

## **Hamмам R'Irha : a winter health resort / by Thomas D. Savill.**

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# H A M M A M R' I R H A,

## A WINTER HEALTH RESORT.

BY

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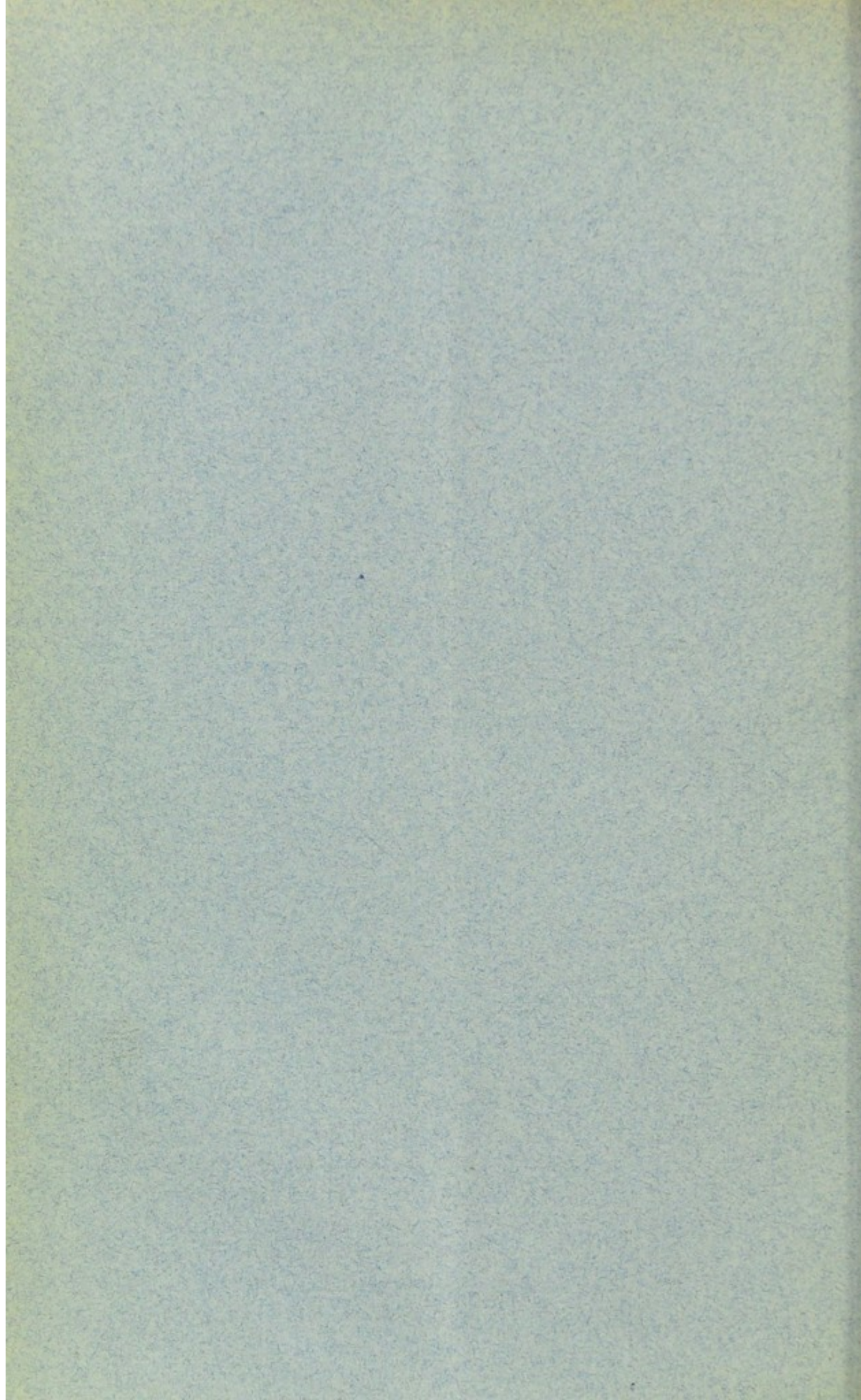


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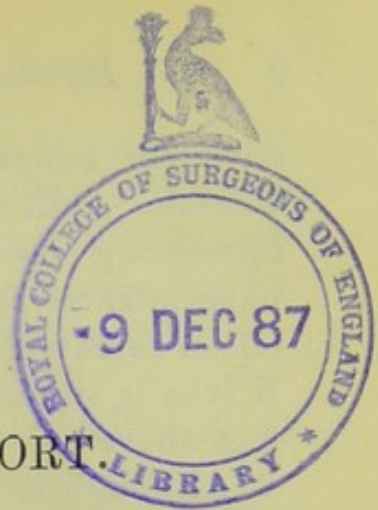
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1886.



HAMMAM R'IRHA,  
A WINTER HEALTH RESORT.



THE want that has long been felt of a good bath station to which rheumatic invalids can be sent in the winter months, induces me to give a brief account of Hammam R'Irha, in Algeria; a place which, if it be not all that can be desired, certainly has its merits. It has already been brought under the notice of the profession in England by Mr. Pollock<sup>1</sup> and by Dr. Lauder Brunton,<sup>2</sup> both of whom speak of it in very high terms. I have twice visited Hammam R'Irha. In December, 1879, I went over from Algiers as a tourist, and in March, April, and May of this year I was there to take the baths.

