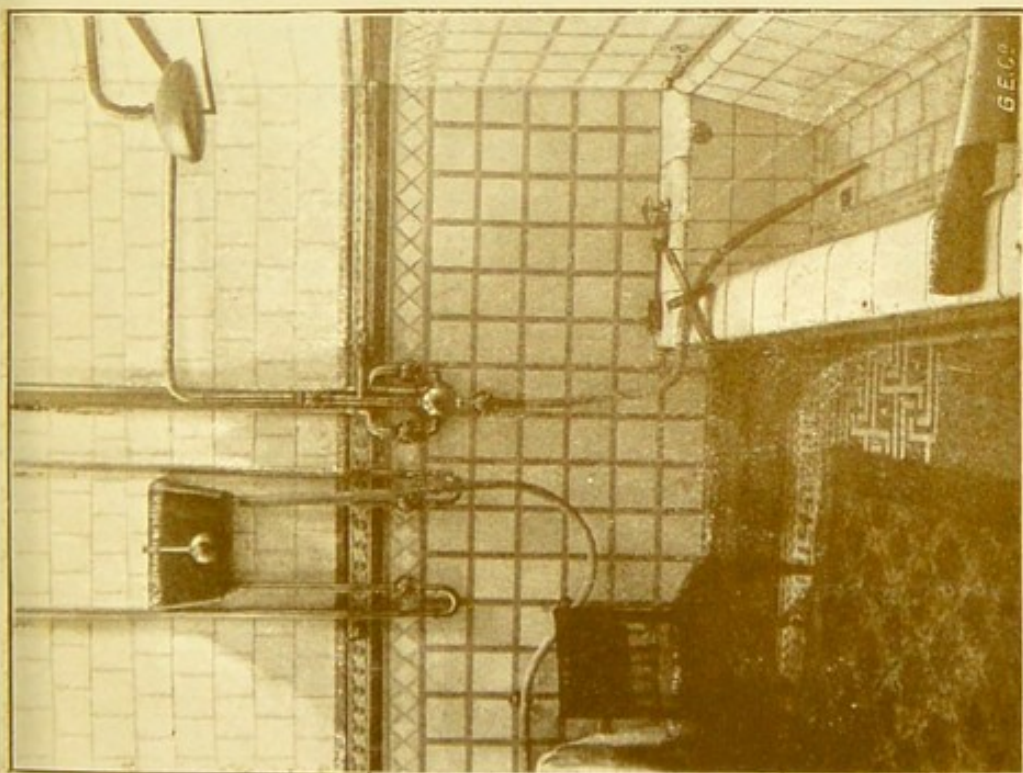
With regard to these baths it is a question "*Nauheim*" whether it is wise to attempt, by artificial
Baths. means, to reproduce the aërated and special waters of Nauheim.

At Nauheim it is claimed that the waters have a certain specific action on the heart. This may be so, we don't pretend to say. We know, however, that by the use of our ordinary hot water the condition of an affected heart is frequently improved, and we have found no special benefit to follow when we have tried these spurious Nauheim baths.

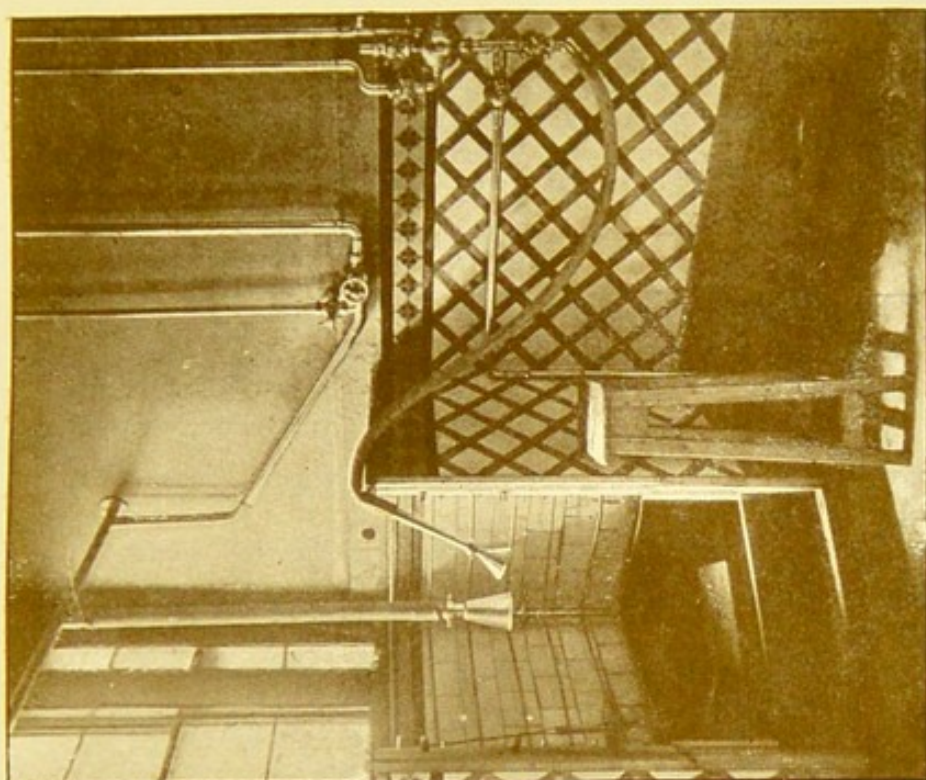
Dr. Wethered, with regard to this subject, says, "The attempts to imitate the Nauheim waters have not proved by any means successful."*

After discussing these baths as used here, the writer of the report in the *Lancet*, already quoted, says: "The Corporation would therefore be well advised in the praiseworthy attempts they have made, and are still making, to establish Bath as one of the leading spas, if not the leading spa, of the world, by the installation of every kind of mechanical appliance likely to benefit the patients, but not to attempt to imitate other natural waters—failure will almost inevitably result."

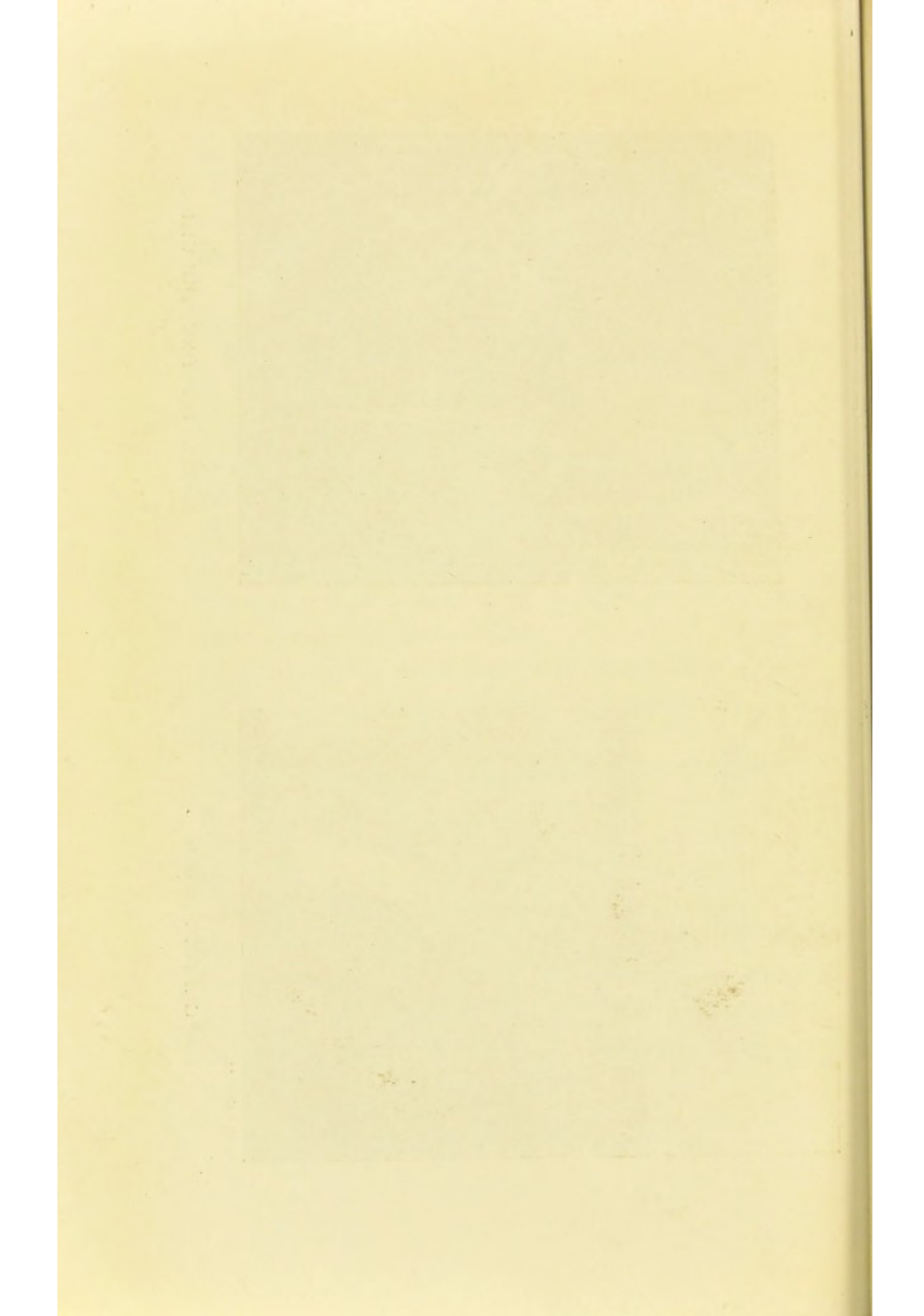
* *Journal of Balneology*, July, 1900.



RECLINING BATH.



LOCAL OR DRY DOUCHE.



In justice to the Corporation, it must be said that the erection of these baths was not at their initiative. "Who shall decide when doctors disagree?"—and the Corporation, in their anxiety to make the baths useful, are naturally slow to refuse what they are told is necessary.

One more form of bath must be mentioned;
The and, though this is done last, it is by no
Swimming means because it is the least important.
Baths.

There are two of these baths, the largest and best appointed being at the "New Royal." It is eighty feet long by thirty-five feet wide, and the depth of the water is about three to five feet. The temperature is usually about 90° F. This bath is not used so much as it deserves as a means of cure, for it can be easily understood how much good may result to limbs recovering from stiffness by the free movement allowed in so large a space of water. We have frequently employed it with this end in view, with excellent results.

CHAPTER V.

THERAPEUTIC ACTION OF THE WATERS.

"He jests at scars that never felt a wound."—SHAKESPEARE.

WATER is Nature's great solvent, and the good that follows a thorough washing-out and flushing of the various organs can easily be imagined even by those who have never tried it.

The Bath waters, however, have a distinct advantage in the treatment of disease over ordinary water; for they possess certain medicinal and therapeutic properties peculiarly their own. If we do not know why this is so, and if we cannot explain how it is that so apparently simple a mineral water has such curative effect, at least we know it is a fact.

We frequently meet cases, for instance, in which patients who have been in the habit of drinking, perhaps, a couple of pints of ordinary hot water daily, and who might therefore be supposed to know the effect that this will have, find a marked difference in favour of the Bath waters.

Some people, upon whose kidneys ordinary hot water has no especial effect, find considerable inconvenience

in the excessive action of these organs after drinking the thermal waters; and when it is remembered that they are taken during a period of increased activity of the skin, produced by the hot bathing, this diuretic effect is all the more remarkable.

Taken, as they usually are, in half-pint doses twice a day, the waters cause a sensation of warmth internally and a pleasant glow to the surface. Besides their diuretic action, they have also, as a rule, a slightly constipating effect, due either to the sulphate of lime they contain, or more probably to the diminished peristaltic action which results from the hot bathing.

The best time for drinking the waters is about eleven o'clock in the morning and four o'clock in the afternoon. They should be taken slowly, as they are more easily absorbed, and better borne by the stomach, in this way than if drunk quickly.

The waters appear to possess a special virtue in those many cases where trouble results from the presence of uric acid; for they have a distinctly solvent action upon this subtle cause of so many ills.

"In our experiments, it was shown that Bath water dissolved over five times the amount of uric acid that distilled water would similarly take up at blood heat, *i.e.* just under 100° F. Since the waters are drunk hot, and used hot for bathing purposes, this

fact may have an important relation to the therapeutics of Bath waters in the treatment of chronic gouty affections and rheumatism." *

It may be that their action in this direction is to some extent accounted for by the natural formation of these thermal waters; for Dr. Luff has shown that, "although the extracts of the ashes of plants have a solvent effect on biurate of soda, yet when an attempt is made to form the solution artificially the same solvent action is not obtained."

Anyway, whether this is the true explanation or not, there is no doubt that our thermal waters are of great benefit in those diseases caused by the presence of uric acid.

The external application of the waters is a no less essential part of the "cure" than their internal use; indeed in many cases it is the more important of the two. Immersion in the thermal waters causes a much more profuse flow of perspiration, and a much greater feeling of exhaustion, than are noticed as a result of bathing in ordinary water at the same temperature. But why is this so? And upon what depends their peculiar virtue?

Looking at their chemical constituents, and seeing how slightly mineralised the waters are, we can hardly suppose that, even if those constituents were

* *Lancet* Report, October 14th, 1899.

absorbed, they would have any very distinct therapeutic action. Perhaps with the natural gases rests the answer to these questions. "Our knowledge of the action of these gases on the human organism is small, but there would seem to be little doubt that they do exert considerable power, whether by mechanical action on the peripheral nerve-endings and cutaneous vessels or by absorption is uncertain."*

If, without exactly knowing upon what their virtue depends, we use these waters empirically, it need only be said that they are not peculiar in this respect, for their case is similar to most of the medicines we prescribe; and experience has justified the confidence we feel that they are a powerful aid in the treatment of disease.

By the thermal waters a grateful sense of comfort is produced, the vessels on the surface are dilated and filled with blood to the relief of internal and congested parts, perspiration is established, tension is diminished, and painful joints are eased; and, by the relaxation of the muscles, more freedom is allowed in the movement of crippled limbs. The physiological action of hot water upon the body is thus described by Drs. Herman and F. Parkes Webber: "At first it probably produces an initial vaso-contraction; this, however, passes off quickly and gives place to vasodilatation, which lasts during the rest of the application,

* *Lancet* Report, October 14th, 1899.

and then slowly passes off. This dilatation of the superficial vessels, with the subjective feeling of warmth, is the characteristic effect of hot applications. The superficial vaso-dilatation is associated with increase in the secretion of sweat and in the frequency of the respiratory movements." With regard to the soothing effect of the bath, they write: "The general sedative action is shown by diminished desire for exertion, and is probably explained by the partial emptying of the deeper blood-vessels, and slowing of the blood streams which accompany the dilatation of the superficial vessels, and cause a certain anæmia of the viscera and brain."

Bathing is generally followed by the "hot pack," by means of which a fuller action of the skin is encouraged.

There is no doubt that, properly used, the thermal waters are a powerful therapeutic agent against disease; they have, however, their limitations, and are not capable of accomplishing the impossible.

Bath works no miracles; she is no English Lourdes, but she is rich in heated, and slightly mineralised, waters, and these, as Dr. Spender says, "operate neither by magic nor charm, but by their chemical and organic powers, and always in harmony with the laws and general institutes of medicine."

* Allbutt's *System of Medicine*, vol. i., p. 344.

Half a million gallons daily of thermal water, too hot to bathe in till it is cooled, and every modern convenience and appliance for its therapeutic use, is what Bath offers to her visitors; and offering this, and with her well-known record in the past to point to, she looks forward with confidence to a still wider field of usefulness in the future.

CHAPTER VI.

CONDITIONS SUITABLE FOR TREATMENT
BY THE BATH WATERS.

"Of all the ills that suffering man endures,
The largest fraction liberal Nature cures."

OLIVER WENDELL HOLMES.

IT is by ignorance of the possibilities of thermal water treatment that disappointment sometimes follows upon a visit here.

Bath waters are a powerful aid to the treatment of disease, but, like other therapeutic agents, they have their limitations. The following are some of the conditions for which improvement may be reasonably expected by the thermal water treatment in Bath.

Rheumatism. The muscular weakness, and some slight stiffness in the joints, which so often remain after an acute attack of rheumatism, are greatly benefited by a course of the baths, while at the same time the general health is improved, and the period of convalescence is shortened by this means.

After an attack of acute rheumatism the tendency is for the joints to get perfectly well. This favourable termination unfortunately does not always follow, especially in these cases where relapses have been frequent, and permanent damage to the joints is the result. Sometimes without a distinct attack of the acute disease, but coming on in a more chronic form from the first, the same conditions are produced by the rheumatic poison. In either case the stiff and crippled joints are relieved by the hot bathing, and gain a freer range of movement from the massage, whilst the power of wasted muscles is encouraged and restored.

Certain forms of heart disease, such as aneurysm, and grave organic lesion, render bathing unadvisable or dangerous. In many cases, however, when the disease is less severe, benefit undoubtedly follows upon a course of baths, especially if with these the graduated muscular exercise recommended by Dr. Schott is used.

These conditions are especially suitable for treatment here; and, like other neuralgic pains which are due to rheumatism, are often benefited in a wonderful way. With regard to sciatica, however, it must not be forgotten that this is at times one of the most obstinate conditions for which to effect a cure. Still we have

frequently seen cases where the ordinary forms of treatment, after failing by themselves, have succeeded when applied in conjunction with the thermal waters.

