An Address

ON

SPA TREATMENT, WITH SPECIAL REFERENCE TO MOFFAT.

DELIVERED BEFORE THE BORDER COUNTIES BRANCH OF
THE BRITISH MEDICAL ASSOCIATION.

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THE first mention of mineral springs takes us back to a period nearly 2,000 years before Christ. We read in Genesis xxxvi, 24, in the Revised Version, "This was that Anah that found the hot springs in the wilderness as he fed the asses of Zibeon his father." This discovery was made somewhere about 1740 B.C. We are also told that one of the daughters of this Hivite was taken to wife by Esau. No doubt, as time went on, the healing virtues of this spring would become known, and be ascribed to some spirit or supernatural agency. Certain it is that at a later date there was a widespread, and no doubt well-founded, belief in the curative effects of certain springs and streams, but it was left to Hippocrates to demonstrate the curative effects of waters apart from the supposed power of the presiding deity or spirit. He possessed a knowledge of waters by no means lacking in scientific accuracy. He recommended "cold douches to diseased joints; warm sprays of water for insomnia; cold water affusions in syncope; and was acquainted with the cooling effects of warm water, and the warming properties of cold water when applied to the body."

Many ancient writers, besides Hippocrates, make reference to the beneficial effects of baths on the human body. Wherever ancient Rome extended her conquest we have still existing, not only on the Continent of Europe, but in England—notably at Bath—abundant proof of the balneological practices of her people. During the Middle Ages, the treatment by baths and "holy wells" fell almost entirely into abeyance, and it was not until the nineteenth century was well advanced that the ingredients of natural mineral waters began to be determined with some exactness.

In considering the elements of spa treatment we note, in the first place, that it is connected with some locality or spa; the choice is determined by the temperament and constitution of the patient, and principally by the illness or diseased condition requiring treatment. It has to be decided whether the patient is to be sent to a bracing locality, or to a mild sheltered spot; whether he will derive most benefit from a strong alkaline, or sulphur spring; and the financial aspect has to be considered. The question of diet has also to be taken into account. It is unwise and inexpedient to tabulate a formal system of diet. Of course, there are certain broad lines along which you can travel; but, in the main, the best results are obtained by the careful study of individual requirements.

Beyond doubt the most important element in spa treatment is the mineral spring. Treatment by mineral waters is not an innocent matter. Let it not be imagined that a medical man who begins practice at a spa has nothing to do but prescribe several glasses of water daily, and an occasional bath: he must serve his apprenticeship. He must acquaint himself with the action of the local waters on the functions of absorption, excretion, and elimination, and also any alterative action they may have on the tissues generally. Even the mildest mineral water possesses its own peculiar influence: and every now and then you are faced with the unhappy results of the injudicious use of the waters. It is safer, therefore, to consult a local doctor in the beginning, or do so at once if unpleasant symptoms arise.

The amount of "drug" potential in the molecular states of a mineral water is very small, and yet it has a vastly greater effect in certain affections than an enormous amount of the artificial salt. In other words, judged by ordinary pharmacological standards, chemical salts present in natural mineral waters are endowed with a degree of therapeutic activity very much superior to that of the same salts when dispensed in the ordinary way. What this activity is we do not know, but it does not seem to be

radio-activity. Other elements in spa treatment are thermal, and in this is included cold as well as heat. Further, the heat may be in the form of water, vapour, or dry heat. Then again, we have the element of electrical stimulation of various kinds, and the element of movements and massage.

When we come to consider the scope of spa treatment, we find it is concerned largely with chronic conditions and intractable constitutional states. It is also directed against slight ailments and the prevention of serious disease. It has also to deal with another class of cases which we may regard as due to deranged balance of function.

There are a large number of joint affections which have to be differentiated into gouty, rheumatic, rheumatoid, and infective, and treated accordingly.

We find also conditions of defective or disordered digestive chemistry with an accumulation of waste products causing toxæmias. In another class we have circulatory disorders of the heart and blood vessels.

Again, we have the results of tropical disease, abdominal plethora, nervous disturbances, and various toxæmias.

I have now to refer to my own experience of spa treatment at Moffat. The town is situated in the upper part of Annandale, in Dumfriesshire. It is built on fine, dry, gravelly slopes about 330 ft. above sea level. It is well sheltered by an encircling range of hills, varying from 1,000 to upwards of 2,000 ft. in height. It is freely exposed only to the south. The climate is temperate and fairly equable. During the greater part of the year it is bracing, yet mild. The rainfall is somewhat above the average for the British Isles, and yet Moffat is not a wet place. Even after several hours of heavy rain the roads rapidly dry, owing to the gravelly nature of the subsoil. There is an excellent water supply, and the sewage is disposed of by means of the septic tank system.