The bath stations in other countries for the treatment of the manifold forms of rheumatism in the summer and autumn months are too numerous to mention; but it is difficult to find a place suitable for the winter and early spring, because it is essential to the successful taking of all baths that there should be warm, dry weather; and these conditions occur in most localities at a season when rheumatic invalids feel the English climate least. One would naturally look for such weather in winter along the northern shores of Africa, where the fierce sun, clear sky, and neighbouring desert should combine to this end. And, in point of fact, Algeria as a whole presents a winter climate which is almost unsurpassed. There are long intervals without a drop of rain, and the northerly winds are tempered by passage across the Mediterranean. The mean winter temperature of its chief town is  $58.4^{\circ}$  F.,<sup>3</sup> and the average number of

<sup>1</sup> 'Lancet,' March, 1881.

<sup>2</sup> 'Practitioner,' April, 1881, and November, 1882.

<sup>3</sup> Calculated from the Government observations of thirteen years, 1865—77.

days per annum on which rain falls is about 80. It has also the additional attractions of beautiful scenery and an interesting race of people. The three ranges of Atlas mountains stretch from east to west, nearly parallel to, and on an average about 50 miles from, the coast; and Hammam R'Irha is situated in a dip of the Lesser Atlas range, 2000 feet above the sea level.

Although in the present day but little known, these baths were valued by the Romans, who built the village of *Aquæ Callidæ* beside the springs, remnants of which and of their baths are yet to be found. In more recent times they have been extensively used by the Arabs, who still make long pilgrimages to them with their wives and families, and who regard it as a part of their religion to have at least one good cleansing a year. They have their own baths just below the other establishments, and set lighted tapers and flags round the walls at certain Mahomedan festivals.

Hammam R'Irha is almost due south of London, and, as the crow flies, about 1100 miles. The quickest way to get there (three days without stopping) is by Marseilles and Algiers, which entails thirty-six hours' sea-passage. The baths are about sixty miles west south-west of the latter place, and about four and a half-hours' journey, first by train to Bou Medfa, and then a pretty drive of eight miles. There is another way with less sea through Spain, by Malaga or Carthagena through Oran; and a third way, with seven or eight days' sea voyage, by British India steamer from London to Algiers. Invalids should take the first or third. The cost without stopping at Marseilles or Carthagena, is about £14; all the way by sea to Algiers about £12.

The bathing establishments are situated on the southern side of a hill and command a beautiful and extensive view. Below, the valley of Oued-el-Hammam (river of the bath) runs east and west. On the opposite side of this is the little Hamlet of Vesoul-Benian, and stretching away in the distance beyond are two ranges of hills. On the west the rugged mountain Zakkar, which dominates all this region, towers to the height of 5184 feet above the sea level; while to the east, the valley expands into a well-cultivated basin, beyond which the high peaks of Ben Chicao and Berouagia can be seen. About two kilometres to the north-west is a

pine wood, said to be eighteen hundred acres in extent, and this emits a most agreeable odour on warm days. On the sides of the hills around flourish the ash, oak, olive, and eucalyptus trees; in well-sheltered places the orange can be grown to some extent, and roses, geraniums, and violets bloom all through the winter.

It will be seen from this description that the place is more or less protected on all sides by mountains, but unfortunately there is a cleft between Mount Zakkar and the pine wood on the north-west; and the north-west wind is the stormy wind of Algeria, being relatively fierce, cold, and rainy—corresponding in some respects with the south-west wind on our south coasts—and sometimes it sweeps down this cleft in such a bleak way that you fail to recognise the warm sunny places of a few days previous.

There are four almost distinct buildings for utilising the mineral waters, situated near together. Firstly, there is a small hospital founded by the French military authorities in 1841 for the reception of invalid soldiers. About two hundred yards to the east of this are the original baths still used by the Arabs and Jews, adjoining and above which is the small hotel built in 1878 by M. Arlès Dufour; and, lastly, there is the large new hotel about one hundred and fifty yards higher up the hill, part of which is finished and habitable, under the superintendence of the same gentleman. Great credit is due to the energy and enterprise of M. Dufour, and one can only wish him success in his extensive undertaking. As yet, however (June, 1884), the arrangements are not complete. So much of the benefit to be derived from a course of treatment at a bath station depends on the immediate surroundings and comforts of the invalid, apart from the bath itself, that one can scarcely over-estimate the importance of these adjuncts, and things, no doubt, will get straight in due time.

Of course, one cannot expect to find, so far from home, the gaiety of the fashionable German and French baths, with their casinos, theatres, and bands, but it is a great thing to find a winter climate for the invalid, and there are several nice excursions and rambles in the country around. For healthy friends and companions there is a tennis court, and lovers of the chase will find some sport on the sur-

rounding hills and fish in the river. The cost of living comes to about fifteen or sixteen francs a day at least. It is well to write for a south room with a fireplace beforehand.

After careful search I have not been able to find a record of any meteorological observations made at Hammam R'Irha; but Dr. G. H. Brandt, who was resident physician last winter, made a series of careful notes, and through his kindness I am able to publish, for the first time, the following *résumé*:

*Weather at Hammam R'Irha Nov. 15 to March 31, 1883-4.*

	Maximum.	Minimum.	Fine days.	Cloudy.	Rainy.	Total rain.
Nov. 15—30	79·7°	39·2°	10	5	5	11 inches.
December .	63·5°	29° (2 days)	13	18	8	3½ inches and 3 showers.
January . .	68·9°	36·5°	21	6	6	3 „ 2 „
February . .	71·6°	39·2°	16	13	5	2½ „ 3 „
March . .	69·8°	31·1°	11	20	12	10½ „ 3 „

NOTE.—In December, one day snow until 2 p.m., 4 inches; two nights below freezing. In January, one day thick fog. In February, one day drizzle all day, two days sirocco. In March, four days rain all day, six days cold wind, one day sirocco. Temperatures Fahrenheit scale, and read in the shade about six feet above the ground.