Whether or not we are right in classing *Rheumatoid Arthritis* rheumatoid arthritis among the manifestations of the rheumatic state, there is no doubt that this disease is to be checked in its early—and relieved in its later—stages by a proper use of the thermal waters. Since, however, this is so eminently a disease of debility, great care is needed to see that the waters do not increase this debility, and bathing is certainly not to be recommended indiscriminately in all cases.

In this form of joint affection relief from local pains, and, to some extent, a further range of movement in the joints, may be effected. It is evident, however, that the bony outgrowths around the joints—which give the name to this disease—cannot be removed by bathing.

Chronic gout in the ordinary form, as shown by the stiff and painful joints, and also in its so-called “irregular” varieties, is, perhaps more than any other disease, benefited by a course of the thermal waters. As is shown in the chapter on gout, the Bath waters have a special power of dissolving

*For the restricted use of this term see chapter on Rheumatism and Rheumatoid Arthritis.

uric acid, and upon this, no doubt, depends their virtue in the treatment of this disease.

Stiff Joints. Joints that are left stiff and crippled, as a result of injury or some surgical conditions, are, like those of rheumatism, suitable for treatment. Bathing, massage, and passive movement help to restore mobility to the joint and to improve the tone of the wasted muscles.

Lead Poisoning. The ordinary means adopted for the elimination of this metal from the system are greatly helped by the internal and external use of the waters. Whilst the removal of the poison is taking place, the symptoms which result from plumbism, especially the loss of power in certain muscles, are improved by douching, electricity, and massage.

Skin Disease. In many cases of skin disease, especially in eczema and psoriasis, we have had most satisfactory results by the aid of the Bath waters. In some instances the waters, by themselves, have effected a cure; in others, the same medicinal treatment, which had been used without benefit at home, has been continued during a course of bathing with the best results.

In conjunction with the thermal waters, for the cure of eczema, we have found the nitrate of mercury ointment of great use.

The presence of paralysis, due to brain *Paralysis.* lesion, such as apoplexy, or embolism, does not necessarily contra-indicate the use of the waters; but, in such cases, they must be used with great caution. Other forms of paralysis, such as occur from injury to nerves, and lead-poisoning, and certain cases of peripheral neuritis are most suitable for treatment.

This is generally claimed to be cured by *Chorea.* the Bath waters. Cases of chorea certainly improve here; the massage and change of air being, no doubt, of benefit; but our experience has not led us to think that the waters have any marked effect upon the disease.

Certain forms of dyspepsia, accompanied by *Digestive* flatulency, are relieved and benefited by a *Troubles.* course of the waters; especially if these are drunk hot, at 150° F., and slowly. At the Hetling Pump Room the waters are artificially heated to the required temperature, and it is there that the sufferers from dyspepsia should go for their morning and afternoon glass of the waters.

The various conditions which are grouped *Neuras-* under this name, and which include many *thenia.* functional disorders, due to paresis of the psychic centres, are much improved by the waters combined with massage.

CHAPTER VII.

RHEUMATISM.

"Who needs must stumble, and, with stammering steps,
Spell out their paths in syllables of pain."

OLIVER WENDELL HOLMES.

UNDER this title will be mentioned two manifestations of the rheumatic state; namely, chronic rheumatic arthritis and chronic rheumatism.

The distinction implied by these names may be somewhat arbitrary, but for purposes of description it is convenient.

By chronic rheumatic arthritis we mean those joint conditions which either remain after the acute attack has passed off, or which, without such attack, have resulted from the slower and more quiet inroads of the disease; and by chronic rheumatism, those painful affections of the nerves and muscles, such as lumbago, sciatica, and muscular rheumatism.

It will, in the first place, be necessary to say a few words about acute rheumatism, since, by so doing, it will be easier to understand its chronic forms.

Into a general account of the disease we need not

enter; it will be sufficient to notice that it is a severe form of fever which affects the joints and heart. But though these are the ordinary and most prominent features of acute rheumatism, it must be remembered that they are not the only ones.

The affection of the nervous system, especially of the meninges of the brain and spinal cord, is not an accidental occurrence. It is one of the distinct manifestations of the disease. Sometimes with these conditions there is arthritis, or endocarditis; sometimes there is not, and we are not necessarily misled because they happen to be absent. Hemiplegia, paraplegia, and meningitis, may result from acute rheumatism.

In June, 1892, a girl, aged 17, was admitted into the hospital, convalescent from an attack of rheumatic fever. Early in July she had a relapse, with arthritis in the right ankle and elbow, and slight rise of temperature; about a week later she had sudden loss of power in the right arm, with numbness in the hand. The next day symptoms of meningitis set in, and she died comatose on the 18th. Tubercle, which had been suggested during life, was not found, though the membranes of the brain were examined most carefully.

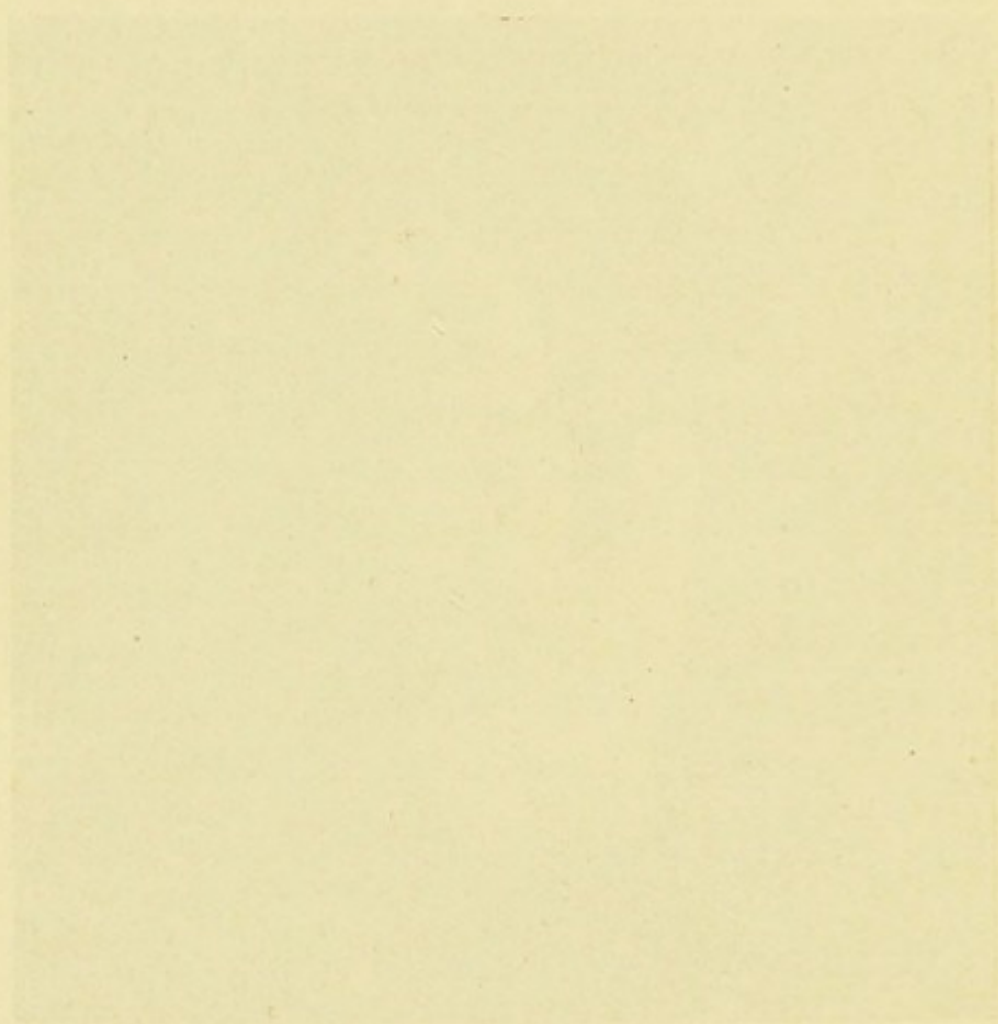
Another case, bearing on this nervous side of rheumatism, was that of a man who was admitted with a clear history of rheumatic fever a few months previously; this, he said, had taken away the use of

PLATE I.



FACE PAGE 58.

CHRONIC RHEUMATIC ARTHRITIS.



his legs. He had recovered to a certain extent, and could get about on crutches. One evening, about a fortnight after admission, he had a sudden rigor, and became completely paraplegic; the temperature remained about 102° F. for three or four days, and gradually fell to normal by the end of a week; about this time, too, he was able to move his foot slightly, and a few days later he was about again.

Yet one more instance must be mentioned. J. S., aged 24, under treatment a year before for chronic rheumatic arthritis, was suddenly attacked with violent pain over the left eye. When first seen, he had not slept for two nights; and morphia was injected. The next day the pain was still severe, and there was drooping of the eyelid and double vision. Then, during the next few days, one by one the muscles of the eye all became paralysed, till, at the end of the week, a condition of entire external and internal ophthalmoplegia had resulted. At this stage the assistance of an oculist appeared to be indicated. Accordingly Mr. Beaumont saw him and, after a very careful examination, diagnosed rheumatism as the cause. An anti-rheumatic treatment was adopted; improvement began at once, and by the end of a fortnight he was perfectly well. He had had no return of the symptoms two years later, when he was last seen.

These cases are instructive, as they show that the affection of nerves, and the loss of power in muscles, are among the symptoms of the acute forms of rheumatism; and this being so, it is more easy to explain how some of those deformities of the joints, and neuralgic pains, which belong to the rheumatic state are caused.

After an ordinary attack of acute rheumatism, the tendency is for the disease to leave the joints little, or none, the worse.

*Chronic
Rheumatic
Arthritis.*

This happy result, however, does not always follow; and, especially in those cases where it has returned more than once, the disease seems to develop into a lower type, and to tend to cause more permanent damage to the joints. This low type appears capable of descending till all signs of fever are lost, and the symptoms come on by slow, and almost imperceptible, degrees.

Plate I. shows the hand of a case such as this—a case of chronic rheumatic arthritis. The patient was an elderly, rather stout, woman, who, except for the partially crippled joints, was in good health.

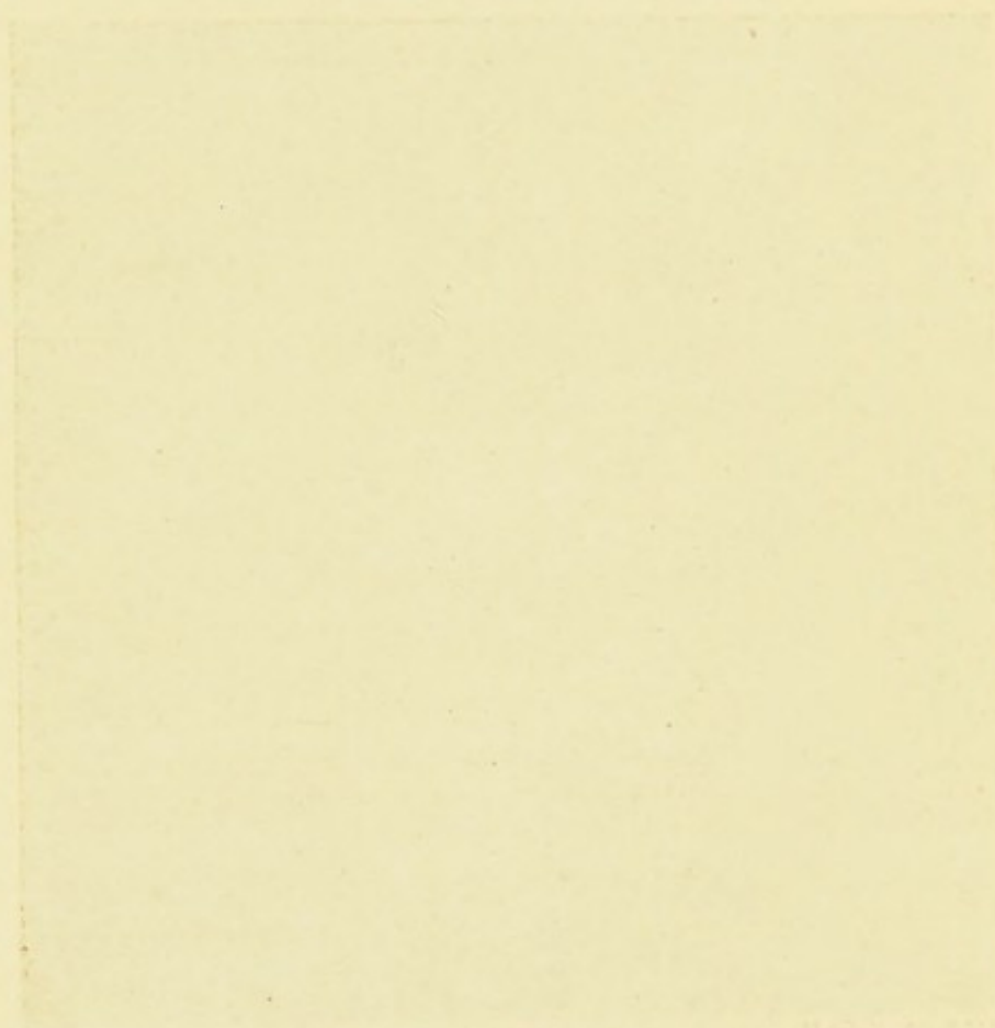
She had suffered for some years from “rheumatic” pains, and, besides the deformity in the fingers and the thickened wrist, which the photograph shows, there was also some stiffness in movement, and synovial thickening, in one knee.

PLATE 2.



FACE PAGE 60.

CHRONIC RHEUMATIC ARTHRITIS.



The peculiar deformity present in this case is also seen as a result of rheumatoid arthritis, and is more fully described in the chapter on the latter disease.

Plates II. and III. show the hands from another case of chronic rheumatic arthritis.

The patient from whom these casts were taken was a soldier, who had had rheumatic fever in India, followed by "Burmese" fever, and was invalided home and admitted into the Mineral Water Hospital.

This is a good example of those cases in which the poison of rheumatism affects chiefly the nutrition of the muscles, causing wasting. In the present instance—as, in fact, is most usually the case—it is the extensors that have chiefly suffered, and the peculiar deformities are due to the overbalancing effect of the flexor muscles.

Cases of this description are sometimes confused with rheumatoid arthritis, but, as distinguishing them from this disease, there is very slight affection of the general health and no enlargement or synovial swelling of the joints, both of which symptoms are so prominent in rheumatoid arthritis.

It must be clearly understood that this term
Osteo- is meant to apply to cases where bony
arthritis. outgrowths have taken place in and around
the joints, especially as the result of
rheumatism. The reasons for this use of the term
are fully explained in the chapter on Rheumatoid

Arthritis. Rheumatic osteo-arthritis is almost entirely a disease of later life. The "locked" and crippled hip, and the bent and perhaps ankylosed vertebræ, in a person of otherwise good general health, are instances of this disease.

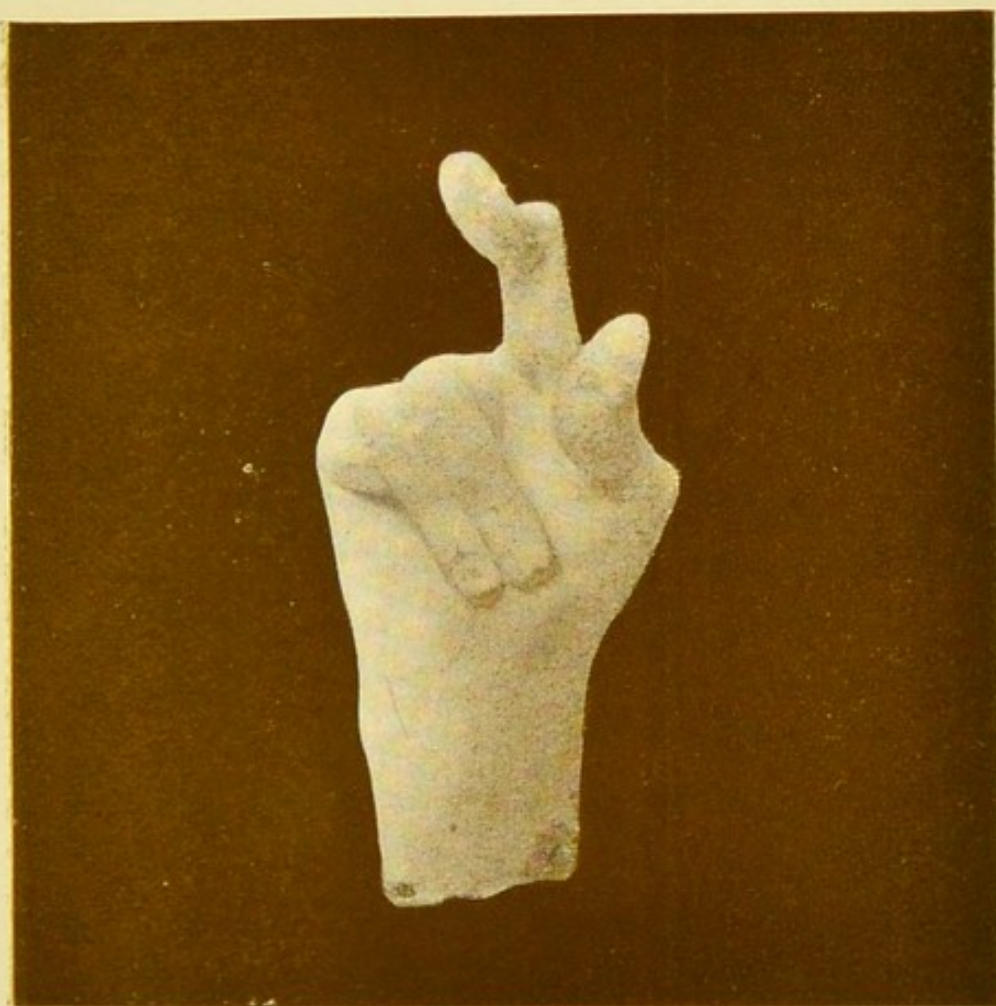
It begins slowly with painful joints and aching muscles. A previous history of acute rheumatism is hardly ever met with. Feverish attacks at the outset, or during the progress of the case, are practically unknown; and it is generally the larger joints, sometimes only one, and seldom many, that chiefly suffer.