The sulphur well is situated on a level plateau, 277 ft. above the town. The exceedingly pure air of the hills and the lovely scenery which meets the eye in all directions play no little part in enhancing the valuable curative effects of the sulphur waters.

Analysis of Moffat Sulphur Water (1911).

	In 1 Litre.
Sodium chloride	0.9149
Sodium sulphhydrate	0.0080
Calcium carbonate	0.0807
Calcium sulphate	0.0323
Calcium chloride	0.1102
Magnesium carbonate	0.0368
Magnesium chloride	0.0584
Potassium chloride	0.0896
Silica	0.0094
	1.3403
Volatile matter and undetermined matter	0.0535
Total solids	1.3938
Gases dissolved in 1 litre:	
Hydrogen sulphide	3.14
Nitrogen	18.21
Carbon dioxide	1.63
Oxygen	1.22
	24.20 c.cm.

It is a beautifully clear sparkling water. The main active principle, sulphur, is in the form of sulphuretted hydrogen gas, and in this respect the Moffat water differs from the sulphur waters of Harrogate and Strathpeffer. Owing to this property, patients should, wherever possible, drink the water at the well, for, even when tightly corked, the water readily loses its gas. The water contains a very small proportion of chlorides, and for this reason is not contraindicated in certain kidney affections exhibiting a tendency to dropsical effusions.

The sulphur water has an exceedingly marked diuretic and flushing effect in practically every case. The specific gravity of the urine of patients taking the water is relatively higher owing to an increased excretion of the total solids. There is also an increase in the amount of nitrogen excreted. These effects are most marked in gouty patients, and in these patients the specific gravity of the urine is often greatest at the height of the diuresis—that is, when the diuresis is most marked. The action of the sulphur water undoubtedly, I think, increases oxidation and tissue change, and profoundly influences the general metabolism, and thus indirectly the toxicity of the blood.

The action of the warm sulphur baths seems to be due to

a nervous and vascular cutaneous reaction attributable to the irritation of the contained salts, modified to a certain extent by the temperature of the water. The baths produce a reduction of the mean arterial pressure, and an equally marked rise in the venous blood pressure. This explains the feeling of lassitude and drowsiness which is frequent after a warm sulphur bath, and is more marked than after an ordinary warm bath. The quickening or retarding of the pulse-rate seems to depend entirely on the temperature of the bath.

The Moffat sulphur water originally came into note for its reputed curative effects in cases of rheumatism and strumous affections of the glands and joints. I need not say we have discarded all belief in the latter claim. I find I get my best results in gouty and rheumatic patients. Rheumatic affections of joints and lumbago and sciatica of rheumatic origin seldom fail to derive great benefit from the waters and baths. Holding as I do that gout is a toxæmia caused by some toxin formed in the liver or intestine, or both, and due to a faulty chemistry of digestion, I take it that gouty patients are bound to derive benefit from a course of the sulphur water, and in my experience they do.

Certain cases of that puzzling affection, rheumatoid arthritis—with its obscure and elusive etiology—obtain a considerable amount of relief. Nervous disorders, such as neuritis, sciatica, lumbago, are also greatly benefited. And in some toxic forms of neurasthenia I have seen excellent results follow a course of treatment.

Certain renal and bladder affections show the most gratifying results. Here the diuretic action of the water is most manifest. Cases of abdominal plethora and engorged portal circulation do well. Especially good results are seen in tropical livers. In many cases of gastric derangement the waters tone the stomach and stimulate digestion.

The water must on no account be taken by patients suffering from tuberculous lung trouble. Haemoptysis is the almost invariable result.

The baths are followed by most beneficial results in rheumatic and gouty joint affections, in lumbago and sciatica, and in scaly eczematous affections, seborrhoeic eczema, and psoriasis. The warm sulphur bath gives great temporary relief in some cases of neuritis. Gouty patients who suffer from insomnia generally obtain a night's rest after a bath.

TUBERCULIN DISPENSARIES: A REPLY.

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SIR CLIFFORD ALLBUTT, Sir Lauder Brunton, Sir William Osler, and Dr. Arthur Latham have made a report to the executive committee of the Welsh Memorial to King Edward VII upon the value of sanatorium treatment which confesses to the failure of the system and yet urges its continuance. "In many cases it must be useless," "in a few instances it is actually harmful," and "in many cases this method of treatment need not be carried out at an institution"—or, in other words, in many cases sanatorium treatment is unnecessary. Why, then, call it sanatorium treatment? Will these authorities give some definite estimate of the number of cases of consumption among the poor that may and can be treated in sanatoriums? It is casting dust in the eyes of the people to vaunt the sanatorium system in one breath and then speak of sanatoriums as an unnecessary luxury.

