

may take their baths at a temperature of 102° Fahr. to 104° Fahr.—the higher figure if pain is a marked symptom—the period of immersion not to exceed twenty minutes. As far as the use of this water is concerned, no distinction need be made between the three principal forms of chronic rheumatism—(1) Rheumatoid arthritis, with more or less enlargement and deformity of joints; (2) articular rheumatism, with no joint deformity; and (3) muscular rheumatism, which may not affect the joints in any way. The idea that gout and rheumatism may be associated in the same subject and called rheumatic-gout is generally abandoned. Gout is now regarded as a disease *per se*, due to secondary indigestion, or a failure on the part of the liver to convert the surplus albumen into normal bile acids and urea; an excess of uric acid finds its way into the blood and at once forms urate of sodium, a very insoluble salt, requiring from twelve to fifteen thousand times its own weight of water to dissolve it, whereas urea is soluble in its own weight. This salt is less soluble in lymph than it is in blood; consequently, where lymph predominates, as in the joint tissues, there this salt crystallizes readily, producing all the painful phenomena which constitutes an acute attack of gout. Rheumatism, on the other hand, is due to tertiary indigestion, or a failure on the part of the tissue cells to complete the final digestion of serum-albumen. In this case the crystallized urate of sodium may be deposited in the muscles or muscular interspaces, or pumped to the nearest joint. The liver has little or nothing to do with rheumatism; neither can cold, nor damp, nor depressing influences be ranked as causes; they merely develop the seeds of the disease already present in the system. Uric acid is the essential blood poison in gout, but in rheumatism there is something in addition, probably lactic acid. In its chronic form rheumatism is essentially the disease of old age and decay; the tissue cells have received a constant over-supply of albumen, usually from excessive meat-eating. It is uncommon either in its acute or chronic form amongst moderate eaters and vegetarians, and threatening attacks may often be warded off by a temporary recourse to a vegetable diet. We have no specifics in these days either for gout or rheumatism; every case requires to be treated on its own merits. It is the acquired or hereditary idiosyncracies of the individual that demand the attention of the physician rather than the disease.

There are certain forms of spinal paralysis so amenable to treatment by thermo-mineral baths that they are worthy of remark. The muscles of the lower extremities may be functionally separated from the spinal cord in a variety of ways. If by organic structural change in the cord itself they are usually hopeless; if by mechanical injury to a nerve (traumatic paralysis) they are often hopeful; and if by pressure of an effusion within the coverings of the cord, which may be either gouty, rheumatic, or syphilitic, they are—in young subjects especially—particularly hopeful. The diagnosis is not always easy; physical signs alone are not sufficient; perhaps the most valuable aid we have to correct diagnosis is the behaviour of the muscles under electric excitement. Such patients may bath twice daily, the period of immersion not to exceed half an hour, or the temperature 104° Fahr.

In cases of hemiplegia, where the leg has regained its power but the arm remains powerless, I have never seen any benefit derived from hot baths, and very rarely from electrical treatment. Cases of locomotor ataxy are not suitable for bath treatment. Sciatica and neuralgias generally will, I think, do well at Hanmer Plains; but in summer only. They may bathe twice daily, at a temperature of 102° to 103° Fahr., each bath not to exceed twenty minutes.

Cases of nervous exhaustion, brain-fag, tardy convalescence from acute diseases, general debility, hysteria, and other morbid conditions must regard the baths as instrumental only in maintaining the skin in such a condition of healthy functional activity as will enable them to derive the full benefit from their surroundings. To this end, three baths weekly, at a temperature of 102° Fahr., for twenty minutes, will be sufficient.

The discovery of traces of iodine and lithium in the Hanmer Springs makes it a matter of very considerable regret that their internal use is interdicted by the quantity of organic matter they contain. Otherwise, in scrofula, gout, and rheumatism such a water should be of value.

I am not sure that we are justified in concluding that the organic matter can only have a vegetable origin. Wanklyn—an authority on the analysis of potable waters—tells us that when a water contains 0.08 parts per million of free ammonia it almost invariably proceeds from animal contamination; in fact, from the decomposition of urea; and that such water is usually loaded with chlorides. In the water under consideration, we have 0.09 in 70,000, a much higher proportion, also with chlorides as the chief ingredient. He states, further, that an absence of chlorides, with excess of albuminoid ammonia, characterizes water contaminated by vegetable organic matter. It is quite likely that in the past the aboriginal natives may have congregated in large numbers at Hanmer Plains, and that these organic impurities may really represent the skeleton of their sewage. I would strongly recommend that the organic matter in this water be again examined by Wanklyn's process, and reported on. I strongly suspect that some error may have crept in, which another examination may correct. It is also desirable that a much larger quantity of the water than I was able to carry down to Wellington (half a gallon only) should be concentrated, so as to enable the analyst to determine the iodine and lithium in figures.

Finally, I am informed that the inhalation of the steam given off by the Hanmer water is in great local repute as a remedy for bronchial catarrh. W. A. Low, Esq., of St. Helen's, informs us that when he suffers from this ailment he shuts himself up in one of the smaller bath-rooms, fills the bath with water at its full temperature of 115° to 117° Fahr., which quickly fills the room with steam, the inhalation of which gives immediate relief. It is an important fact to know that the gases given off by this water have a soothing rather than an irritating effect on the lungs; and, although it is not likely that patients will resort to Hanmer Springs for the relief of a common cold, it is desirable to ascertain by experiment how far this treatment will benefit the more chronic forms of bronchial irritation.

I have, &c.,

The Hon. A. J. Cadman, Native Minister, Wellington.

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