Exposure to wet and cold is often the exciting cause which brings on the attack. Injury also to some joint will start the train of symptoms in one already predisposed. The injured joint may be said to be prematurely old; and these, and other cases where the cause is not so clearly known, are sometimes described as senile arthritis.

To this term, however, we would object that age is not a disease; and that although an injury by lowering the vitality of a joint may be fairly said to have increased its age, yet this, by itself, is not enough to produce the symptoms in these cases. It is much more in accordance with reason and experience to consider them the result of rheumatism, and to class them with osteo arthritis.

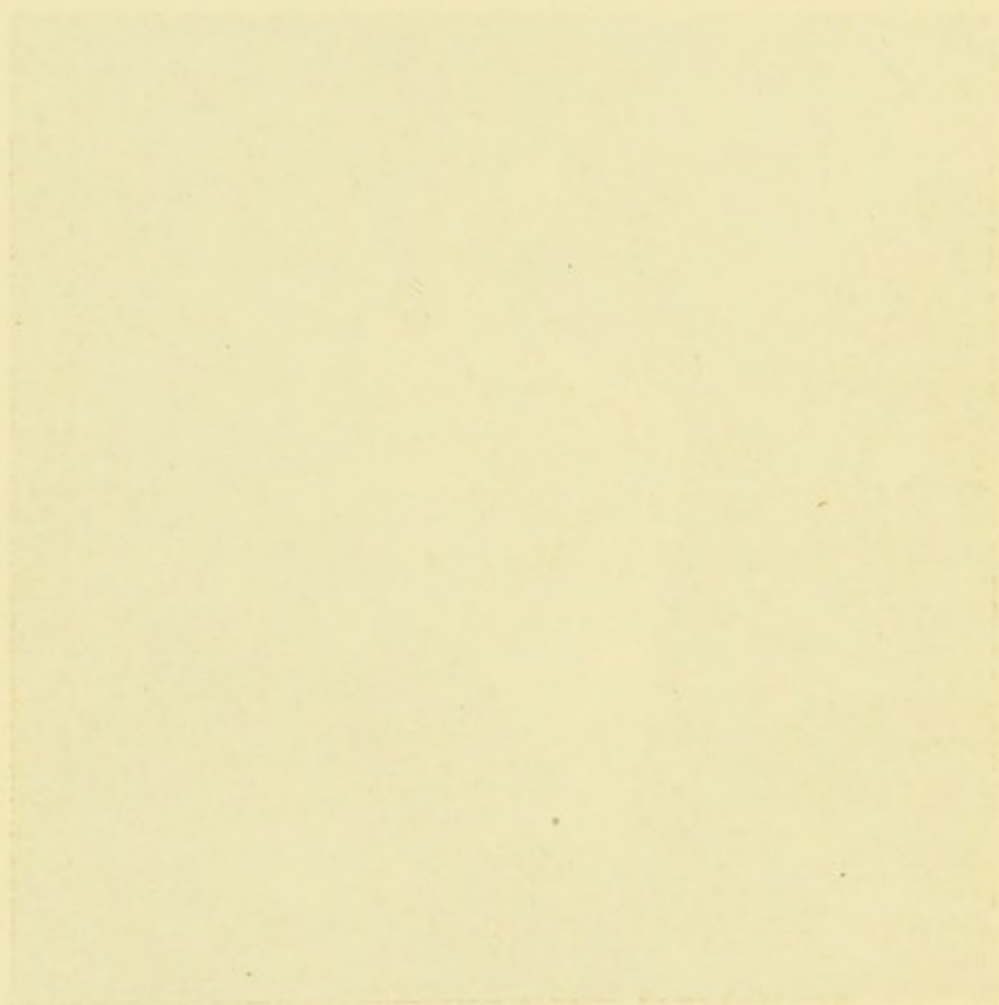
These outgrowths are also sometimes found in rheu-

PLATE 3.



FACE PAGE 62.

CHRONIC RHEUMATIC ARTHRITIS.



THE UNIVERSITY OF CHICAGO

matoid arthritis; and it is among the cases in which they occur that the difficulty in differentiation, spoken of later on, is met with.

As is suggested in the chapter on Rheumatoid Arthritis, the future may show that these two forms of joint affection are only different manifestations of the rheumatic state; in which sense they would belong to the same disease. With our present knowledge, however, and seeing that their general characteristics are so dissimilar, they can hardly be included in a common description, or grouped under a common name.

Osteo arthritis is so different from rheumatoid arthritis in its onset, in the joints which chiefly suffer, and in its effect upon the general health, that we have been led to distinguish between the two, and to describe them separately.

*Chronic
Rheuma-
tism.*

In this it is the nerves and muscles especially that suffer; but not necessarily in the neighbourhood of the joints; and, as a result, are produced such conditions as lumbago, sciatica, and the various other myalgic and neuralgic pains. As in acute rheumatism, violent pain and temporary paralysis of muscles is produced; so, in the more chronic stages of the disease, the same conditions result in a less severe but more lasting form. In sciatica it is quite common to find

wasting of the thigh and leg ; indeed, this is nearly always present, and points clearly to the affection of the motor, as well as the sensory, fibres of the nerve. The troublesome cramps, so often associated with sciatica, are to be similarly explained.

This condition occurs in chronic rheumatism, *Flat Foot*. as a result of loss of power in the muscles, but it is not so frequently seen in this disease as in rheumatoid arthritis. It is a small thing, but it causes great distress.

As we have used, and shall use again, the term osteo arthritis away from its orthodox use, in which it is another name for rheumatoid arthritis, and as we are especially anxious to distinguish chronic rheumatic arthritis from rheumatoid arthritis, it will be convenient here to give a table of differentiation of these three forms of joint affection.

*DIFFERENTIATION OF "RHEUMATIC"
JOINT DISEASE.*

	CHRONIC RHEUMATIC ARTHRITIS.	OSTEO- ARTHRITIS.	RHEUMATOID ARTHRITIS.
GENERAL HEALTH.	Fair.	Good.	Bad.
AGE.	Any.	Advanced.	Chiefly early.
SEX.	Either.	Either.	Chiefly Women.
PREVIOUS ATTACK OF ACUTE RHEUMATISM.	Frequent.	Very seldom.	Occasional.
CONDITION OF JOINTS.	Few joints affected. Synovial thickening and fibrous bands. Chiefly larger joints affected. Contractions.	Few joints affected. Bony outgrowth and enlargements. "Locking" and eburnation (sometimes).	Many joints affected. Synovial enlargement, especially in smaller joints. Sub-luxation, contraction, and eburnation.
WASTING OF MUSCLE.	Varies; sometimes marked.	Very slight.	Very marked.
SPENDERS' SPOTS AND STAININGS.	Absent.	Sometimes.	Frequent.
QUICK PULSE.	Absent	Sometimes.	More often.
FEVERISH ATTACKS.	Seldom.	Never.	Frequent. Hectic and Prolonged.

CHAPTER VIII.

TREATMENT OF RHEUMATISM.

"Till taught by pains,
Men really know not what good water's worth."—BYRON.

IN the joint affections just considered the waters are of especial help as a means of treatment.

The deep and reclining baths, with the under-current douche, are very useful for the relief of pain and for the reduction of the synovial thickenings. The Aix massage system has, however, very frequently, advantages over other forms of bathing, since, by this, more freedom of movement is imparted to the joints and the tone in the wasted muscle is improved. Sometimes it is advisable to give the immersion and the Aix baths on alternate days throughout the course. Where there is much wasting of muscles and stiffness of joints, the ordinary dry massage—that is, massage independent of the water—is applied, either with or without the addition of electricity. Massage of this kind is often found to be of more benefit when it is given during a course of bathing than at other times, and on this fact,

no doubt, depends the greater success of this mode of treatment that is noticed here.

Some affection of the heart is, of course, occasionally present in cases of chronic rheumatic arthritis; but, unless it is very severe, it offers no bar to the use of the waters. With proper care, indeed, with regard to the temperature of the water and the duration of the bath, the condition of the heart is frequently very much benefited by bathing.

In osteo arthritis, pain in and around the joints may be relieved; but it must be clearly understood that no amount of bathing will wash away the bony outgrowths that have formed, or restore the joint to its former state of health.

This is sometimes relieved, by bathing and *Sciatica*. douching, in the most marvellous way; at other times, unfortunately, it is one of the most difficult conditions to cure. For its acuter stages there is only one place for it, and that is bed. Pain has been described as nature's cry for rest; and this cry must be obeyed, if ease is to be found. In the very acute stages morphia may be necessary; and the various anti-neuralgic and anti-rheumatic drugs must be appealed to. There is no specific medicine for sciatica, but sometimes one drug will effect a cure, and sometimes another. Painting the skin over the course of the nerve, in the upper part of the thigh, with

strong hydrochloric acid has been recommended; we have had some good results by means of this treatment, but also many failures. Hot fomentations and mustard poultices are often useful, and acupuncture or blisters are frequently of benefit.

When the disease is less acute, baths may be employed. Quiet soaking in the deep and reclining baths, with the application of a gentle douche, is generally the most suitable form of bathing. The Aix massage baths may be used later in the case, when they do not occasion an increase of pain, and are of help in removing stiffness and in restoring the wasted muscles. Dr. Lewis Jones speaks well of electricity in the treatment of sciatica. He advises the placing of the negative pole on the sacrum or over the sciatic notch, while the other is moved slowly along the trunk of the nerve and applied to painful points.

For this, like sciatica in its acute stages, *Lumbago*. rest is indicated, and relief may frequently be had by aid of the old-fashioned "ironing" to the back with a hot flat-iron, the skin being protected by a layer of flannel. When bathing is possible the waters may be used as in sciatica, with the addition of the lumbar chair and the Scottish douche, which are specially designed for the treatment of this condition.

Whether this is the result of rheumatism, *Flat Foot*, or simply occurs from "weakness," the treatment of it, as a symptom, is much the same. In its acute form, as Mr. Clutton suggests, it is well to keep the foot entirely at rest and fixed in a proper position by a plaster-of-Paris splint; whilst massage is applied to the muscles of the leg in order to restore their tone. In the more chronic form some artificial support or pad must be employed—the light metal, or leather "socks" which are used inside the boots are perhaps the best means of keeping the bones in their proper place, pending the recovery of the muscles and ligaments. The boots themselves are an important element in the treatment of this condition; they should have strong soles, and these, as Mr. Clutton has also suggested, should be thicker on the inner side, so as to throw the foot slightly over and bring the line of pressure more to the outer side. The Aix massage douching, and simple dry massage with electricity, are of help in the treatment of this condition.

CHAPTER IX.

GOUT.

"The fathers have eaten sour grapes,
And the children's teeth are set on edge."

AMONG all the morbid states for which the Bath treatment is of use, gout should certainly be given the foremost place. This disease, in all its various manifestations, with its recognised accompaniments, and with its cloud of nebulous and ill-defined sequelæ, is one which, above all others, calls for treatment by mineral waters.

An exact definition of gout is still wanting. In its acuter forms we recognise it as a morbid condition, characterised by certain well-known phenomena, and accompanied by the presence of uric acid in the blood. In its more chronic manifestations this uric acid is still present to a greater or less extent, and to it we are accustomed to attribute the various troubles that arise.

The question as to where uric acid is produced, and to which organs its presence in gout is mainly due, has led to much discussion. The kidneys,

the liver, and the spleen have in turn been held to be responsible; and when these have failed to satisfy, the "system generally" has been found at fault.

Sir Alfred Garrod, who as long ago as 1847 first demonstrated the presence of uric acid in the blood of persons suffering from gout, regards the kidneys as the organs responsible for its manufacture.

Sir Dyce Duckworth, on the other hand, says: "The liver is the organ in which, in health, uric acid is chiefly formed; and it is probably to derangement of function in this gland that we must look for over-production of this substance."

Dr. Luff, after careful investigation and reasoning, comes to the conclusion that normally uric acid is manufactured in the kidneys, and that in gout its presence in the blood is due to these organs failing properly to excrete it. He thus apparently agrees with the view of Sir Alfred Garrod.

Sir Dyce Duckworth, though he gives the chief credit to the liver, especially emphasises the importance of the nervous system in the causation of gout. Here then, in the central control department of the brain, we have probably the fountain-head of all the mischief, and the explanation of the relative positions of the liver and kidneys in producing the disease. Influenced by the nervous centres, organs act and react upon

each other in the body as a living whole ; and one does not suffer without the others also suffering as well. Viewed in the light of this theory, gout becomes, not a disease of this organ or of that, but rather a condition in which the proper function of many organs is interfered with and impaired.

There is probably no disease in which the *Heredity*. influence of heredity is more marked than it is in gout. It is not so much the disease itself, but rather its potentiality that is transmitted to the offspring. The vitality and the power of resistance to external influences in the joints and organs implicated is lowered in those with gouty parents, and thus, in after life, when the exciting cause is met, these organs cease to function properly, and the peculiar morbid changes are set up.

Dr. Da Costa speaks of gout as hardly known in America. Among other influences, which give our cousins this immunity, heredity no doubt is one. America is a comparatively young country, whose early settlers were probably a hardy, healthy lot. "It takes several generations to build up the estate of a gouty constitution, and to thoroughly entail it ;" * so the time may still come when, in America, they too will possess an ancient aristocracy, and a gouty heritage.

* Mortimer Granville.

If gout bred gout alone it would be bad enough, but the tendency to joint affection which is transmitted manifests itself, especially in women, in another and almost more distressing form; the heirloom of gout descends to the son, while the daughter's portion is rheumatoid arthritis.

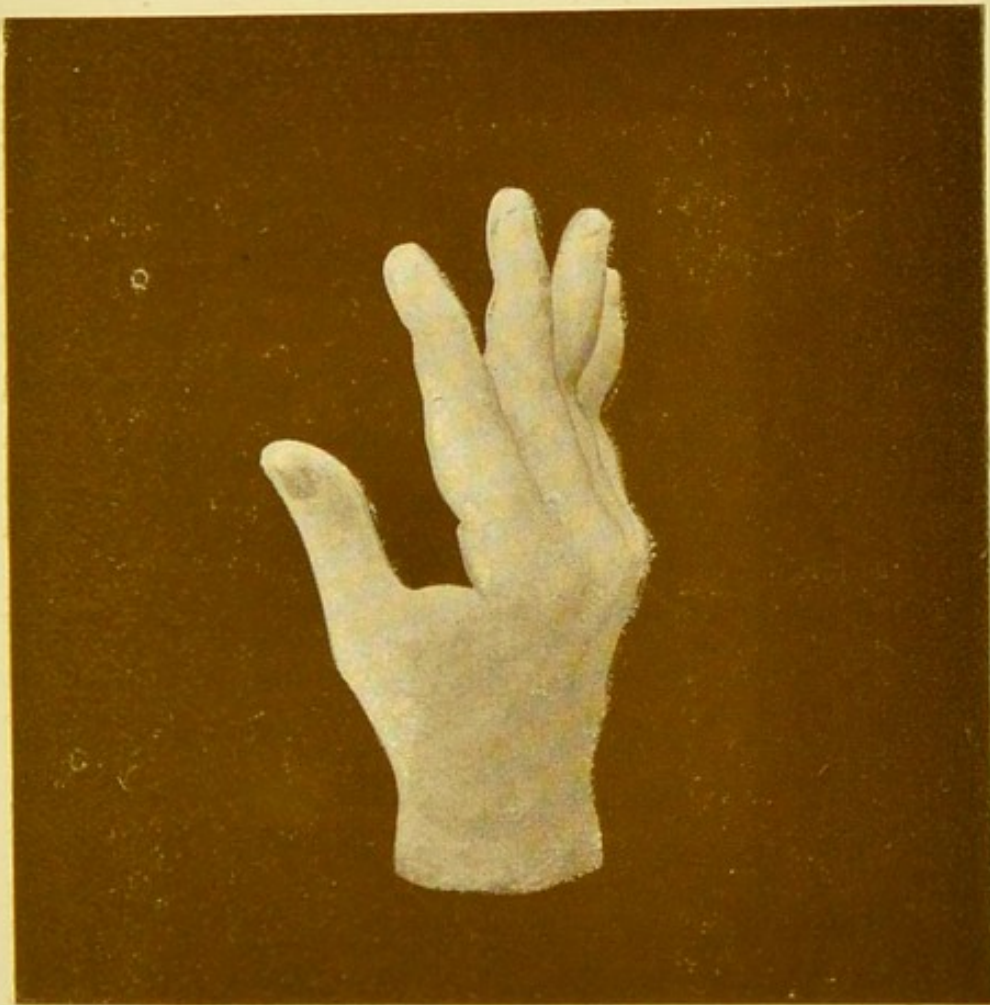
In a person born of gouty parents the teeth and nails have certain peculiar characteristics of their own; the former are ground down, are hard, and resist decay, and, there being also a tendency to a premature absorption of the alveoli, they are often shed intact; the latter are brittle, fluted, and striated. By reading aright these signs in teeth and nails, we often learn more of our patient's tendency to disease than he perhaps knows himself.