This table gives us some valuable data, and represents, I believe, on the whole, a fairly typical winter, although the seasons vary considerably. It will be noticed that the thermometer dropped below freezing point on three occasions, and that snow fell thickly once; but frost and snow are exceedingly rare. The changes of temperature at sundown are not so sudden as they are in the south of France, and the mean night temperature is generally 5° C. less than the mean day. What the absolute mean temperature was last winter I have not yet been able to ascertain, but it is probably below that of Algiers by some 6° or 7° F.<sup>1</sup> Out

<sup>1</sup> Since this paper has passed through the press, I have received fuller details of Dr. Brandt's daily observations, from which I calculate the following results:—Mean daily temperature for the winter 1883-84, from November 15th to April 15th, 11·14° C. (52·05° F.); mean daily temperature for the last half of November 13·4° C. (56° F.); for the month of December 9·3° C. (48·7° F.); for the month

of a total of 137 days, 71, or rather more than half, were quite fine, and there were only 37 really wet days; nevertheless, over thirty inches of rain fell in these four and a half months, showing that the rain was heavy when it did fall, as is usual in sub-tropical climates; but its position on the side of a hill and the porous soil prevent Hammam R'Irha from being a damp place. The sirocco, or desert wind (south-east), is of course occasionally felt, but it gives rise to very slight inconvenience; its terrors are reserved for the summer.

Perhaps the greatest charm of this climate rests in the purity and bracing character of its air. It strongly resembles the mountain air of Scotland in the summer months, only there is less wet. When the north-west wind blows there is quite as much need of an overcoat as in Scotland, but not at other times. Invalids should take great care during the prevalence of this wind. The safest time to take the baths in an average season would be from October 1st to December 30th, and from March 1st to May 30th. The intervening months of January and February may well be spent in Algiers or its suburb Mustapha Supérieur.

All the water in the district is hard, but there are two valuable mineral springs at Hammam R'Irha. The chalybeate spring for drinking rises about three quarters of a mile to the east of the bathing establishment. It is quite cold, clear, inodorous, and very pleasant to drink. Its chief active principle is oxide of iron held in solution by carbon dioxide, and it sparkles with bubbles of this gas when freshly drawn. It also contains a quantity of sulphate and bicarbonate of lime. The following is the detailed analysis of the solids contained in one litre of the water, made by M. Morin, the Government analyst:<sup>1</sup>

Acide carbonique, libre	...	...	...	0.8820
Bicarbonate de chaux	...	...	...	0.9411
„ de magnésie	...	..	...	0.0314
„ de strontiane	...	...	...	Indices.
„ de manganèse	...	...	...	0.0008
„ de peroxide de fer	...	...	...	0.0100

of January 9.4° C. (48.9° F.); for the month of February 12.3° C. (54.1° F.); for the month of March 10.9° C. (51.7° F.); for the first half of April 11.1° C. (52° F.)

<sup>1</sup> Quoted by Dr. E. Renard in his 'Station Thermale d'Hammam R'Irha, 1880, p. 21.



Sulphate de chaux	...	...	...	0.5438
„ de magnésic	...	...	...	0.1623
„ de soude	...	...	...	0.3425
Clorure de sodium	...	...	...	0.2801
„ de potassium	...	...	...	Indices.
Silicate de soude	...	...	...	0.0240
Alumine	...	...	...	0.0020
Matières organiques azotées	...	...	...	Traces légères.
Arsenic et acide phosphorique	...	...	...	Traces.
				3.2200
	Ensemble	...	...	3.2200

Peroxide of iron constituted 39.8 per cent. of the solids dried at 100° C.

The other spring rises just behind the hotel, and is used almost solely for bathing purposes. It is generally about 58° C. (136° F.) at the source, but by the time it reaches the baths is cooled down to 44—45° C. (110—113° F.). The supply is constant and abundant, and this water is also clear and colourless, but to a very delicate sense it has a slight sulphurous odour, more distinct at some times than at others. On this account it was formerly affirmed that the medicinal properties of the baths were due to sulphur, but it has now been proved<sup>1</sup> that the odour is due to the presence of barégine and sulfuraires, low forms of vegetable life about which very little is known, but which are frequently found in hot mineral springs, and have given rise to the same mistake before. They belong to the same class of organisms as those described by Mr. A. W. Bennett in another part of these 'Reports,' and it is significant that this water—like the water in which the *Beggiato alba* is often found—contains an excess of sulphates but no sulphur or sulphides.