We learn from this report that "the cardinal factor in the treatment is the constant and skilled regulation of the amount of rest and exercise prescribed from day to day for each individual patient." This system is Brehmer's, as any one who has visited Goerbersdorf very well knows, but it is dignified nowadays by the term "auto-inoculation." Certainly if this cumbersome and complicated system of "auto-inoculation" is able to do all that is required for the sufferers from consumption, these authorities are right in recommending the system to their wealthy patients; but, so far, this old system under a new name has been applied chiefly to early and specially

selected cases which have already been through a probationary period, and sufficient time has not elapsed for us to be able to say whether even these results will last. It is, therefore, somewhat premature to speak of the "cardinal factor," when the results of this system in England are still *sub judice*. As yet there is no trustworthy evidence that this system of "auto-inoculation" by graduated exercise can do more than the sanatorium methods of Germany have already achieved. Certainly such a system of "auto-inoculation" carried out under the Insurance Bill requires sanatoriums, and therefore cannot help the poor.

As these authorities choose to furnish no evidence in favour of the system they advocate, and trust the public will place a high valuation upon their mere statements, I will venture to furnish evidence that proves the hollowness of these pretensions that sanatoriums, combined with graduated exercises, can help the poor suffering from consumption. Both rest and graduated exercise have long been employed in Germany in the treatment of consumption at sanatoriums, and the results of sanatorium treatment among the poor in Germany lend no encouragement to the view that sanatoriums can help the poor. Professor Moeller, of the famous Belzig sanatorium, near Berlin, tells us that sanatorium methods by themselves cure only 10.9 per cent. of the cases. Arranged according to stages the results were:

Stage I. Sanatorium methods alone cured 31.8 per cent.
" II. " " " " 1.9 "

According to Moeller's later experiences, sanatorium methods alone may cure 25.3 per cent. of the cases of pulmonary tuberculosis of Stage I (German Board of Health classification), while I may mention incidentally that tuberculin has secured the same results in his hands in 84.6 per cent. Weicker, the devoted pioneer of the Volks-sanatoriums of Germany, found that of every 100 cases treated in sanatoriums by rational methods alone, including exercises, at the end of 1 to 1½ years, 41; at the end of 2 to 2½ years, 51; at the end of 3 to 3½ years, 65.8; and at the end of 4 years 80 had lost their fitness for work or were dead. The death-rate was as follows:

In 1 to 1½ years	...	25 per cent.
In 2 to 2½ years	...	38.4 per cent.
In 3 to 3½ years	...	55 per cent.
In 4 years...	...	56.7 per cent.

Again, the aspect of sanatorium treatment is not encouraging when we read that 7.6 per cent. of cases in Stage I are unfit to work or are dead in 1 to 1½ years, 19 per cent. in 2 to 2½ years, 33.3 per cent. in 3 to 3½ years, and 55.6 per cent. in 4 years.

This tragic result of sanatorium treatment compelled both Moeller and Weicker to look about for some better system, and they are both among the most enthusiastic advocates of tuberculin treatment in Germany. Weicker's investigations are invaluable as evidence upon this national question, because he was dealing with the very class of people who would come within the scope of Mr. Lloyd George's Insurance Bill.

I therefore ask the authors of this report to furnish at least some positive evidence that may help to neutralize the otherwise inevitable verdict against sanatoriums as a means of helping the poor. Surely, the voluminous report compiled by the late Dr. Bulstrode upon sanatorium treatment justifies me in saying that there are no satisfactory statistics dealing with the results of the treatment of the poorer classes in sanatoriums which can help us in forming an opinion. We are compelled to look to Germany to guide us by its careful and laborious statistical analysis of sanatorium results. One may ask, too, why it is that in France there has been no effort to establish sanatoriums on any moderate scale for dealing with tuberculosis among the poor.

Further, those familiar with Weicker's careful reports know that special care was taken to try the system under the most favourable conditions. In Weicker's sanatoriums the presence of tubercle bacilli in the sputum was almost a disqualification. At any rate, in the majority of cases received into Weicker's sanatoriums tubercle bacilli were not found in the expectoration. Is it not, therefore, little less than folly to take our instructions from men like Sir Clifford Allbutt, Sir Lauder Brunton, Sir William Osler, and Dr. Arthur Latham, who so minimize the importance