Thus far, in heredity we have seen the
Food. chief predisposing cause of gout. It is not alone, however, to the sins of our forefathers that we must look for the origin of this disease. Gout may arise *de novo* in ourselves. Of this fact there seems to be little doubt, the evidence is so strong in its favour; but, even if this were not so, it would still be a reasonable assumption, since how else could gout have first appeared?—for the earliest sufferer from it could not have inherited it from his parents.

It is by errors of diet, by ignoring the ordinary rules of health, and by disregarding Nature's laws, that gout may be developed. "Gout," says Sir William Roberts, "is the Nemesis of high living." There is no doubt that in this country we live too well, and eat too freely of butcher's meat. By taking an unnecessary amount of this highly nitrogenous food, the digestive organs and the kidneys are made to do more than their fair day's work. This state of things may go on without more serious harm than an occasional grumble or threatened strike, in a healthy individual, who is living under favourable circumstances, and is not stamped with the birthmark of gout; but even in him, and much more so in one less favoured, the time will come when a revolution will take place; and the democratic kidney and digestive cells will control the constitution, and usurp the throne, which the will, by its blindness and stupidity in times past, has proved itself incapable of occupying.

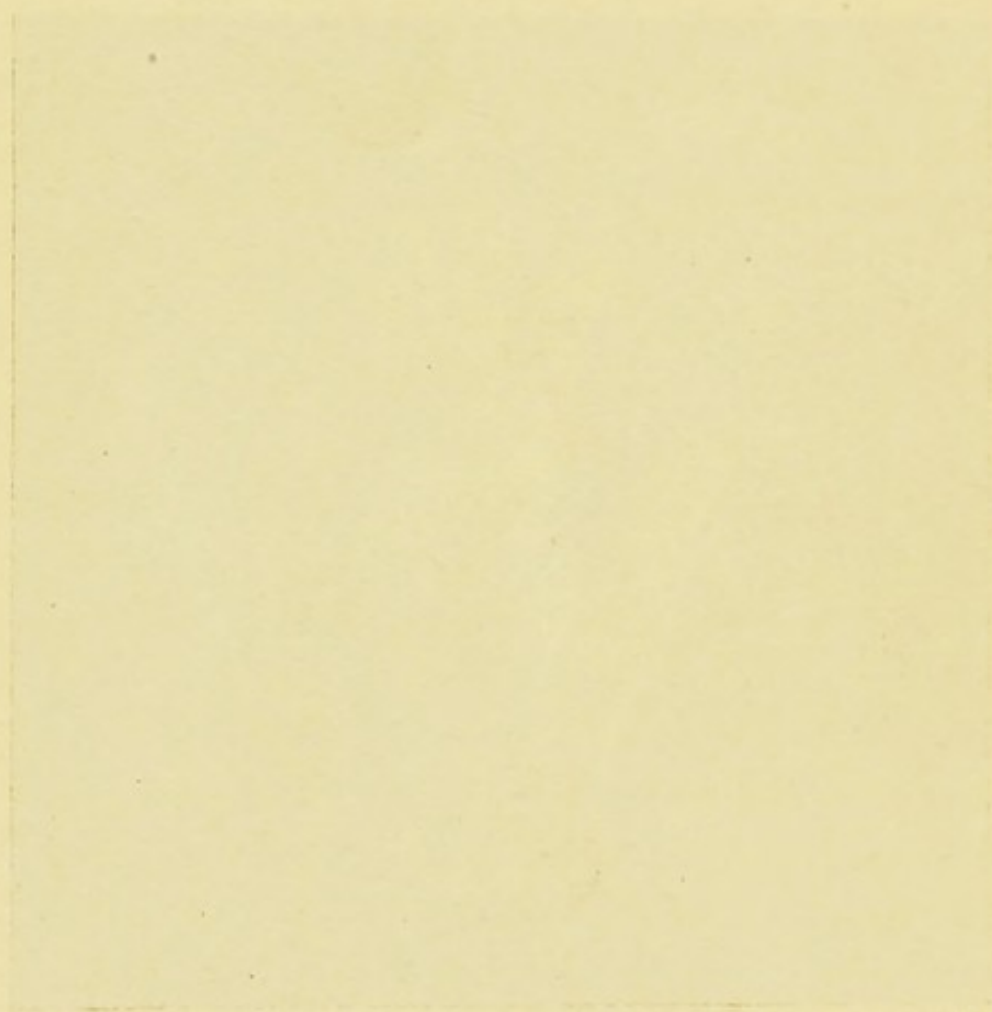
If meat were taken once a day, and for six days only in the week, as the Church suggests, and if there were a few weeks of entire abstinence from it every spring and fall, as it also recommends, it would certainly be the better for us all. Sir H. Thompson said: "We dig our graves with our teeth, and in later life with our artificial teeth." Dr. George S. Keith

PLATE 4.



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CHRONIC GOUTY ARTHRITIS.



tells us that "in advanced life, and in old age, a simple and restricted diet is even more necessary than before. The natural loss of teeth gives a good hint that the more solid articles of food should be withdrawn."*

It is not that meat in itself produces gout, for it appears that even vegetarians are liable to the disease; and some of the lower animals—if we may draw an analogy from them,—such as the lion and the tiger, eat nothing else and do not get it.

Alcoholic The excessive use of alcohol, in its many
Drinks. and various forms, has long received the credit for being the main cause of gout; even its temperate use is almost equally condemned with its abuse by many besides extreme teetotalers. Without for a moment denying the undoubted evils of alcohol, the question is—Does it deserve this credit? Is it in fact true that alcohol causes gout?

Sir Alfred Garrod says: "There is no truth in medicine better established than the fact that the use of fermented liquors is the most powerful of all the predisposing causes of gout; nay, so powerful, that it may be a question whether gout would ever have been known to mankind had such beverages not been indulged in." It may be true

* *Plea for a Simpler Life*, p. 139.

that without alcohol there would have been no gout, but is it not equally true that with alcohol, and without some other factor, there would also have been no gout? In his treatise on gout in Allbutt's *System of Medicine*, Sir William Roberts says: "Gout is but rarely found among drunkards, toppers, and loafing beer-swillers; nor is it a special concomitant of cirrhosis of the liver, nor of other organic tissue changes which originate from alcoholism. Gout is rather an incident of the legitimate use of alcoholic beverages." Persons who acquire gout, he adds, "are, as a rule, above reproach with regard to their sobriety; but it cannot be gainsaid that their scale of living is habitually high, and that they are among those who fare sumptuously every day."

Sir William Roberts is not here merely giving his opinion; he is drawing attention to undoubted facts when he speaks of the infrequency of gout in chronic drunkards, and by so doing he shows that not from alcohol alone, but from this in conjunction with something else does gout arise, and that something else is the high living and sumptuous fare of which he speaks.

The immunity from gout in Scotland, in Ireland, and in America, where much less flesh food is consumed than in England, is thus explained; for in those

countries, and especially in Scotland, whisky is not a thing unknown.

Dr. G. Keith says: "A Highlander frequently takes as much whisky as would render most persons useless; but living as he often does on a very small amount of oatmeal or potatoes and a little milk, he may do a good day's work, if not too severe, and he may live a long life. I was told by one of the first financiers in Scotland, that such a life about the age of sixty is a much better one on which to buy an annuity than that of a well-fed Yorkshire teetotaler of the same age. Had the Highlander been also well-fed, or had the well-fed Yorkshireman indulged in alcohol in any form, neither of the two was likely ever to have reached the age of sixty; but after sixty the average life of the Highlander was appreciably longer than that of the Yorkshireman, and therefore more valuable for the financier's purpose.'"

Some forms of fermented liquors certainly possess more gout-inducing properties than others; but why this is so, is not at all clear. Dr. Luff is of opinion that it is not due to the greater quantity of alcohol, or of sugar, that they may happen to contain, nor (as he shows in the following table) is it to be explained by their relative acidity, since

* *Plea for a Simpler Life*, p. 120.

some of the least acid are the greatest gout-inducers and *vice versa* :—

ACIDITY (Beginning with the most acid).	GOUT-INDUCING PROPERTIES (Beginning with the most gouty).
Moselle. Rhine Wine. Burgundy. Madeira. Claret. Champagne. Port. Sherry. Malt Liquors.	Port. Sherry. Other Stronger Wines. Champagne. Stout and Porter. Strong Ales. Claret. Hock. Moselle. Weaker kinds of Ales.

After considering the various constituents of gout-inducing wines, Dr. Luff reminds us "that those accustomed to drink wine are apt to indulge in other luxuries of the table which greatly favour the development of gout.*

Some years ago Dr. Mortimer Granville suggested that the explanation of their gout-inducing properties lay in the partial and incomplete fermentation of certain wines—and in different brands of the same wine—with

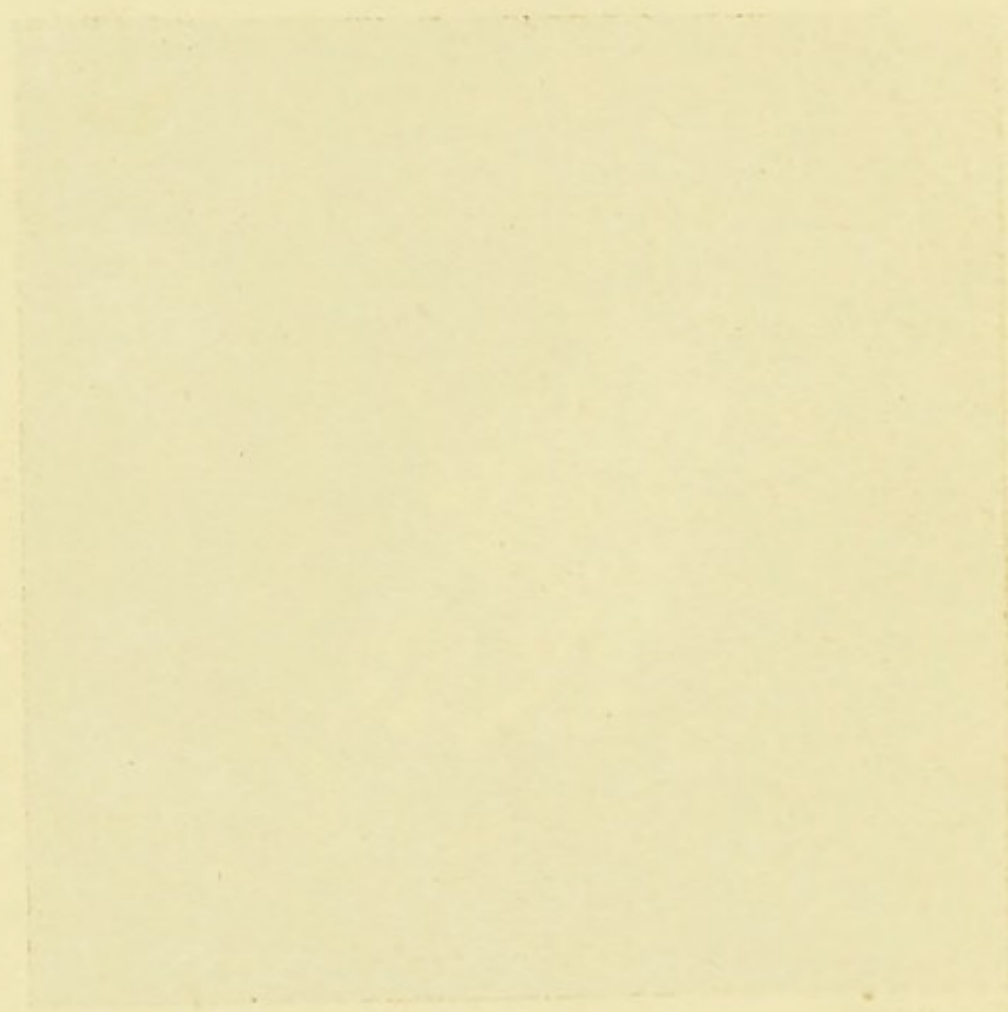
* "Gulstomian Lecture."—*Lancet*, April 17th, 1897.

PLATE 5.



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CHALK GOUT.



the result that a ferment which interferes with metabolism is introduced into the system. There is certainly much to support this theory. Old port, for instance, which has been long in the wood, is much less gouty than the newer wine. The light wines also, such as Hock and Moselle, which come lowest upon the list as gout-inducers, would naturally mature earlier, since they contain, in such a much lower degree, the alcohol-producing elements. Beer is our national drink, and is generally looked upon as especially gouty, and so, perhaps, it is in its stronger form, though the lighter ales, it will be noticed, come last of all upon the list. The theory of incomplete fermentation may explain why it is that the strong malt liquors possess such gout-producing properties, for they would naturally take longer to complete their fermentation than the lighter ales.

It has been said that no one, unless he is a farm labourer, should drink beer after he is forty years of age. Farm labourers are supposed to be exempt from gout; this, however, is not our experience at the Mineral Water Hospital, though they doubtless suffer less than their brothers in the towns. The ordinary Englishman will have his beef and his beer, and the latter not in the mildest, or probably purest, form; and, this being so, he must be content also to have the gout.

This term seems at first sight to imply a contradiction to the foregoing views on *Poor Man's Gout*. In reality, however, it is not so.

This form of the disease occurs for the most part in those with a gouty tendency, who, while most abstemious and self-denying, are living an unnatural and unhygienic existence, full of anxiety and worry, and, above all, with irregular meals, and a want of proper exercise.

There is one more cause, if it may be so called, of gout which must just be mentioned, *Lead and Gout*. namely, lead. It appears as if the entrance of this metal into the system of a person predisposed to gout has a special influence in inducing the onset of the attack. It has been remarked that in Scotland the association between plumbism and gout is much less frequent than it is in the South. When we remember, however, that gout is a rare disease in Scotland, and that the workers in lead form a very small proportion of the whole population, it seems to follow, and to be a matter of no surprise, that the facts should be as they are; for the chances are distinctly against the entrance of lead into a system with a birthright of gout.

It is not necessary to dwell upon the *Symptoms*. clinical features of gout. The red-hot painful joints of the acute attack are well known

PLATE 6.



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CHALK GOUT.



and easy to recognise; they are the outward and visible signs by which the morbid changes that have for long been taking place within the body manifest themselves. When the acute attack has passed, the patient often finds himself better in general health than he had been for months before—Nature has had her revenge, and has given him a decided hint to be more careful in his manner of living in the future. As a rule he does not take the hint, however, and the result is that attack follows attack, until certain of his joints are permanently crippled. The deformities, especially in the hands, which result from gout are often very peculiar, and by their nature point very strongly to the nervous element in the disease of which Sir Dyce Duckworth speaks. The accompanying illustrations show some of these deformities. They are from photographs of casts taken at the Mineral Water Hospital. Plate 4 is the hand of an old Crimean soldier who had for many years typical attacks of gout. The fingers show that peculiar inversion of the joints which is also met with as a result of both chronic rheumatic arthritis* and also rheumatoid arthritis, and which, no doubt, results from nerve atrophy. Plates 5 and 6 are from a well-marked case of chalk gout, and Plate 7 is a radiograph from a case of the

* See Plate 1 (ch. vii.), Chronic Rheumatic Arthritis.

same nature, in which is to be noticed a distinct destruction of bone from the deposition of the urate of soda.*

In the foot the joints of the first toe often become fixed as the result of repeated attacks, and the various other joints suffer from enlargement and distortion. Pain under the sole, and especially in the heel, is very common in gout; it is probably due to a deposit of urate of soda in the fasciæ, and is frequently very difficult to treat. Sweating of the hands and feet is often present in chronic gout, and in some cases there are also trophic changes in the skin, these symptoms pointing clearly to the nervous element in the disease. Such cases might easily be confused with rheumatoid arthritis; but, occurring as they frequently do in men of middle age, with a gouty history and with tophi in the ears, there is no room for doubting their true relationship with gout. Sometimes it is the larger joints, such as the knees, the elbows, and shoulders, that are chiefly affected; and the crippling which finally results does not seem to depend entirely on either the frequency or the severity of the attacks, but apparently rather upon the personal susceptibility of the patient himself.

Gout is often present without distinct arthritis; the

* From a photograph kindly lent by Dr. A. B. Blacker.