Chemically this spring belongs to the large class of calcareous or earthy waters, its chief constituents being sulphate and carbonate of lime. The following is the analysis of the solids in one litre of water :

Carbonate of calcium	...	...	...	.207
„ magnesium	...	...	...	.030
Sulphate of calcium	...	...	...	1.303
„ magnesium	...	...	...	.172
„ sodium	...	...	...	.017
Chloride of „	...	...	...	.439
„ potassium	...	...	...	.091
Silicate of sodium	...	...	...	.069
Alum	...	...	...	.002
Peroxide of iron	...	...	...	Traces.
				2.330
	Total	...	...	2.330

<sup>1</sup> *Vide op. cit.*, p. 29, *et seq.*

The baths are taken either in one of the small bathrooms, or in a swimming bath (piscine). In the former case the temperature can be accurately adjusted, and douches, hot and cold, are provided. The temperature of the water in the piscines is  $112^{\circ}$ , and it may be thought that this is too hot, but it is quite supportable, and a stay of five to fifteen minutes permissible, if the heart be healthy and the entrance into the bath gradual. In either case, lying down afterwards under blankets for twenty to thirty minutes is an essential part of the treatment. After coming out of the bath the skin is reddened, and profuse perspiration follows. This effect is heightened by drinking the hot water while in the bath, a course which the Arabs never neglect. Then after cooling off gradually and a further rest the treatment is finished. Thus it will be seen that their mode of action is akin to the Turkish bath, and, like it, is followed by some sense of lassitude. How far the chemical constituents of the water exercise a medicinal effect on the skin I am not prepared to say, and I think it would be very difficult to separate their effects, if they have any, from those of the heat, subsequent sweating, and climate.

The class of cases which derive most benefit from the treatment at Hamмам R'Irha is undoubtedly the rheumatic.

It is stated by Dr. Renard,<sup>1</sup> who was for a long time in charge of the military hospital, that out of 400 cases of "rheumatism" entered in the hospital register, 330, or a proportion of 4 out of 5, were marked on dismissal as having been benefited in a greater or less degree; 50 or 60 remained in the same condition; and between 15 and 20 were worse. This author ascribes the number of those who were not relieved to broken-down constitutions, visceral disorders, or entirely mistaken diagnoses. Those cases certainly do best which are most recent and which occur in the young, or where the constitution and viscera are otherwise sound. But old-standing cases also derive benefit if a prolonged course be persevered in; the swelling and stiffness are lessened, and the pains relieved.

Rheumatoid arthritis in advanced life rarely seems to improve much, though I met with one case which was sensibly ameliorated by a six weeks' course. It is well to

<sup>1</sup> 'Résultats Thérapeutiques d'Hamмам R'Irha,' 1882, p. 9.

remember that here, as I believe in all hot mineral baths, the first effect is always to increase the rheumatic pains, and the full benefit may not be perceived until some little while after the completion of the course, and perhaps after leaving the place.

Dr. Renard states that other joint affections may be treated with advantage here by the warm baths and massage. He treated 42 cases with the following results: cures 11, ameliorations 29, same state 2.<sup>1</sup> Traumatic, he says, are the most satisfactory of all joint lesions; then, in order, rheumatismal, gonorrhœal, scrofulous, and gouty; *these last are the most rebellious of all.*

Cases of chlorosis do well at Hamмам R'Irha by drinking the chalybeate spring, and regular exercise, but the warm baths are unsuitable for them. Drinking the waters of both hot and cold springs appears to have a beneficial effect on some forms of irritable dyspepsia. Cases of chronic bronchitis and emphysema might be treated successfully by inhalation of the hot vapour, and a case of this affection under my care obtained marked benefit by these means.

I do not think the climate is available for any form of phthisis except in its very early stages, and in the autumn or spring months; and, although I watched a case of incipient pulmonary tuberculosis improve at Hamмам R'Irha in April of this year, I am decidedly of opinion that this ailment does better at Algiers.

As a change from the latter place, before returning home at the end of the season, it offers many advantages; for at a time when Algiers is getting oppressively hot, this mountain station is still cool and fresh, and so the transition to England is less sudden.

Lastly, for convalescents from protracted illness, and for those who from overwork, or more correctly overworry, are broken down in health, Hamмам R'Irha affords a quiet retreat without too much gaiety or too much luxury, but with the purest of air to breathe, a thorough change of scene and mode of life, and a mild yet exhilarating winter climate.

<sup>1</sup> 'Résultats Thérapeutiques,' p. 6.

FURTHER REMARKS  
ON  
HAMMAM R'IRHA AS A WINTER HEALTH  
RESORT.

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IN the 'St. Thomas's Hospital Reports' of last year, I endeavoured to give an impartial account of this health resort, and now that I have passed another winter there it may perhaps be worth while to record my additional observations. Those who read the paper referred to will remember that it was described as an inland bath station of Algeria, chiefly adapted to the rheumatic invalid in the winter and early spring months, when other "rheumatic" baths are closed or out of season; and it may be said at the outset that subsequent study of the climate, and the cases treated there, tend largely to confirm this statement.

Daily observations were taken on the following points. The height of the barometer, corrected to sea level, which as foreign to our present purpose, will not be published. The maximum and minimum temperatures in the shade were read every morning in a fairly exposed position close to the hotel, six feet above the ground, and the mean temperature in each twenty-four hours was calculated therefrom. The character of each day, whether cloudy, rainy, showery, or

fine, and the amount of rainfall in inches, were also noted, and the prevailing direction and force of the wind. These, with a column of "remarks," completed the monthly table; and at the end of the month, the totals, means, highest and lowest of each series of observations, were placed at the bottom of the column.

It would take too much space, besides being wearisome, to reproduce each of these complete monthly tables, but they will be preserved for the reference of anyone interested in the matter, and I shall content myself by giving here the conclusions only.