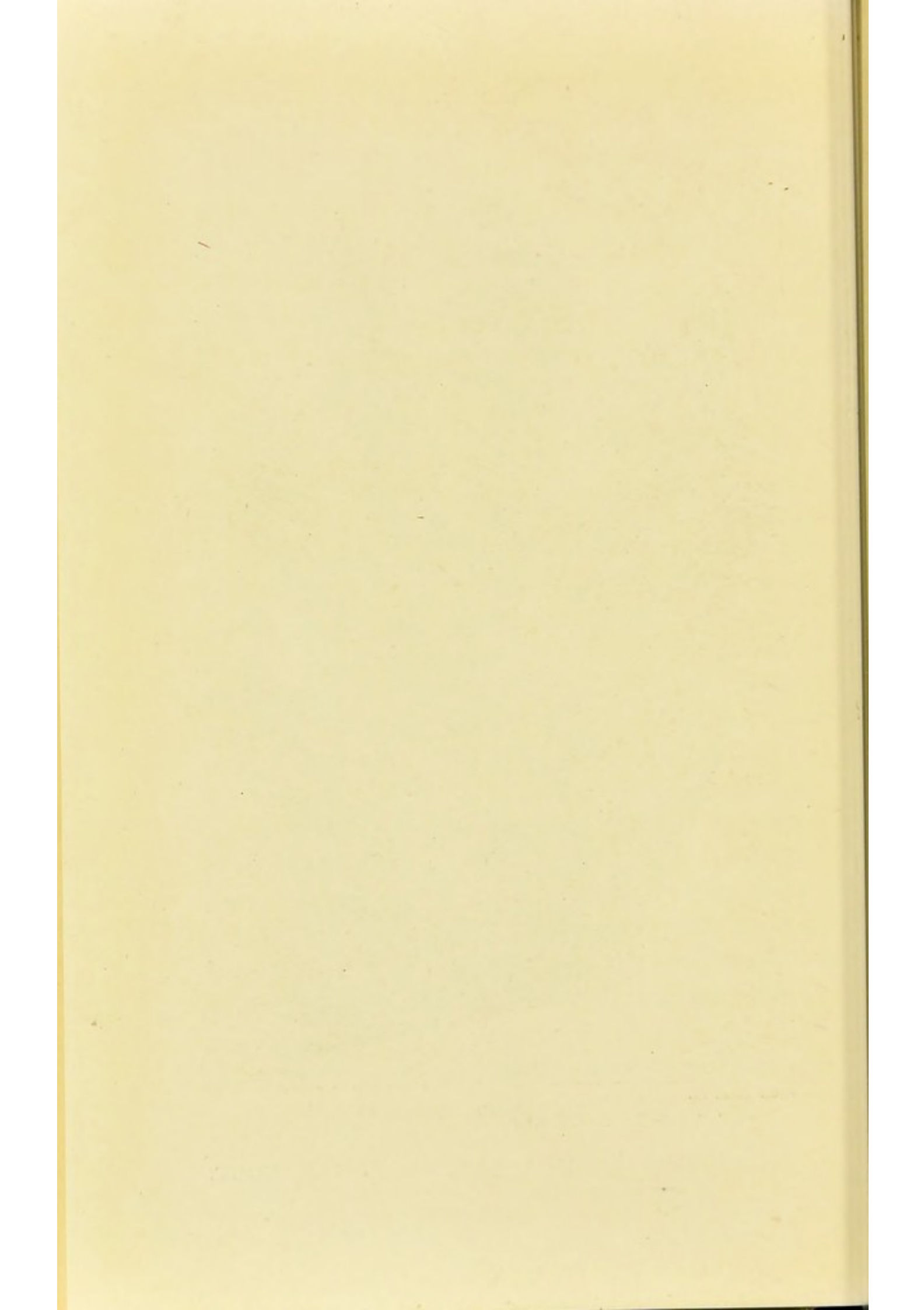
PLATE 7.



FACE PAGE 82.

Kindly lent by Dr. A. B. Blacker.

RADIOGRAPH FROM A CASE OF CHALK GOUT.



uric acid in the blood makes its presence known by dyspepsia, sciatica, cramps, glycosuria, bronchitis, asthma, and various skin diseases, all of which are well recognised symptoms of the gouty state. Also in these, its so-called irregular manifestations, we meet with functional derangements of the heart and head. Irregularity of the pulse and palpitation, with a sense of cardiac oppression and faintness, are often present. Attacks of vertigo and temporary loss of mental power, with forgetfulness of words and inability to properly articulate; tingling or numbness of the skin, and even loss of the power of movement in some limb—so that the presence of grave organic lesion of the brain is feared—are among the functional phenomena of irregular gout.

The mental condition of the gouty is well recognised: depression of spirits and hypochondriasis are nearly always present, and the irritability of the temper is proverbial. The morning is always a trying time for them, and not less so perhaps for their friends as well; breakfast is an ordeal which has to be got over with the least amount of scratchiness and discomfort possible. The writer of *Elizabeth and her German Garden* asks: "Who can begin conventional amiability the first thing in the morning? It is the hour of savage instincts and natural tendencies; it is the triumph of the disagreeable and the cross." When friends who have been staying

with her leave, Elizabeth hopes she may not see them again for at least ten years. "I suppose," she says, "the fact is that no friendship can stand the breakfast test." Her case is as clear as possible; without doubt Elizabeth is gouty.

CHAPTER X.

TREATMENT OF GOUT.

"Moderation is the silken string running through the pearl chain of all virtues."
BISHOP HALL.

THERE is an old saying, with regard to matters of diet, that a man at forty years of age is either a fool or his own physician; and, if this is true, it is sad indeed to notice how few physicians there are, even if the medical profession itself be included. The directions for diet in gout given by different authorities are so various that if for safety the sufferer should decide to be guided by them all, he would find himself possibly allowed a small quantity of water as his only means of nourishment. By some plenty of animal food is recommended; by others this is absolutely forbidden. Starchy foods and sugar are poison, harmless, or useful in turn. The same may be said of fruit; at one time, for instance, we hear that strawberries are gouty, at another time we find them highly recommended. Salt is the latest addition to the list of poisons in gout, and its place is

*Diet in
Gout.*

to be taken by chlorate of potash, or the ashes of certain plants.

After speaking of the diversities of opinion with regard to diet, Sir Dyce Duckworth says: "The fact is there is no treatment for gout, but much for gouty patients"; and in these words we have, without doubt, the key to the situation. "One man's meat is another man's poison" is true in nothing more than in gout. The general circumstances of the case, and the personal peculiarities and idiosyncrasies of the patient, have to be taken into account; for it is not only the gout that has to be treated, but the individual as well. With regard to wines, the differences of opinion are equally numerous. Fashion rules here more perhaps than in anything else. In the sheltered sanctity of some West-End consulting-room a certain wine is recommended, and for a time this holds the field against all comers, until in turn its place is taken by a better.

In all things moderation should be the text for a sermon upon the dietary of gout—moderation, not only to be observed by the patient in what he eats and drinks, but also by his medical adviser, so that he may avoid a too slavish adherence to authority and precedent.

During the acute attack the diet should be of the simplest nature possible. It should consist chiefly of

eggs, milk, and light farinaceous puddings, with, occasionally, home-made soups or beef tea.

In elderly people especially, and also in others who are accustomed to the use of wine, alcohol in some form is nearly always necessary.

The appetite is often lost in acute gout, and it is safer, within certain limits, to wait for its return, rather than to force food upon an unwilling stomach. The lost appetite is Nature's silent call for digestive rest, and in our anxiety to keep up the patient's strength we may easily do harm if we fail to hear this call. Dr. Keith is very emphatic upon this subject, and, without going all the way with him, we strongly recommend everyone, and not the gouty only, to read his books.*

In chronic gout, and in the intervals between the acute attacks, we must be guided, in our directions as to diet, by the special circumstances of the case. The age, habits, surroundings, and mode of life of the patient have to be taken into account; there is no one form of diet for the gouty. As a general rule, less meat, and in its place a moderate consumption of fish, fowl, game, and vegetables, with milk, eggs, farinaceous puddings, and fruit, is the diet to be recommended; whilst the following things are best avoided:—Beef,

* *Plea for a Simpler Life and Fads of an Old Physician*, by Dr. G. S. Keith. Published by A. and C. Black, London.

pork, veal, hare, duck, salmon, mackerel, lobster, and crab; also all messed-up and second-cooked meats, and rich soups, all spiced foods and curry (as made in this country), preserved fruits, pastry, plum puddings, and most of the so-called sweets. It will be noticed that the above list contains, broadly speaking, things indigestible; and that is the very point. In gout the digestive organs are, for the most part, weak, and must be humoured. The gouty must learn to eat to live, and avoid the snare of living to eat. Dr. Burney Yeo advises "a moderate mixed diet," and if a whole volume were written on the subject we should not be better guided than by those few words; and for wine, he says that form is best which acts most upon the kidneys of the individual.

*Thermal
Water
Treatment.* It is during the interval between the acute attacks, and for the many chronic manifestations of the disease, that a course of

bathing and the internal use of the Bath waters is of so much good. The diuretic action of the waters, which has been already noticed, makes them of special use in gout; and we see more success obtained in the treatment of this disease, in its various forms, than in any other. The action of the skin is encouraged, and the affected joints are relieved by the hot bathing;

while the internal organs are washed out by the water that is drunk.

This, when it can be employed, is the bath most generally useful in cases of *The Deep Bath.* gout. It is well, as a rule, to begin with a temperature not over 99° F.—in a bath lasting about fifteen minutes—and to have only a light pack to follow. After a few baths have been taken, however, the temperature may be increased up to 105° F., or even more, the time being extended to perhaps twenty minutes, and the ordinary hot pack employed. The under-current douche is often used with benefit in conjunction with these baths. The temperature of the douche is generally four or five degrees higher than that of the bath; and the current of this hotter water coming as it does, with considerable force upon the parts affected, is of great use in relieving pain and swellings.

In cases where general immersion is desired, and the deep bath cannot be employed, *The Reclining Baths.* the reclining baths may be used instead.

These are taken at a somewhat higher temperature, as, there not being the same mass of water, the effect is less trying; also of course the recumbent position makes them more easily borne. It is generally well to begin, for the first few baths, at

a temperature of about 100° F., and then to raise it gradually as the patient can stand it. The douche and pack are also used as in the case of the deep bath, only, with regard to the former, it is well to remember that in the smaller reclining bath it more quickly raises the general temperature of the water.

*Aix
Massage
Baths.*

These most useful baths are similar to those at Aix-les-Bains, and consist of a combined process of massage and of douching. They are of special benefit for the relief of the stiff joints, and various pains in nerves and muscles, which so often occur in chronic gout. The bath usually lasts fifteen minutes, and the temperature of the douche can be accurately regulated according to directions. The pack also follows these baths, but sometimes in its place, especially in warm weather, the rain spray douche, beginning hot and cooling down to about 60° F., is to be preferred.

*Vapour
Baths.*

In many cases of gouty arthritis these vapour baths are of great use, either alone or in conjunction with some other form of bathing. They may be applied generally to the whole body, or, as is more usual, to some particular limb.

In some gouty skin affections also, where immersion

in the water proves too irritating, the use of vapour is very effective.

By the addition of sulphide of potassium to the water a bad-smelling but very useful sulphur bath is formed, which, especially in gouty eczema, seems to have a distinctly curative influence, and an advantage over the ordinary hot water.

The lumbar, the needle, the rain spray, the Scottish, and other forms of so-called dry douches are useful adjuncts in the treatment of chronic gout, especially in such conditions as sciatica, lumbago, and other neuralgic affections.

On coming out of the bath, and before undergoing the pack, it is well to drink a glass of the water, since by so doing, the action of the skin is encouraged.

Every other day is, as a rule, often enough to take either the deep or reclining baths; the Aix massage process, however, being less trying, may in many cases be used daily, and the same may be said of the various douchings.

After the bath, bathers should stay at least half an hour in the cooling-room before going home, so as not to be exposed to the outer air whilst the skin is acting over-freely.

The solvent effect of the mineral waters upon urate of soda has been already noticed, and it is by virtue of this, and by their diuretic action, that they are of so much benefit in gout.

A glass of about eight to ten ounces of the waters should be taken twice daily, at about 11 a.m. and 4 p.m. It should be drunk slowly, and fresh from the spring. In some cases, especially in dyspepsia, with a tendency to flatulency, the water at the Hetling Pump Room, which is artificially heated to about 150° F., is to be recommended instead of the ordinary water. With regard, generally, to a course of the waters, patients must remember that time is an important element. Some appear to think that by bathing daily, or twice a day, and drinking the waters in proportion, they can effect a cure in a shorter time.

It should hardly be necessary to remind them that such a theory is founded on fallacy, and fraught with danger. It would be as reasonable to expect to be cured by taking a whole bottle of medicine at a draught rather than in its proper daily doses.

The average time for a course of the waters is about four weeks; and in gout, the visits should be repeated not less than once a year.

While undergoing a "cure," people are much more

prone to obey Nature's laws, and to follow the promptings of common sense, than when they are at home; and to this fact, no doubt, belongs some of the credit for the benefit they receive during a course of the waters.

Colchicum, by virtue of its action on the *Drugs.* liver, is looked upon almost as a specific in gout. It certainly is of great use, and has a remarkable effect in relieving pain during the acute attacks. It is best given in doses of about thirty drops every four hours for the first day or two, and then discontinued; its physiological effect being better obtained in this way, than by the use of smaller doses for a longer time. Salicylate of soda and the alkalies are often with advantage given with the colchicum, and opium or morphia may be used, when other means fail, for the relief of pain. In chronic gout iodide of potassium or the tincture of iodine internally are useful; and the weekly use of the old-fashioned Plumer's pill, followed next morning by some saline aperient, such as Carlsbad salts or Apenta water, will often help to keep off an acute attack.

For local application to the inflamed joints many different things are recommended; but nothing is probably better than the mixture of belladonna and glycerine, applied warm, and covered over with a light fomentation,

Finally, those who suffer from gout, or who have a tendency to the disease, are advised to take more regular exercise—walking, bicycling, or riding; especially this last. Even during a course of the waters they would do well, on the days they do not bathe, to have an hour's ride. A gallop on the turf will do more for the liver in chronic gout than all the colchicum they may swallow.

NOTE.—At Mr. Roberts' Riding School, Julian Road, excellent mounts may be had.

CHAPTER XI.

RHEUMATOID ARTHRITIS.

"Dogmatic medicine is a thing of the past."—BURNES YEO.

THIS disease is characterised by a progressive degeneration of the joints, and by marked debility. It has been known at various times by many different names. Trousseau called it "nodular rheumatism"; it was Haygarth's "nodosity of the joints"; the "chronic rheumatism" of Adams, and "arthritis deformans" of other writers. It is known as "osteo-arthritis" in the nomenclature of the Royal College of Physicians; and to some it still retains the old title of rheumatic gout.

Sir Alfred Garrod was the first to call it rheumatoid arthritis, and this is the name by which it is now most generally known. It is certainly to be preferred to "osteo-arthritis," since, in many cases, there are none of those bony changes around the joints which that name implies.

The theories, as to the nature of rheumatoid arthritis,

are no less numerous than its names. By some it is looked upon as essentially a joint disease. Others recognise it as a form of peripheral neuritis, with a special tendency to changes in the joints. Dr. Ord sees in it the outcome of some uterine or other irritation affecting the joints secondarily through reflex nervous influences.

The onset of the attack is due to various *Causes.* causes. There is no doubt, as Mr. Hutchinson suggested, that the inheritance of a gouty or rheumatic taint is a powerful predisposing cause. With such an inheritance, and especially in the case of gout, a decreased power of resistance in the joints is transmitted to the offspring, with the result that a disease, which might otherwise have been shaken off, becomes firmly established in the system.

In a lesser degree a birthright of tubercle, by lowering the general vitality, predisposes to the disease. Various weakening illnesses, to which lately influenza has been added, also such debilitating influences as rapid child-bearing, prolonged lactation, severe hæmorrhage, overwork and worry, are all powerful predisposing causes. Sex seems to have a decided influence, women suffering much more than men, the ratio being about seven to one.

Cases of rheumatoid arthritis, which follow an attack

of acute rheumatism, are partly due to the weakening effect of the illness and partly, in all probability, to the special influence that the disease has effected in the individual. There seems, indeed, to be a more intimate connection between rheumatism and rheumatoid arthritis than is commonly allowed.

Among the directly exciting causes, exposure to wet and cold should certainly be given a foremost place. The attack may also be induced by sudden fright or shock. During the Franco-Prussian War cases are said to have occurred, among those shut up in some of the besieged towns, from fright at the explosion of shells in their near vicinity. It must be remembered, however, that those sufferers were also exposed to all the horrors and privations consequent upon a prolonged siege.

Cases are sometimes seen in which the onset of the disease dates from some sprain or accident. In such instances the injury of some joint is no doubt the final cause which fans the spark and lights the fire that has long been smouldering.

Finally we hear, as indeed was only to be expected at the end of the nineteenth century, of the bacillus of rheumatoid arthritis. A few years ago Dr. Shüller discovered the micro-organism of the disease, and now, more recently, Drs. Bannatyne and Wohlmann have demonstrated another and apparently different

one. The evidence at present forthcoming cannot be said to satisfy the requirements of philosophic reasoning that these organisms are the cause of the disease.

Clinical Rheumatoid arthritis is the most easy and,
Features at the same time, the most difficult disease to recognise. An ordinary typical case is self-apparent to the most casual observer;

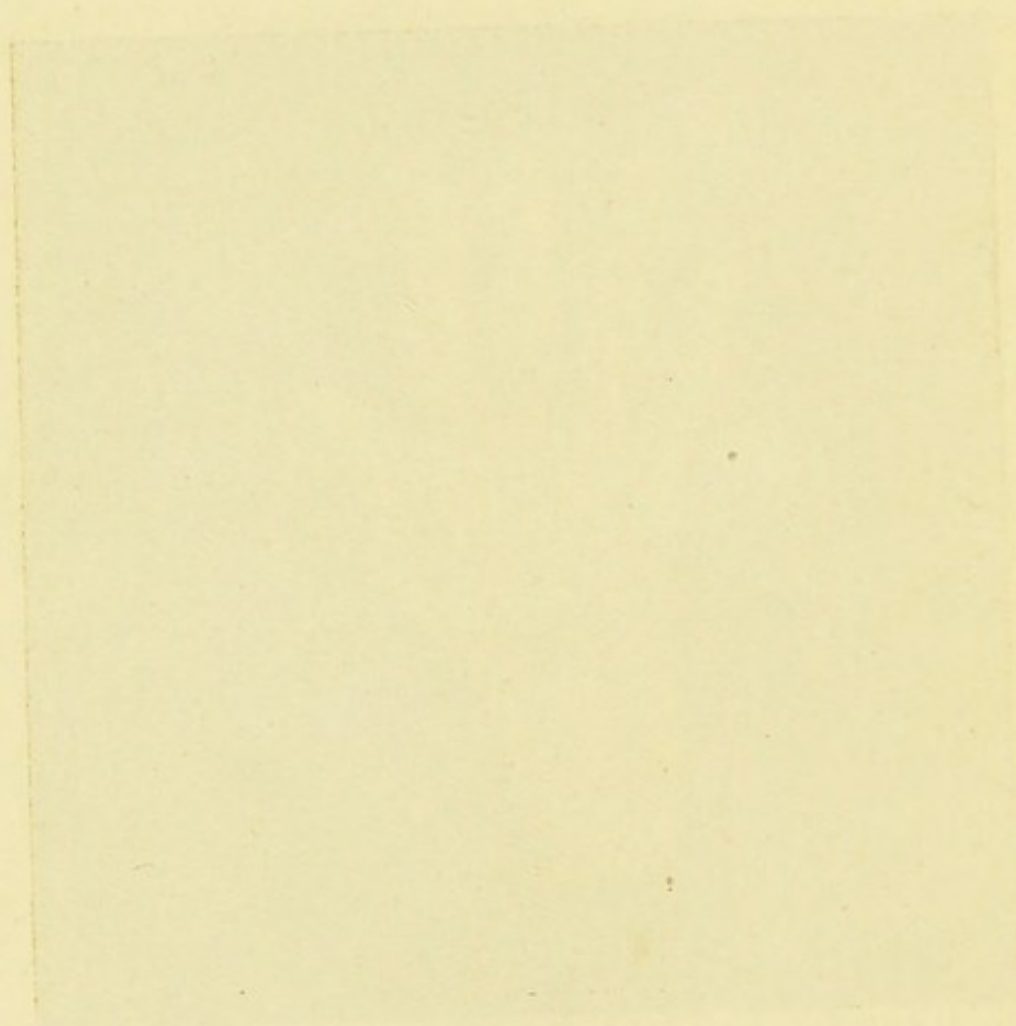
but there are others in which the disease is so complicated as to defy differentiation from the various joint affections into which it seems to merge. What is, and what is not, rheumatoid arthritis seems also to depend very much upon the personal equation of the observer. For instance, the mon-arthritis of some old man, whose hip perhaps is stiff and painful, or entirely ankylosed, is a case of rheumatoid arthritis to some authorities, while we ourselves should not include it in the disease at all. The presence of Heberden's nodes, again, has been taken as indicating rheumatoid arthritis. They are, no doubt, often present in this disease, but are much more frequently seen in elderly, slightly-gouty, women who have none of the symptoms of rheumatoid arthritis. Then, again, like the mon-arthritic hip, those other cases, where the sufferer is bent down by years and "rheumatism," with his vertebræ semi-ankylosed and fixed, are not rheumatoid arthritis. For these the term osteo-arthritis might be used, but probably the popular diagnosis of

PLATE 8.



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RHEUMATOID ARTHRITIS.



“rheumatics” is much more near the truth than we are apt to think.

Experience at the Mineral Water Hospital has taught us to be less and less inclined to dogmatise upon the exact differentiation of certain forms of joint disease.

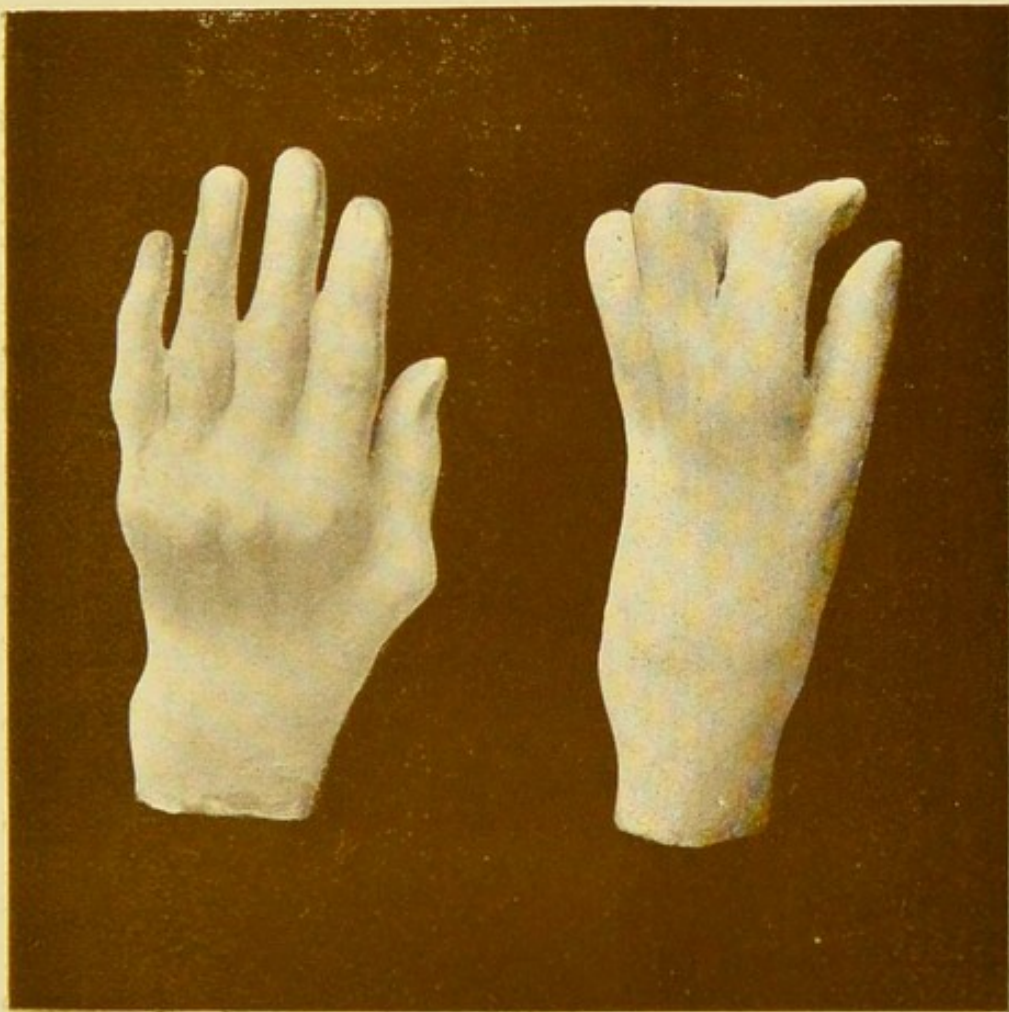
Having cleared the ground somewhat by explaining what, in our opinion, is not rheumatoid arthritis, it will be convenient to pass on to what it is. It must be remembered that it is almost entirely upon clinical observation that we depend for diagnosis. Patients so seldom die at the Mineral Water Hospital, that the chances of pathological examination in the *post-mortem* room are few and far between. Still, we see a large number of cases in the course of the year, and they must qualify somewhere for such examinations; perhaps our great workhouses could supply the material needed.

There seem to be two fairly well-defined classes of rheumatoid arthritis. In one the symptoms come on in early life, from about the age of eighteen to twenty-four; in the other, from about forty and onwards, during what has been called the early degenerative period. In the former class the cases are generally well defined and easy to recognise; in the latter the diagnosis is often more difficult, and it is among these that an exact differentiation is frequently impossible.

There are many points in the previous history, the onset, and the clinical features of the cases occurring at these two periods of life which not only warrant their being placed in distinct classes, but also being described separately; it will be sufficient, however, to draw attention to especial points of difference as occasion occurs.

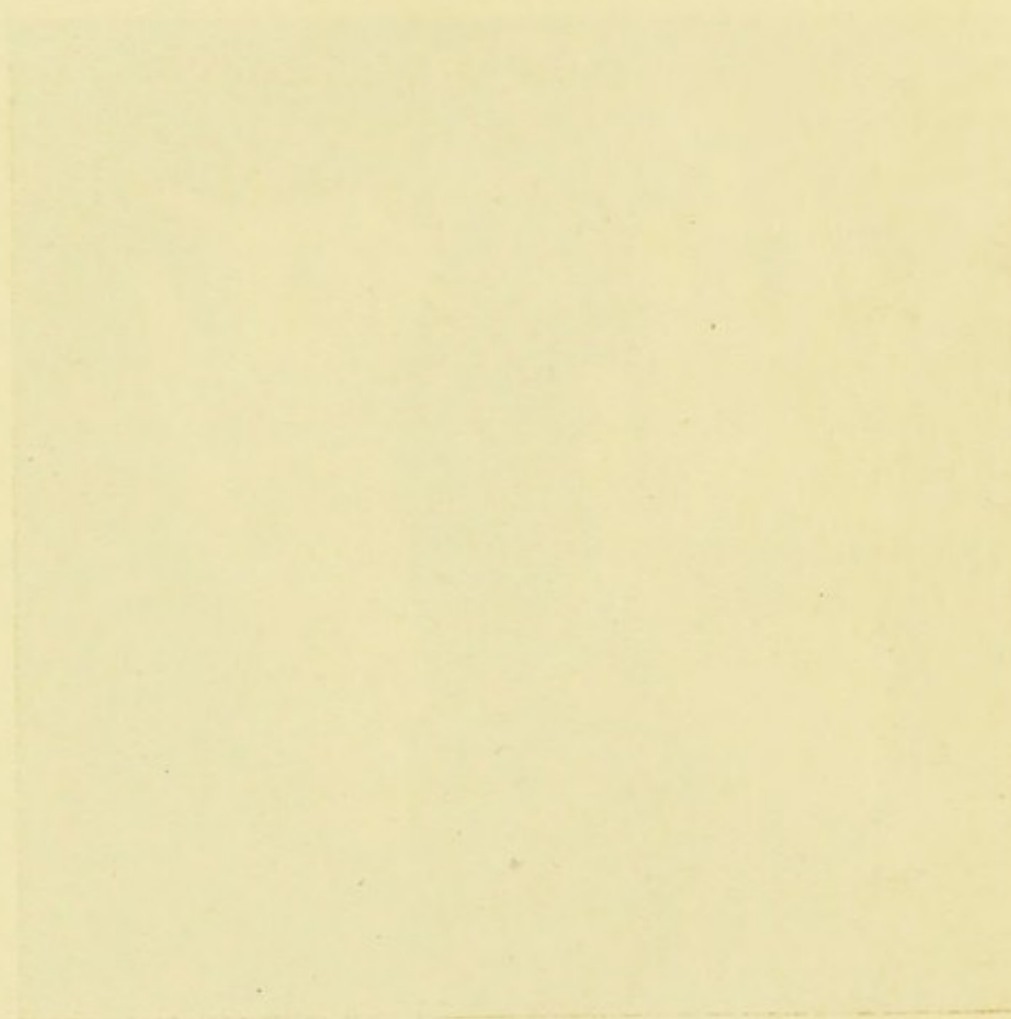
The disease may begin with an acute attack, or in a more slow and chronic manner; its early symptoms being frequently most indistinct and vague. "No medical trouble," writes Dr. Spender, "is more insidious in its approach, or more subterranean in its quiet journey." Sometimes, before any joint trouble is noticed, patients will complain of a feeling of lassitude and general loss of strength. Pain in the muscles of the thumb, and aching in the joints with sensation of pins and needles, or sudden loss of power in some muscles, are not infrequent symptoms that foreshadow the attack. But, however it commences, joint changes quickly show themselves, and declare the nature of the disease. These changes begin in the fingers, wrists, and feet; and then spread upwards to the elbows, the knees, the shoulders, and the hips, till perhaps there is hardly a joint in the body that is not affected. The articulations of the vertebræ are frequently involved, and the temporo-maxillary joints very seldom escape. If the disease begins with an

PLATE 9.



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RHEUMATOID ARTHRITIS.



THE END OF THE WORLD

acute attack there may be great pain and swelling in the joints, a hectic temperature, with an evening rise to 101° F. or more, and a morning fall to about 99° F., and profuse perspiration. A slower and more chronic commencement is commoner in the older class of cases; and in these, too, there is much less synovial swelling, and more impairment of movement in the joints, and changes in the cartilages and bones, than in the younger class. During the progress of the case, even when it was chronic at the beginning, subacute attacks are apt to supervene.

The heart does not escape in rheumatoid arthritis, though its affection is much less frequent than in acute rheumatism. These two diseases run into each other so much that it seems as if it were the poison of true rheumatism that manifests itself, in an irregular way, in rheumatoid arthritis. The character of the temperature, the nature of the sweat, and the clinical fractures, are distinctly different in typical cases of the two diseases, but very often the types seem to merge into each other.

With the joint affection there is marked anæmia, great emaciation, and various digestive troubles. There seems also, in many cases, to be a loss of power for properly assimilating food, which causes a grave obstacle in the maintenance of the patient's strength. Painless enlargement of the lymphatic glands is very

often present, and is especially well marked in a patient who is in the hospital at the present time. In children there is also, as Dr. G. F. Still has pointed out, an enlargement of the spleen; but this condition is rarely, if ever, noticed in adults.

With the wasted muscles there is generally an increase of the tendon reflexes, and nearly always a loss of power in responding to the Faradic current. Then, as pointing to an implication of the vaso-motor system, there is an increased rapidity of the heart's action, local sweating, and pigmentation of the skin. On these last three symptoms Dr. Spender lays especial stress, and regards them as almost diagnostic of rheumatoid arthritis; and they are, without doubt, of distinct assistance in distinguishing some of the doubtful instances of the disease. Very frequently, and especially in later life, a glazed and shiny condition of the skin is present. This was very noticable in the case from which the photograph shown on Plate II was taken, and clearly indicates changes in the trophic nerves.

Such then is a short sketch of the disease, and we will now consider some of its phenomena at greater length.

Joints. The swelling follows pretty accurately the outline of the joints. To the touch it is soft, elastic, and semi-fluctuating, and con-

sists partly of fluid, but chiefly of thickened synovial membrane. These swellings are seen in the accompanying illustrations. Plates 8 and 9 are from photographs of casts taken at the hospital, and show fairly typical hands of rheumatoid arthritis.

In the knee, and in other joints also, during the earlier stages of the disease, a curious crackling fremitus is felt on movement. This crackling is caused by prolongations of the synovial membrane into the joint, and must not be confused with the harsh grating of the later stages, when ulceration of the cartilage and eburnation of the bone has taken place.

There is a tendency in this disease to a weakening, and consequent stretching, of the ligaments and tissues in and around the various joints, and, at the same time, to an atrophy of the muscles, especially the extensors; the result is that partial dislocation of the bones occurs. In the knee, for instance, the tibia, in its semiflexed position, is carried backwards in its loosened joint upon the femur. Flat foot, so common in rheumatoid arthritis, is another example of this action, and in the hands the flail-like joints and ulnar deflection of the fingers are similarly produced. There has been much discussion as to how this last deformity is caused. It has been suggested that it is due to an enlargement of the head of the first metacarpal bone, which would carry the index finger, and with it the other fingers,

to the ulnar side; but against this view is the fact that, quite as often as not, cases of this deformity are seen where no such enlargement of the metacarpal bone exists. Some again see in it the result of certain forms of employment, though they do not explain how this is supposed to act. It is neither necessary to assume the presence of bony changes which do not exist, nor to go out of our way to imagine some special form of employment, in order to explain this condition.

There are certain simple reasons why the deflection should take place to the ulnar rather than to the radial side. In the normal hand the fingers have a much greater range of movement towards that side, and on the whole their strength, and the length of the metacarpal bones, decreases from the first to the fourth. If then, by disease, a condition is produced, like that in the hand from which the photograph shown on Plate 10 was taken, where the flail-like fingers hang loose and powerless from their metacarpal joints, gravity by itself would tend to draw them to the ulnar side, and gravity would be assisted by the anatomical conditions, all the more by reason of the loosened tissues, and atrophied extensors already mentioned. Another well known deformity of the hand is shown on Plate 11. Here there is flexion of the first phalanges, with over-extension of the

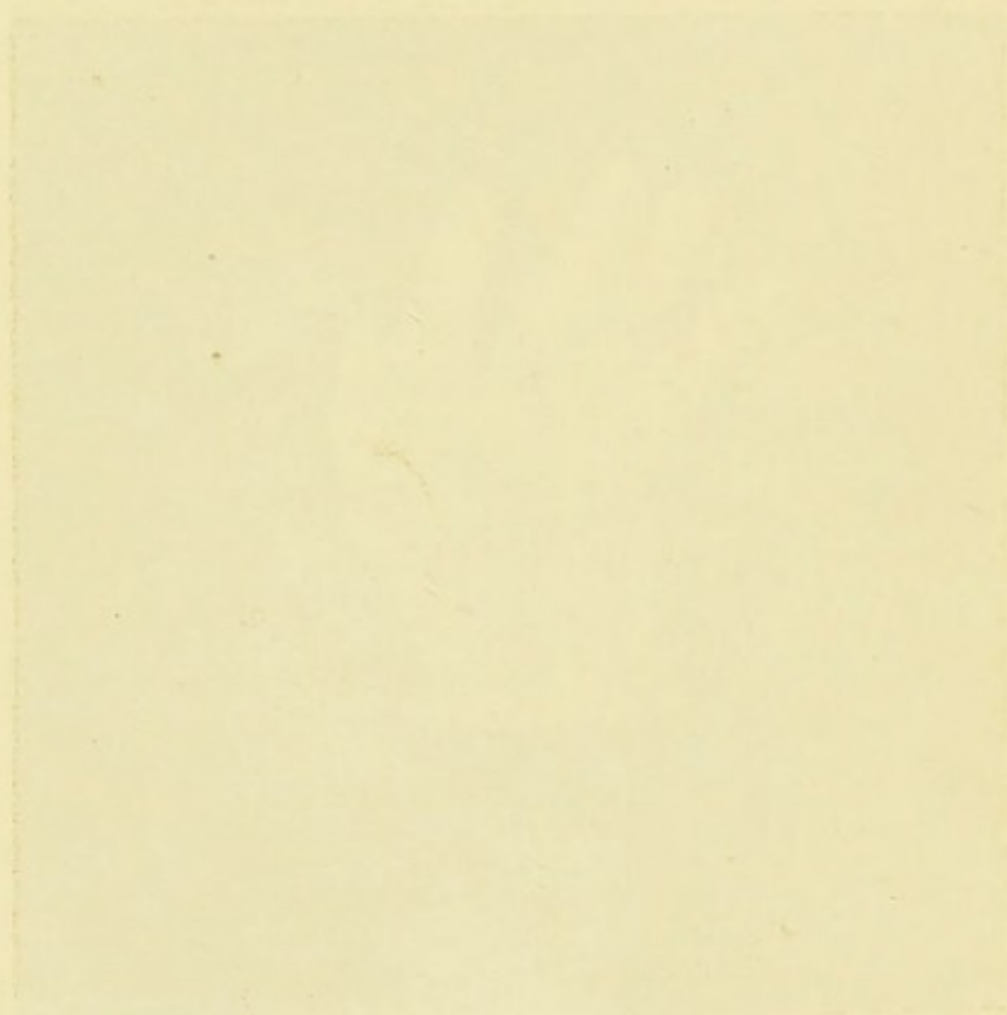
PLATE 10.