Firstly, with regard to the temperatures. The highest temperature recorded during the winter from December 14th to April 24th was  $79^{\circ}$  F., and the lowest was  $33^{\circ}$  F., so that at the observatory the thermometer never fell within one degree of freezing point, though it fell as low as this on two nights in December, four in January, and one in March.

The mean temperature for the month of December was  $46^{\circ}$  F.—as compared with  $48.7^{\circ}$  in the same month of the preceding year; that for the month of January,  $43^{\circ}$ —as compared with  $48.9^{\circ}$  in the preceding year; for the month of February,  $56^{\circ}$ —as compared with  $54.1^{\circ}$ ; for March,  $48.5^{\circ}$ —as compared with  $51.7^{\circ}$ ; and for part of April,  $52^{\circ}$ —being the same as in the preceding year. *The mean temperature for the whole of the period named was  $49.1^{\circ}$  F., or  $3^{\circ}$  lower than the winter 1883-4.*

In arriving at these figures, the mean was first struck between the maximum in the day and the minimum at night, and from these means of temperature in twenty-four hours the average of the month was calculated, and from these again the average of the season. So it should be borne in mind that the result is considerably lower than the average of temperatures would be if taken in the daytime alone; for the minimum at night is necessarily lower than the minimum of day, and consequently the former is lower than the average temperature to which the invalid, who is only out in the daytime, would really be exposed.

The proportion of fine days was rather larger than during the preceding winter, being 81 out of a total of 132 observations, or nearly two thirds. There were twenty-five fine days

Weather at Hammam R'Irha from December 14th, 1884, to April 24th, 1885.

TABLE I.

	Maximum.	Minimum.	Mean.	Number of fine days.	Cloudy days.	Showery days.	Rainy days.	Amount of rain.
December 14th to 31st. (18 days)	58°	33° (2 nights)	46°	10	3	3	2	4 $\frac{9}{32}$ inches. (2 $\frac{1}{2}$ inches fell in 48 hours.) Snow fell for half a day, but did not lay.
January (31 days)	63°	33° (4 nights)	43°	13	6	7	5	4 $\frac{3}{32}$ inches. ( $\frac{3}{4}$ inch fell in 24 hours on two occasions.) Snow fell all one day, and lay part of the next on the hills around.
February (28 days)	78°	38°	56°	25 (23 consecutive)	0	3	0	$\frac{6}{16}$ inch. ( $\frac{3}{16}$ inch fell in one night.) In February and March there were 25 consecutive days without any rain.
March (31 days)	79°	33° (1 night)	48.5°	18	5	4	4	2 $\frac{9}{16}$ inches.
April 1st to 24th (24 days)	75°	38°	52°	15	0	3	6	8 $\frac{1}{2}$ inches. (6 $\frac{1}{2}$ inches fell in 48 hours.)
(Total—132 days).								

Note.—All temperatures in Fahrenheit scale. Maximum temperature of season 79°, minimum 33°, and mean 49.1°. 81 fine days, 14 cloudy, 20 showery, and 17 rainy. Total rainfall 19 $\frac{15}{16}$  inches.

in February, and twenty-three of these were consecutive ; and out of thirty days in February and March, there were only three showery days, all the rest were bright and warm, days when any invalid could live out of doors from morning till night. There were fourteen cloudy, twenty showery, and only seventeen pouring wet days.

The total amount of rain also shows an advantage over last season, being  $19\frac{15}{16}$  inches as compared with  $30\frac{1}{8}$  inches. There was only  $\frac{5}{16}$  inch fell during the whole of February, and on the other hand the unprecedented quantity of  $6\frac{5}{8}$  inches fell in forty-eight hours on the 16th and 17th April. This last is no doubt a very startling observation to those who have never visited tropical or subtropical regions, but those who have done so will remember that the rain occasionally falls, not in drops, but in streams and even sheets of water.

Table I shows these facts more in detail.

A very important point in this, as in any climate for rheumatism, is the humidity of the atmosphere, for we are taught that the two climatic factors in the production of the malady are cold and damp, especially when in combination. But, up to the present time no observations at Hamman R'Irha on this point have been recorded, possibly because the place is even yet but little known.

I am aware that the sources of error in observing atmospheric humidity are many—depending as it does so much on the strength of the wind, the aspect, the height from the ground, time of day, presence of trees—and so every precaution was taken that was possible under the circumstances to insure correct results. Leslie's method, by means of wet and dry bulb thermometers, was the one used, the temperature being converted to the Fahrenheit scale, and the amount of moisture calculated by means of Glaisher's hygrometrical tables.

The 9 o'clock readings were taken six feet from the ground in a place sheltered by trees from the north-west and shaded by a board from the rising sun. There were 129 observations at this time of day, giving an average of 81 per cent. (complete saturation = 100) for December, 70 per cent. for January, 57 per cent. for February, 62 per cent.

for March, 61 per cent. for April, and 66·2 per cent. for the whole season. The readings at 1 p.m. and 5 p.m. were made in the western angle of a south window, shaded from the sun, and so more nearly represented the condition in which an inmate would be placed. There were 38 observations at one o'clock, giving an average of 61·2 per cent., and 54 at five o'clock, giving an average of 71 per cent.