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RHEUMATOID ARTHRITIS.

SHOWING ULNAR DEFLECTION, AND FORWARD DISLOCATION,
OF FINGERS.



second, and again slight flexion of the third; the result being that the fingers appear to bend backwards, at their middle joints, in the wrong direction.

It is to this condition that Sydenham apparently alludes when, in considering the deformities of rheumatism, he says: "The joints of the fingers become, so to speak, inverted, and present nodular protuberances, such as are met with in gout, on the inner rather than on the outer sides of the fingers." It is not at all clear how these peculiar deformities are to be accounted for. The interossei muscles have got much credit for their production. By their physiological action these muscles would tend to produce just this position of the fingers; but then, in so many cases they are atrophied, and therefore could not act, and even if this were not so some further reason would be needed to explain how it comes about that these little muscles take on the entire management of the fingers, and counterbalance the stronger flexors and extensors; but it is easier to suggest difficulties in the acceptance of present theories than to advance a satisfactory explanation.

This deformity occurs chiefly in cases of later life, and especially in those with a gouty inheritance, and is seldom seen in the younger class of cases. It is also more common in private than in hospital practice. It is not, however, peculiar to rheumatoid arthritis, but

is also seen in chronic rheumatic arthritis, and in gout, as reference to the Plates 1 and 4 will show.

As the disease progresses there is gradually more impairment of movement in the affected joints. This is partly due to ulceration of the cartilages, partly to dislocations and the formation of fibrous bands, and partly to bony outgrowths, which, by their locking action, further limit the range of movement. The case then presents the phenomena of osteo-arthritis. It is not to be supposed, however, that a case of this class of rheumatoid arthritis need have gone through the stages of the earlier form of the disease: it is quite otherwise; for cases occurring in middle or later life often show this osteo-arthritic condition soon after their first onset. It is in these cases, too, that we find those peculiar enlargements about the terminal phalangeal joints which are known as Heberden's nodes; these are similar to other bony outgrowths, but have been dignified with a name; they cause little inconvenience, beyond some slight lateral displacement of the last joints of the fingers, and, like the peculiar deformity of the hand just considered, they, too, belong to later life, and are frequently found in those with a gouty tendency who have no other symptoms of rheumatoid arthritis.

*Nerves and
Muscles.*

Wasting of the muscles is always a prominent symptom in this disease. The wasting is especially marked in the arms

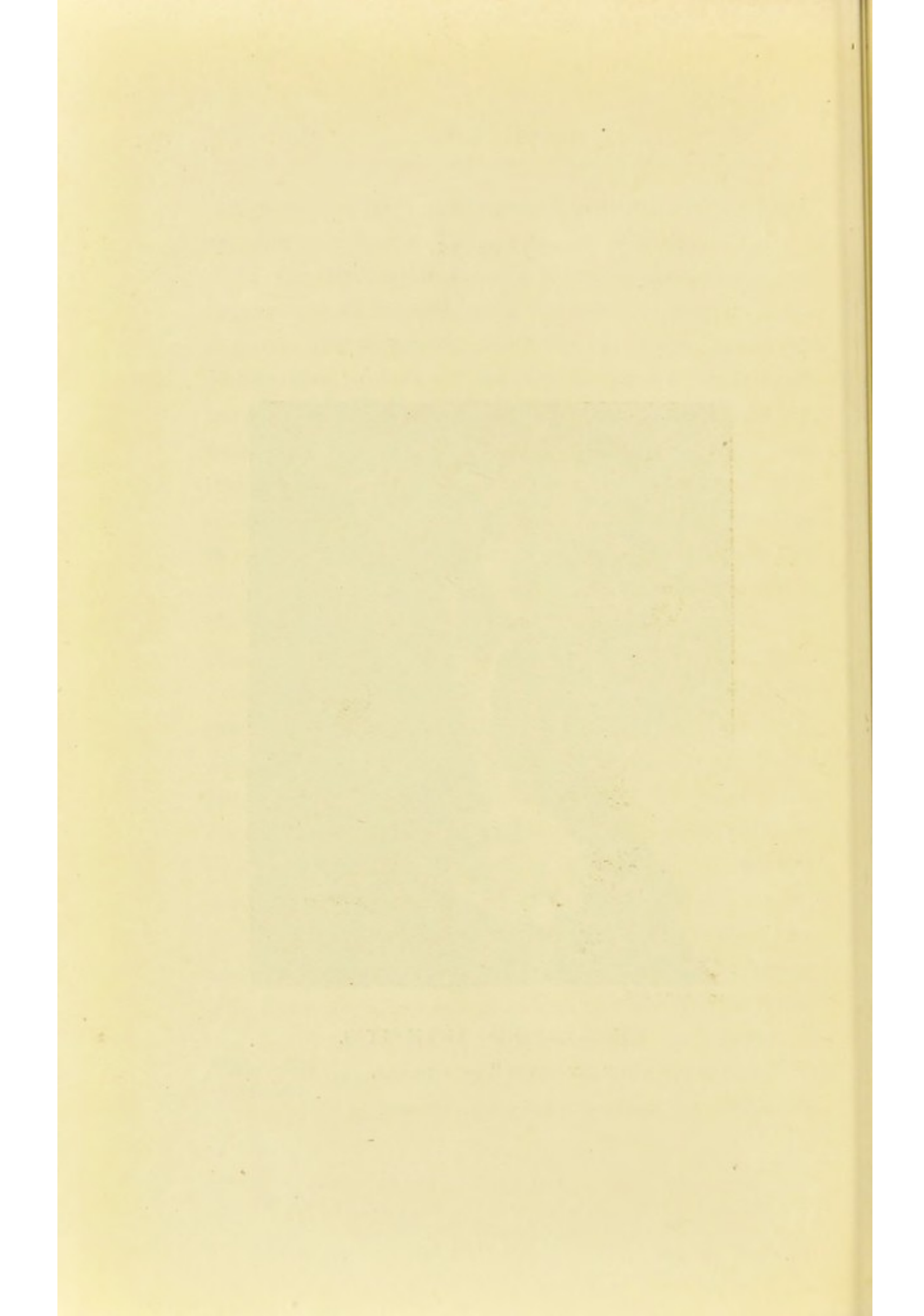
PLATE II.



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RHEUMATOID ARTHRITIS.

"INVERSION" OF FINGERS.



and legs. It is of more rapid and pronounced a nature than can be accounted for on the ground simply of disuse, and is evidently the result of changes in the nervous system. Sometimes it forms the earliest symptom in the disease. A case of this kind occurred in the hospital a few years ago. The patient, a man, went to work one morning as usual, when he suddenly lost power in both arms; a few days later the joints began to be affected; and six months from the onset of the attack he was admitted into the hospital, presenting all the features of a well-marked case of rheumatoid arthritis.

That the loss of power is not the result of disuse is very well shown by the following case: H. S., aged 19, was admitted into the hospital suffering from rheumatoid arthritis. In the left hand the joints were freely movable, though there was marked synovial thickening. In the right hand the enlargement was less, but the wrist was semiflexed and almost fixed, and the fingers were less free than in the other hand. Now if the loss of power varied as the loss of mobility, we should expect to find that the left hand was stronger than the right. This, however, was not so; the power of the left hand to that of the right, as shown by the dynamometer, was in the proportion of 15 to 22. That is to say that the hand in which the joints were more fixed, and in which, consequently, the element of disuse

would play a more important part, was stronger than the other. It may be added that there were no acute symptoms in either hand to interfere with the observations. Increase of the deep reflexes is generally present and suggests an irritability of the spinal centres, possibly due to the anæmia.

Among other nervous symptoms of which patients complain are "fibrillar twitchings," and persistent and troublesome cramps, the latter occurring chiefly at night, and sometimes causing great distress. Then there are the three conditions already mentioned, viz., the rapid pulse, the local sweatings, and the pigmentation. The rapid pulse is seen more often in the rheumatoid arthritis of later life, but the cold, moist hands are almost equally common in all cases; they are not, however, peculiar to rheumatoid arthritis, for they are also met with, though less often, in chronic rheumatic arthritis and in chronic gout. The pigmentation varies in its character: sometimes it takes the form of small round spots, or groups of spots, of a dark mahogany colour; at other times it is seen as smudges, or patchy discolourations, of the skin. Sometimes this staining follows the track of a cutaneous nerve. Plate 12 shows the "butterfly" pigmentation on the forehead from a case of rheumatoid arthritis which was in the hospital.

With regard to these pigment spots and stainings,

PLATE 12.



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"BUTTERFLY" PIGMENTATION IN A CASE OF
RHEUMATOID ARTHRITIS.



patients, as a rule, have no doubt that they made their appearance at or about the same time that the joint trouble began.

Rheumatoid arthritis is a joint disease, but
General it is also a disease of the whole system,
Remarks. the joint affection being one of its manifestations. There is usually marked anæmia, and microscopic examination of the blood, by means of the hæmosytometer, shows a distinct deficiency in red corpuscles. The circulation is feeble, as shown by the cold extremities, and there is a loss of tone in the nervous and digestive systems. It is, as has been shown, a disease which, at times, so simulates other joint affections that exact differentiation may be by no means easy. It may occur at almost any age. We saw a case, a few years ago, in a child of two and a half years old; and it is also seen in advanced life. Its cause must, for the present at any rate, remain shrouded in doubt. The inheritance of a joint weakness—an arthritic diathesis, as it has been called—is no doubt an important predisposing factor; and possibly, in the future, a bacillus may prove to be the final exciting cause.

Lately, Drs. Poynton and Paine have demonstrated what they believe to be the micro-organism of acute rheumatism. The connection between this disease and

rheumatoid arthritis is more intimate than is generally allowed.

Looking at rheumatoid arthritis as a whole, seeing how it runs into true rheumatism, how in it the heart may be affected, how rheumatism itself causes affections of the nervous system—as was seen in the chapter on that disease—and how similar are some of the joint deformities produced by each : bearing all these things in mind, and remembering the marked nervous phenomena of rheumatoid arthritis, we would suggest, as a useful working hypothesis, that it is one of the manifestations of the rheumatic state ; a disease, in fact, the symptoms of which are caused by the specific poison of rheumatism, acting through the agency of the nervous system—that it is, in other words, a rheumatic nervous illness.

The specific poison of rheumatism is probably a micro-organism—whether it has been discovered yet or not—and this, by finding itself in soil of a particular kind, might conceivably develop, not the true disease, but a bastard form, such as rheumatoid arthritis.

No two individuals are alike, and no two “cases” are exactly similar ; therefore, if a certain disease is caused by a particular micro-organism, we are forced to allow that the micro-organism can act differently in different individuals. The origin of species in the life-history of disease has yet to be worked out.

A living germ is one factor; the soil it grows on is another. Evolution obtains in the world of germs, as elsewhere in the organic kingdom, and time will probably show that many at present so-called separate diseases are but the result of some common micro-organism developing differently in different media.

True inquiry in this direction is not advanced by assuming a specific germ for each different morbid state, as formerly each ailment of the body was supposed to have its specific drug to cure it.

CHAPTER XII.

TREATMENT OF RHEUMATOID ARTHRITIS.

"Our remedies oft in ourselves do lie."—SHAKESPEARE.

HOWEVER much of academic interest there may be surrounding the etiology and pathology of rheumatoid arthritis, there is no doubt that the question of its treatment is of far more importance, not only to the sufferers themselves, but also to their medical advisers.

*General
Remarks.*

It is impossible to approach the subject of treatment without remembering that some authorities have described rheumatoid arthritis as an incurable disease. There is no doubt that those advanced cases, where ulceration of the cartilages has been followed by erosion, contractions, and ankylosis, till the joint has ceased to be a joint, are incurable; no medicine, no water, and no treatment can possibly undo the past, and restore the joint to its former state. But for those

other cases—for those occurring, for instance, in earlier life—a cure may certainly be effected.

We have seen cases of this kind, where the puffy enlargement of the wrists and finger-joints, the swelling of the knees, the wasting of the muscles, and the general aspect of the patient, with his cold and sweating hands, denoted an undoubted case of rheumatoid arthritis, get perfectly well, and show no signs of the disease a few years later. Unfortunately, however, such complete recoveries are the exception. Still, that they occur at all, is sufficient to give hope to the patient, and to dispose of the statement that the disease is incurable. But even where a cure cannot be effected, much may still be done, by a proper use of the means that Nature has given us, in preventing the progress of the disease, and in relieving the sufferings of the patient.

Constitutional Treatment. Rheumatoid arthritis is eminently a disease of debility, and the chief aim in its treatment is to improve the general health of the patient. With this object in view, all weakening and debilitating influences, all prolonged use of depressing drugs, all fanciful restrictions in diet—restrictions based upon the false assumption that the disease is of the nature of gout—and all causes of worry are to be most especially avoided.

Change of air and scene, cheerful surroundings, and

perfect rest from business anxieties are to be recommended. Mental depression is so constant, that it may in reality be looked upon as one of the symptoms.

It is easy to advise some patients not to worry, but it is often impossible for him to follow that advice. Still, it should be our object to see that this course is made as easy for him as circumstances will allow. Dr. Herman Webber, in his address at the inaugural meeting of the Balneological Society a few years ago, spoke of the necessity of health resorts being properly supplied with entertainments and with music. "The mind," he said, "at all times has a marvellous influence over the physical welfare of the body, but never so much as in chronic joint disease"; and he impressed upon his hearers the importance of music as a therapeutic agent.

The advice of an old physician to his patients was: "Change. If you can't leave home, change your room; and if you can't do this, change your furniture." He realised the influence of the mind upon the body.

As much fresh air as possible, and exercise short of actual fatigue, is to be recommended. Warm clothing, flannel or Jaeger wool next to the skin, should be worn at night as well as during the day.

Many sufferers from rheumatoid arthritis, especially those of middle and advancing life, are peculiarly sensitive to variations in the temperature, and will

often foretell changes in the weather with far greater accuracy than the barometer. Among the younger class of cases, however, it is remarkable how often patients are unconscious of these changes, and how little they seem to feel the cold, and for this very reason it is all the more important that they should be warmly clad.

The feebleness of the digestion and the
Diet. frequent inability to properly assimilate food, with the consequent loss or fickleness of the appetite which are so often found in rheumatoid arthritis, present a great difficulty in the maintenance of the patient's strength. As a general rule the diet should be liberal and varied, and contain plenty of animal food. Within certain limits, anything that the patient fancies may be taken; for in this, as in other diseases, the appetite is usually a safe criterion. A diet consisting of mutton, fowl, fish, and game, with vegetables—especially potatoes, spinach, celery, French beans, and asparagus—and fruit, is, as a rule, to be preferred.

Animal fats are of the greatest use, and should be taken in the form of milk, cream, butter, eggs, cheese, and bacon. Oatmeal porridge, and milky rice and sago, or other farinaceous puddings, are also to be recommended.

Rich, made-up, and second-cooked meats are best

avoided, by reason of their being indigestible; but even here the appetite must be consulted, and apparently morbid cravings may occasionally be satisfied without harm.

The physician, however, should be something of a cook as well as a doctor; for he may often assist his patient quite as much by his knowledge of the culinary art as by his power of prescribing nauseous drugs.

The use of alcoholic drinks will depend very much upon the habits of the patient; if he has not been accustomed to them, they are best avoided. Stout and beer are not contra-indicated in rheumatoid arthritis, and are often taken with great benefit. A moderate allowance of one of these, or, in their place, of some other form of stimulant, will often be of use in encouraging the appetite and in helping a weak digestion.

With regard to drugs, it must be clearly understood that they are of use only as tonics, to improve the general health, and for the treatment of symptoms. There is no specific for rheumatoid arthritis.

Quinine, iron, arsenic, and cod-liver oil are of special benefit. This last, however, should be looked upon, not so much as a medicine as a food, and a most useful one, especially in cases where there is much debility. It should be given in teaspoonful doses, twice

daily, after food ; and if a small pinch of salt be taken directly it is swallowed the discomfort of indigestion, which is apt to occur, will often be prevented. When the oil cannot be taken, cream and butter should be substituted for it ; the latter in the form of buttered bread, as distinct from bread and butter.

The syrups of the phosphate and the iodide of iron are of great use, especially the latter, of which Sir Alfred Garrod speaks very highly in the treatment of this disease.

For the acute stages, at the commencement, and for the subacute exacerbations which occur during its progress, salicylate of soda still holds the foremost place. It is generally best given in an alkaline mixture with quinine. Salicine and the salicylate of quinine are also useful during these stages.

In the more chronic cases the carbonate of guaiacol, in five-grain doses, is to be preferred.

Dyspepsia and constipation, of course, must be attended to. The latter is best corrected by some saline, such as Apenta water, or Carlsbad salts ; whilst the former is so common in this disease that it may almost be regarded as a symptom.

Sufferers from rheumatoid arthritis would do well to take a glass of hot water before breakfast ; especially if this is allowed to replace the pernicious morning cup of tea, for the habit of taking this is one which

no self-respecting stomach could do otherwise than resent.

Insomnia, when it is not the result of pain, is best treated by sulphonal, either alone or combined with sodium bromide, taken in a glass of hot milk at bedtime. Chloral, Indian hemp, and the tincture of lupuli, are also valuable hypnotics. Sometimes wakefulness is the result of an empty stomach; and then food is called for rather than drugs, and a cup of milk arrow-root or an egg flip will induce natural sleep.

During the acute and subacute stages, when
Local Treatment. there is much local pain and swelling, no application is so useful as the old mixture of belladonna and glycerine. This having been warmed and liberally applied, the joint should be wrapped up, either in lint and cotton wool, or in a hot fomentation. In more chronic conditions, salicylate of methyl (oil of winter-green) may be used with advantage.

Strapping of the joint with ordinary adhesive plaster often gives relief, and, whilst acting as a support, also tends by its pressure to reduce the swelling. Under the strapping Scott's mercurial ointment may often be applied with advantage.

Gentle friction to the joints, especially with some stimulating liniment, will frequently relieve pain. Counter-irritation, by blisters or iodine paint, is very

useful in the treatment of local pain and for the reduction of synovial swellings. It is best applied, as Dr. Spender recommends, not directly over the joint but just above, on the cardiac side of it.

The encouragement of local warmth and perspiration by bandaging the joint in wool is also to be recommended for the relief of pain. Local perspiration, especially of the hands and feet, is a condition that often calls for treatment. It sometimes happens that the moisture of the hands, so that the lines upon the palm are converted into little rivulets, is so distressful a symptom that it has to be corrected. Probably it is due, as Unna has suggested, to a want of tone in the underlying muscles; and he advises massage, electricity, and iodine.

Leistikow lays stress on the importance of distinguishing between cases of hot and cold perspirations. For the latter he recommends hot baths, with the addition of vinegar or spirits of camphor; the hand or foot is then to be carefully dried and washed with a soap made of—

Formaline, 3ss.

Adeps Lanæ, 3ij.

Vaseline, 3ss.,

the lather being allowed to dry on. In cases of hot perspiration a tepid bath of a weak solution of borax is to be used. Sulphur, ichthyol, and salicylic acid are also useful as applications in these cases.

In the case of the feet generally, it is a good plan to wash them at least twice daily, changing the socks each time, and before these—which should be made of thin merino—are put on they should be dusted well with a 3° salicylic acid powder, made up with talc or starch.

Sometimes it is well to envelope the feet in strips of salicylic plaster, 3°, for twenty-four hours, and followed by the dusting powder already mentioned.

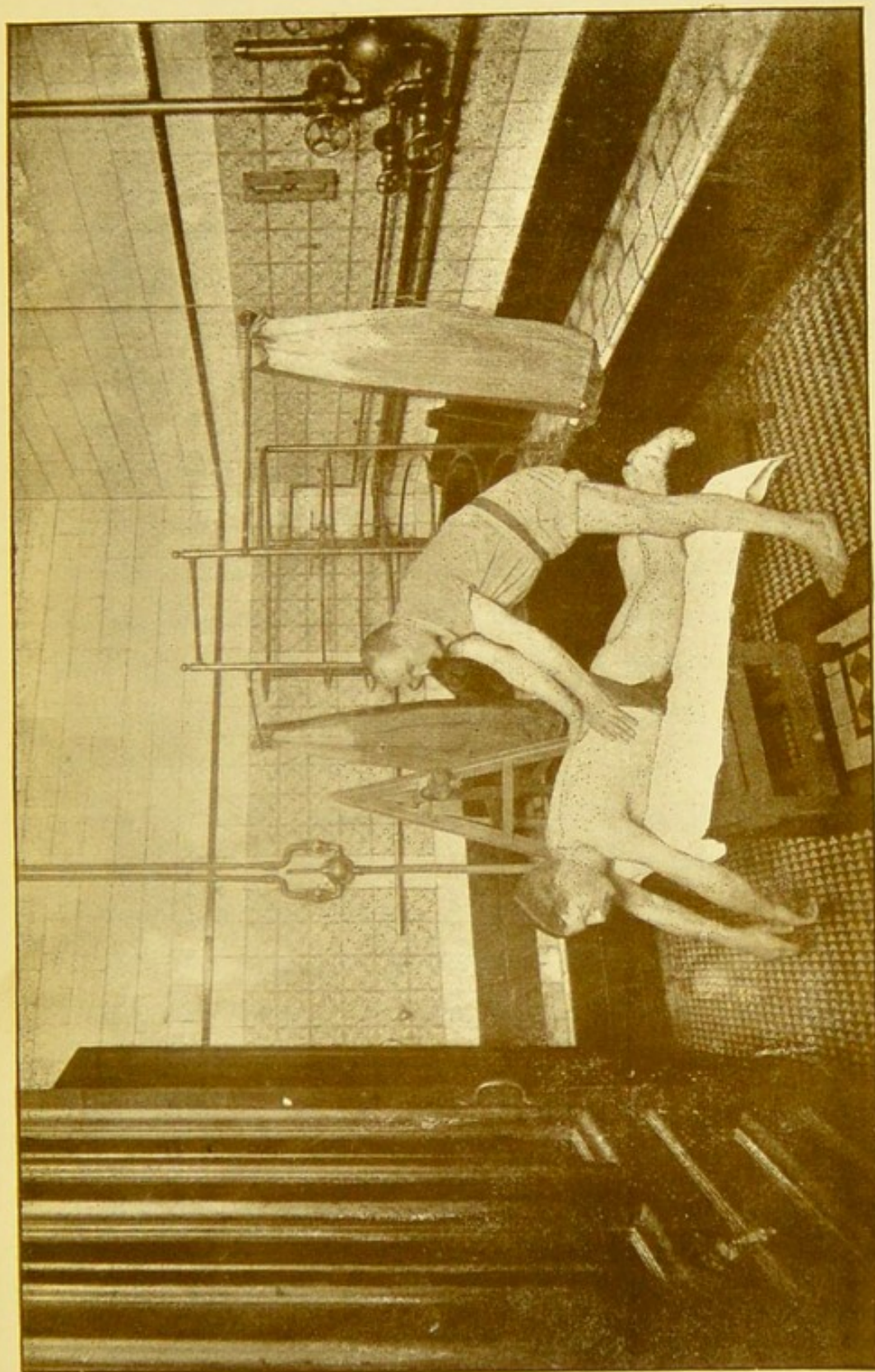
This powder should also be used for the gloves, which, as well as the shoes, should be light and loose-fitting.

It must not be forgotten that these local sweatings are outward manifestations of the disease, as well as due to local causes, and that they will become less as the general health improves. Belladonna, ergot, and sulphur have been recommended for their cure, but these are probably less effective than the tonic treatment of iron and quinine.

There is no doubt that in properly applied

Massage. massage we have a very valuable therapeutic agent in the treatment of rheumatoid arthritis. It cannot of course be used during the acuter stage, owing to the pain which it would cause; when, however, this has passed off, it is of aid in nearly all cases that come under observation.

By massage the tone of wasted muscles is improved,



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AIX-MASSAGE ROOM AT BATH, WITH BOARD FOR LUMBAR AND
ABDOMINAL MASSAGE.

THE UNIVERSITY OF CHICAGO

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1900

synovial swellings are reduced, and a further range of mobility is gradually restored to the crippled limb. Furthermore, massage improves the general health by increasing the appetite, and inducing sleep.

It should be begun gently, and for short periods—about half an hour—on alternate days, and increased in frequency and extent as the patient becomes able to bear it.

With massage, the resistive movements described by Dr. Schott, of Nauheim, should be employed, by means of which the action of the muscles is encouraged and re-established; for, in spite of all that can be done to give mobility to a crippled limb by passive movement, nothing in this direction equals the active contractions of its own muscles.

For general massage some simple application, such as the oil of cocoanut, is sufficient; but when the object is especially to reduce a swollen joint, an ointment containing iodide of potassium should be used. It is hardly necessary, in conclusion, to say that there is massage and massage; and that, unless the operator be skilful, he may do more harm than good.

Faradic electricity tends to prevent *Electricity*. muscular wasting, and may conveniently be given in combination with massage, but it appears to have no curative effect upon the disease.

In Professor Clifford Allbutt's *System of Medicine*, Dr. H. Lewis Jones speaks favourably of electric baths, especially in the treatment of pain and stiffness, in early cases. We have had no experience at present in this form of treatment; but, as electric baths are shortly to be added to the bathing establishment here, we shall doubtless before long be able to speak with more authority.

The proper use of hot bathing is often of
Baths. benefit in rheumatoid arthritis; it is not, however, to be recommended in all cases, and should never be taken except under medical advice.

It can easily be understood that in cases of marked debility the weakening effect of too long immersion in hot water may undo the good which might otherwise be looked for in the treatment.

In water of about 99° F. to 100° F. a sense of comfort is felt and painful joints are eased. Moreover, supported by the water, the limbs can be moved more freely, and the natural action of the muscles re-established.

In Bath it is usual to begin with a few simple immersion baths, and then to pass on to the Aix massage system, which is certainly the most useful form of bathing in this disease. In cases where this bath cannot be borne, on account of the painful con-

1760 Michael Aberdeen At 30 A Lumbago attended, with
 April 19 Readmitted. ———— Lamone & Patis in his Shoulders
 of several Years standing.
 21 Potio purg. med. Cus
 Bib. Aqu. Theriac. Cy on Mary. B. 6 bis in Janas
 May 2 Urtica. Scrophetic. pro re. nula. summis.
 5. Mistle. Bals. Capiv. et Cy. Guaiac. 3ij. s. vel alt. Noct. h.
 June 6 This Patient has made use of the Waters both internally
 and Externally ever since the 21. of April to the 6th of June
 without any Signs of Amendment, but grew rather
 weaker, on which Account he was Ordered to try
 what Effect the sweating Chair, might have on him.
 accordingly on the 6th Instant, he was put into it, in
 the Evening, in the Presence of Doct. Mousey Mr.
 Palmer, and Mr. Wright Surgeons, and continued
 in it one Hour, during which Time, he drank two
 Pints of a strong Decoction of Guaiacum in Barley
 Water, in this State he sweat pretty much, particularly
 in his Face, the Pit of his Stomach, and down his
 Back to the Loins, the Extremities were warm, but
 very little Perspiration in those Parts, he bore the
 Operation very well, and was no ways faint.
 He was then taken out of the Chair, and put into a
 warm Bed, between the Blanketts in which State he
 lay till ten the next Morning.
 The Doctor ordered him to continue the Decoction in small
 Draughts frequently, and likewise three Spoonfulls of
 a Cordiall, with Conf. Card. every fifth Hour, pursuing
 which Method he sweat profusely most Part of the
 Night, but had very little Sleep till towards the Morning,
 on Account of his not making Water, till that Time, he
 frequent Attempts for that Purpose, at last he made
 Water freely by which he seemed very much relieved.
 When the Doctor saw him this Morning, he found
 him very Easy, in every Respect, and that he could now
 move his Toes, which was what he has not been able
 to do for a long while. It was not thought proper
 to repeat the Operation this Day for fear of sweating
 too Much, but it is to be repeated to Morrow.
 June 25 Discharge no Better.



dition of the joints, relief may be had by using either the "rain spray" or "needle" douches. In those cases, too, the Berthollet vapour bath should be employed, either generally or locally to one or two joints at a time.

The effects of the bathing must be carefully watched, and it is not usually well to take more than twelve or fourteen baths during a course of about four weeks. When they can be used, the baths are of undoubted benefit, and, besides their immediate action, they help to bring out the fuller effect of the dry massage, which should, if possible, be always employed.

Drinking the Waters. Internally the waters are of less importance in rheumatoid arthritis than in many other conditions; they help, however, to correct digestive troubles, and to check constipation.

Hot Air. The employment of dry heat for the relief of chronic joint disease is by no means new. The hot sand bath, recommended by Haygarth, is an example of this treatment; and the accompanying photograph (Plate 13) from an old case-book at the Mineral Water Hospital shows that a process very similar to that still employed was used in Bath in the middle of the eighteenth century.

What this "sweating chair" was like we do not exactly know; but, judging from the results recorded in this case, it seems fully to have justified its name.

It belonged to an epoch of heroic treatment when emetics, purgations, and bleedings were in daily use for the treatment of distempers.

During recent years this "sweating chair" has been replaced, in a more scientific form, by the Dowsing and the Greville hot-air baths. By means of the ingenious arrangements with which these apparatus are supplied, either the whole body or some particular joint or joints can be exposed to a temperature of upwards of 300° F., or less, as may be desired. As a rule, it is probably better in rheumatoid arthritis to treat only one or two joints at a time, as exposure of the entire body to the heat is naturally somewhat trying.

A few applications of this mode of treatment are naturally of little use, and a course of twenty or thirty should be taken before much benefit can be looked for.

The effect obtained by these baths appears to depend on the action of dry heat; though in the Dowsing system, it is claimed that the light rays are also helpful. We have had most satisfactory results by means of a very simple apparatus consisting of an oil or gas fire, a conical tin, made specially for the purpose,* and an ordinary bed cradle, which, in use, is covered with blankets. By means of this the whole body, or a particular limb, can be

* Can be obtained from Mr. Clements (Ironmonger), Union Street, Plymouth.



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GREVILLE ELECTRIC HOT AIR BATH,
SHOWING LEG AND SHOULDER
GENERATORS.



exposed to the hot air, which may be applied at a temperature of 250° or more, and regulated by raising or lowering the flame. It is less elegant than the Greville system, described in an earlier chapter, and has not the advantage, that this possesses, of being so easy of application to any part of the body; but where it can be used it appears to be equally beneficial, and is certainly more simple and less expensive.

A few words must be said on the subject
Surgery. of surgical interference with rheumatoid joints. Forcible movement of a stiff joint is to be advised only with great caution. It is probably only justifiable when the limb is in a useless position; when, for instance, the knees are semiflexed, or the elbow-joints fully extended. In such cases an attempt may be made to alter the position of the limb so that it may become a useful, though still stiff, member once more.

In the disorganised condition of the joint, in an advanced case of the disease, the attempt by forced and passive movement to restore its former mobility can only end at best in disappointment. Very often, accompanying the flexion of the limb, there is also subluxation of the joint; in the case of the knees, for instance, the tibia is sometimes carried backwards on the femur, and in these cases forced extension is not to be advised. Nothing short of excision of the joint could give a strong and useful limb; and in

rhumatoid arthritis this favourable result might be attained at the expense of the patient's life.

When forcible extension is possible it should be done under an anæsthetic, and the limb then fixed in its new position by some light splint, until it is strong enough to do without supports.

In those cases where we have seen attempts made to restore mobility, by frequent movement under gas or other anæsthetics, the results, after endless suffering to the patient, have not been such as to encourage further trial.

Aspiration of the joint and flushing out with some antiseptic fluid has been recommended, on the assumption apparently that the disease is of local microbic origin, but these are violent measures which we should be sorry to advise.

Finally, patients can do much for themselves. They should get out into the air and walk as much as possible, and so improve their general health and restore strength to their muscles. With the same end in view, they should make use of the elastic exercisers of Sandow or Whiteley, by means of which they can do much to strengthen their limbs and get a further range of movement in their joints.

The flexor muscles of the hand may be exercised by grasping a small ball of indiarubber or worsted; and it is wonderful how steady daily action, even

by so simple a method, will improve the strength of the fingers.

For stiffened elbows and shoulders they should use an ordinary rolling-pin, commandeered from the kitchen for the purpose; and by sitting at a table, rolling imaginary paste, they may do much to restore the movement of their joints. For their knees, as they sit alone, they should use some simple apparatus—a box on wheels, or a roller-skate—which, with the foot resting in it, will move to and fro on the floor, and encourage a further range of movement in the joint.

Above all things, patients suffering from rheumatoid arthritis are urged to keep out of the hands of the bonesetter and the charleton. If medical men, who have spent years of study upon the human organism and its ailments before they can practice at all, and then many more years of special work upon some particular disease, fail to produce a cure, people may rest assured that they will seek in vain for help from some ex-tobacconist or advertising herbalist, who would persuade the credulous public that they have discovered the panacea for all human woes.

It is a sad reflection that it should be necessary, in the opening days of the twentieth century, to sound a note of warning against superstition and quackery. Unfortunately, however, there are a large number of people—educated and cultured people too—who still

cling to charms as a means of exorcising the evil spirit of disease.

The "galvanic" ring of quackery is a case of point; and we still, too often, see it on our patients' hands. It is sold for the relief of rheumatism in all its forms; and half its attractiveness would, doubtless, disappear if it could be bought for its intrinsic value, instead of at the fancy price at present given for it.

Kind friends advise its trial to some person suffering from rheumatism, saying: "At any rate it can do no harm;" but, as Dr. Oliver Wendell Holmes says, "it always does very great harm to the community to encourage ignorance, error, or deception." Besides, this ring sometimes comes very near performing, by strangulation and gangrene, a most radical cure of the rheumatism in the finger it is on.

With the verses from the Koran, the knuckle bones and corks for cramps, and the elixir vitæ of the quack, it should be consigned to the oblivion it deserves.

THE END.