The mean amount of humidity on the whole 221 observations at all hours gives 66·1 per cent. For comparison it may be useful to state that the average winter humidity at Greenwich for the forty-one years 1842-82, as recorded in the Meteorological Society's reports, is 87 per cent. ; and it was only on six occasions out of the total number of observations that the humidity at Hamman R'Irha reached this figure.

The dryness of the air, then, is one of the main features of the climate, and it seems to me to afford the principal explanation of the benefit derived by the rheumatic invalid. It is this, combined with a mild, equable temperature, which no doubt forms the chief source of success. It is a curious fact that careful observations on the moisture of the air are not often made at health resorts, and so my results cannot be compared with those of other places ; but I am inclined to think that there are few winter resorts, if we except Egypt, which could vie with Hamman R'Irha in this respect.

A circumstance which relates to the temperature of a health resort, and upon which great stress is rightly laid, is the fall of temperature at sundown. In all countries where a clear atmosphere and cloudless skies prevail, the rapid radiation of heat from the earth immediately after the sinking of the sun gives rise to a sudden chilling of the air and to heavy dews. I have known a fall of 15° F. within an hour in some places, and a fall of 8° and 10° F. is by no means uncommon. This is a source of great danger to invalids of all classes, so at Hammam R'Irha the temperature was frequently noted one hour before and one hour after sundown ; in all sixty-seven times, on days selected quite by chance, and the mean fall of temperature, calculated from these, was 3·4° F. On one occasion it was 12°, another 10°, and another 8°; the lowest being 1°.



The large amount of sunshine in Algeria is the feature which most strikes visitors who come fresh from our English winter, and it is to be regretted that there was no instrument for accurately recording the number of hours per diem. However, in the absence of a sunshine recorder, I was in the habit of making daily notes of what I judged to be the number of hours during which the sun remained quite unobscured by clouds; an unscientific method no doubt, and must be taken for what it is worth.

The total amount of bright sunshine thus reached was 720 hours, out of a possible total of 1411 hours, or a trifle over one half.

The following table gives more detail on all these points and shows the figures for each month. Here also are recorded the number of days with north-west wind, the one which is generally cold and wet, and also the number of days with sirocco, though this latter gives rise to no inconvenience in the winter.

Concerning the temperature and analysis of the waters there is nothing to add to what is stated in last year's paper, except that on every occasion when the temperature was taken at the source, the hot spring was found to be 67° C. (152° F.), and the ferruginous spring 19° C. (65° F.) The reaction of both is neutral.

One correction is needed. Hammam R'Irha is always stated to be 2000 feet above the sea level, and this height appears in last year's 'Reports;' but repeated observations with my aneroid barometer never showed an altitude exceeding 1675 feet.

It is with much pleasure that one can record certain improvements in the accommodation of the hotel. The large piscines beneath the new hotel are now completed, so that the patient need not go out of doors to take his bath, and by the next season the douches and small bath-rooms are promised to be ready, so that all will then be complete.

The heat, not the vapour, from these baths below, permeates the floor of the large drawing-room, formerly complained of as being cold in the evening, and keeps it at a uniform temperature of 65° even without a fire.

The proprietor has very wisely decided to reduce his terms,

Weather at Hamam R'Irha, from December 14th, 1884, to April 2nd, 1885.  
TABLE II.

	Humidity per centage (saturation = 100).										Fall of temperature at sundown.		Proportion of bright sunshine.		Prevailing direction and force of wind.	
	9 a.m.			1 p.m.			5 p.m.				Number of observations.	Average fall in degrees Fahrenheit.	Hours of sunshine.	Hours of daylight.		
	Number of observations.	Average percentage.	Number of observations.	Average percentage.	Number of observations.	Average percentage.	Number of observations.	Average percentage.								
Dec. 14th to 31st. (18 days)	17	81	8	65	11	73	14	2.8°	76	173	10 days N.W. No sirocco.					
January (31 days)	31	70	6	61	4	72	10	2.5°	112	270	10 days N.W. No sirocco.					
February (28 days)	27	57	4	44	10	64	9	3.3°	215	308	Very little wind. 5 days N.W. 1 day light sirocco.					
March (31 days)	31	62	11	67	16	73	18	4.2°	183	372	9 days N.W. 2 days sirocco.					
April 1st to 24th. (24 days)	23	61	9	69	13	73	16	4.3°	134	288	15 days N.W. No sirocco.					
(Total—132 days)																
Totals & averages	129	66.2	38	61.2	54	71	67	3.4°	720	1411	49 days N.W. 3 days sirocco.					

Note.—Total number of observations on humidity:—Percentage, 221; mean percentage of season, 66.1.

and all the bedrooms now have fireplaces in case of need. Much still remains to make the place perfect, especially with regard to amusements; but I gladly record these improvements side by side with the favorable observations on the climate.

Of course, every region in the world has its winter or rainy season, upon which the crops and plants depend for their water, but the Algerian climate differs from others in the mildness and equability of its temperature, in the long spells of fine weather which occur, and in the fact that it rains heavily when it does rain, a large proportion of it falling at night. It is impossible to say for certain in any winter which months will contain the most fine weather, but if we may go by the last two seasons' records, January, February, and April contain the largest proportion. However, now that the baths beneath the big hotel are finished, they might be taken with safety any time between October 1st and May 30th.

The kind of clothing usually required for Hammam R'Irha is what we are accustomed to wear in England in the spring or autumn; but the invalid will do well to be also provided with warm things, and a pair of stout boots. Let him also take a stock of amusements, for, although there is a piano, billiard table, and library, the style of life is essentially a country one, and the nearest big town is sixty miles away—a town, however, abounding in interest.

There are several pleasant excursions, and there is a very fair amount of wild sport—partridge, rabbits, jackal, hyena and wild boar (all the winter), and quail in the spring—in the country around, which will delight a true sportsman of the old school who does not mind the stiff, hilly walking; but he will find it well to be provided with a dog—a good setter or pointer, not afraid of bushes, and who has been trained to retrieve is the desideratum.

The low valleys should be avoided after sundown, for there are rumours of a mild form of intermitting fever contracted in this way. The partridge season commences in August and ends in March.

There were not many visitors, and comparatively few invalids came last winter to Algeria, as, indeed, happened at

most other winter health and pleasure resorts. This was accounted for partly, no doubt, by the depression of trade, but far more by the outbreak of cholera occurring just before the time when people usually journey south; and although neither this latter, nor the quarantine regulations, gave rise to any real inconvenience after the beginning of November, still the scare produced was enough to keep people away. Notes of such cases as came under my care will be found at the end, and as far as they go, tend to corroborate the observations of others, referred to last year, on the remarkable benefit rheumatic invalids derive from the treatment.

According to Dr. Renard<sup>1</sup> cases of gout are the most rebellious of all, and rarely derive advantage from the course; but a very intractable case (Case 1) of chronic gout improved immensely by perseverance, and a double course of baths. This patient, who had had the affection for upwards of twenty years, and visited several times the baths of Vichy, Contrexville, Royat, and Aix-les-Bains, wrote to me after the first course, "Mais j'ai trouvé à Hammam R'Irha une grande amélioration pour la détente des muscles et pour le jeu des articulations; puisqu'en arrivant ici, il y a cinq semaines, il fallait me porter; tout mouvement des jambes m'était impossible. Aujourd'hui je m'appuie sur des béquilles, et, si le mieux continue, j'espère bientôt pouvoir marcher m'appuyant sur deux bâtons." The details of his illness are to be found in the appendix. Cases of inveterate gout such as this are far more frequent in England than among the French, and I am inclined to think that those who are unable to stand the English winter, might find Hammam R'Irha worth a trial.

It will also be seen that cases of phthisis and of chronic bronchitis improved, mainly under the climatic influences. One case of acne and two of prurigo also derived benefit from the baths.

The records of the military hospital show a slight elevation of temperature in all cases for a few hours after the bath, and my own observations confirm this fact.

<sup>1</sup> 'Résultats Thérapeutiques d'Hammam R'Irha,' p. 6, 1882.

*Complete List of Publications on Hammam R'Irha.*

GOLOZZI, Dr. E., 'Station Thermo-Minerales d'Hammam R'Irha.' Alger, 1877.

DUBIEF, Dr. FERDINAND, 'Note sur la station Thermo-Minerales d'Hammam R'Irha.' Alger, 1878.

RENARD, Dr. ERNEST, 'Station Thermale d'Hammam R'Irha.' Alger, 1880.

POLLOCK, Mr. G. D., in the 'Lancet' for March, 1881.

BRUNTON, Dr. LAUDER, in the 'Practitioner' for April, 1881, and November, 1882.

BRANDT, Dr. G. H., 'Hammam R'Irha a Winter Bath Station.' London, 1882.

KOBELT, Dr. W., 'Hammam R'Irha.' Alger, 1882.

RENARD, Dr. ERNEST, 'Résultats Thérapeutiques Hammam R'Irha.' Alger, 1882.

SAVILL, Dr. T. D., "Hammam R'Irha, as a Winter Health Resort," 'St. Thomas's Hospital Reports,' vols. xiii and xiv. London, 1884 and 85.

## APPENDIX.

## DETAILS OF CASES TREATED AT HAMMAM R'IRHA.

CASE 1. *Chronic gout of twenty years' standing ; marked amelioration.*—C. A—, a Parisian gentleman, æt. 53, coming of a fairly healthy family, passed the first twenty years of his life without illness. At the age of twenty he began to pass red sand in his urine.

He became very stout, and had an attack of "renal colic" when about twenty-five years old. At thirty he had his first attack of gout in the feet and hands. He got well of it for a time, but it recurred again soon, and gradually became chronic. Each fresh attack, like the first, came on quite suddenly and was attended by acute pain and tenderness, and by "high fever"; sometimes the foot was affected, sometimes the knee. He visited from time to time the baths of Vichy, Contrexville, Rozat, and Aix-les-Bains, but without benefit. For five or six years he had been unable to walk without the aid of two sticks, and for the past year had been a helpless cripple, being quite unable to walk, or only across the room by the aid of crutches. Latterly even passive movement caused him pain.

He was carried into the establishment, and this was his condition when he arrived. The knees and ankles were found to be almost ankylosed by deposits in and around the joints. Joints of upper extremities comparatively free. A good deal of subcutaneous fat everywhere, but viscera healthy. Urine free from albumen and of good specific gravity. Mind clear, and remarkably cheerful.

This gentleman took two courses of baths, lasting six weeks each, separated by an interval of about six weeks spent in Algiers. He took baths in the piscine nearly every day, followed by douche and massage. Once or twice he took a little colchicum, but the above was practically the only treatment pursued. He left on February 27th, when the following note was made "Can now walk up and down

stairs by the aid of one crutch, and walks about the house and garden with crutches quite well. Knees and ankles still swollen and distorted, but much less than on arrival. Quite free from pain."

CASE 2. *Rheumatic affection of right knee and periostitis of tibia ; cure.*—O. H—, æt. 35, had lived an abstemious, healthy life, except for occasional attacks of dysenteric diarrhœa, contracted in India. He had not had a gonorrhœa for many years, but one year before coming to Algeria his left knee had begun to get stiff, and he could not extend it without pain. Left elbow had also been attacked from time to time in the same way, and he had had "rheumatic" pains flying about him.

On arrival he could walk, but only with a limp and with pain. The left knee was enlarged, more especially round the ligamentum patella, where there was marked thickening of the synovial membrane. No fluid in the joint. Great tenderness and some puffiness along upper and minor aspect of shaft of tibia. Viscera healthy.

He took about twenty-one baths in two instalments, separated by an interval of one week in Algiers. He also took 5 grains of iodide of potassium twice a day for a fortnight. On leaving he could walk perfectly well without any pain, and only had slight stiffness after a very long walk, and he is now quite well.

CASE 3 *Chronic bronchitis and emphysema ; amelioration.*—Mr. M—, æt. 23, has had "bronchitis" ever since the age of 10. He did not remember whether it began with an acute attack or not. The breathing had been getting much worse lately, he had been getting weaker, and always seemed to be "catching cold." Seven months previously he had expectorated about a teaspoonful of blood, and a smaller quantity more recently. No family history of consumption. On examination the chest showed signs of extensive bronchitis and emphysema of both lungs. Cardiac dulness a good deal obscured by the hyper-resonance of lungs, but there was some pulsation in the epigastrium. Viscera other-

wise sound; no anasarca; digestion good. He was prescribed a vapour bath, fifteen minutes every day, and out-of-door exercise when fine. When he left after a month's stay he professed himself much better, and it was noted, "Much improvement in breathing, less expectoration, moist râles quite gone"—notwithstanding that there was a good deal of bad weather during his stay. This gentleman had passed some time previously in Algiers without improvement.

CASE 4. *Chronic rheumatism after three acute attacks; great improvement.*—V. C—, æt. 35. His father had died of gout, and his mother was "rheumatic." The patient himself was healthy until the age of 27, when his first attack of acute rheumatism came on during a gleet which he had had for some time. The sole of the left foot was mainly affected and he was laid up for several months. He recovered after visiting Aix-la-Chapelle, and remained well till the age of 31, when the second attack came on, subsequent to another attack of gonorrhœa. This time more joints were affected, and especially those of the right arm, and he was incapacitated for work for six months. He recovered and remained well, except for occasional stiffness, until he contracted scarlatina five months before coming under my notice. The acute rheumatism came on five weeks after the advent of scarlatina and nearly all the joints in the body were affected. He went to Bath in the month of February without deriving any benefit, and then came to Hammam R'Irha. On examination the joints found to be affected were the left ankle, left hip, right shoulder and elbow, and the metacarpo-phalangeal joints of both hands. In all of them there were great swelling and stiffness, but no pain except on movement. He was obliged to walk with sticks, and the power of voluntary movement of the right shoulder was completely gone. The swelling in all cases seemed to be due to synovial thickening. He was very anæmic, and the muscles generally were wasted, especially the right deltoid. The heart was quite healthy and the other organs normal.

This patient took the baths almost daily for six weeks, with much benefit, and then in May returned to England. In August he wrote to me, "I am very much better, and can



now use my arms fairly well. My right shoulder is the most crippled, but I think it is slowly getting better."

CASE 5. The next case was that of a gentleman who came complaining of "*rheumatism*" in the left big-toe joint, and "*rheumatic pains*" flying about him. But the former turned out to be an inflamed bunion, and the latter were undoubtedly neurotic. He presented several of the early symptoms of general paralysis of the insane, and was not considered a fit case for the baths. However, he stayed a fortnight, and professed some improvement in his general health.

6. The Algerian colonists regard these baths as a cure for nearly all chronic maladies, and so it happened that two cases of *old hemiplegia* were sent to take the baths. But these made little or no progress, though they said their joints became less stiff.

7. Cases of *ulcer of the leg*, so common among the Arabs, are also sent in numbers to take the baths; but it is worse than folly for them.

CASE 8. *Pulmonary phthisis; amelioration.*—D. J—, æt. 56, had had dyspnœa, cough, and profuse expectoration on and off for sixteen years. He had never expectorated blood, but had had night sweats, and was losing flesh.

When he arrived there was well-marked consolidation at both apices and signs of extensive breaking down just below the left apex (possibly a cavity), also coarse crepitation at both bases.

Whether this was a case of true tuberculosis or a form of chronic pneumonia I am not able to state positively. I had not the means of searching for bacilli at hand. There was no history of consumption in the family. He stayed eleven weeks and at the end of that time all the moist sounds had disappeared from his lungs, he had gained flesh and strength, and was improved in every way. He only took the warm baths twice a week.

9. This last patient, and also Case 2, complained of

*prurigo*, which quite disappeared after the first few warm baths.

10. Several cases of *idiopathic anæmia*, of which no record was kept, derived benefit from drinking the chalybeate water, and regular out-door exercise.

These are condensed accounts from notes of all the cases taken by myself at the time, and are in no way selected. That there are not more is due to the causes before mentioned. All patients were in the habit of drinking a glass of the cold chalybeate water night and morning.

