

by the internal and external use of a naturally arsenicated water.

The greater *safety* would result from the excessive and constant dilution of the medicinal substance by pure water, thus preventing any irritating or injurious effect upon the system. This is distinctly proved by the fact of the daily and habitual imbibition of the Whitbeck water by the inhabitants of that village, as detailed by Dr. Davy.

The greater *efficacy* of the natural over any artificial solution of arsenic must be influenced by two chief circumstances: 1st, the adjuvants constituted by the pure air, delightful scenery, proximity to the sea, and the complete change of mental and bodily associations, involved in a visit to a district like that of Whitbeck; and 2nd, the peculiar state of combination in which the chief remedial substance exists in this particular water. And on this point I may be allowed to quote, verbatim, the remarks of Dr. Davy and Mr. Church, premising that the fact of the arsenical impregnation of the Whitbeck water was determined some years back by Mr. Zenner, analytical chemist, of Newcastle, and was then understood to be the necessary effect of the existence in this mountain of large masses of arsenical pyrites (mispickel).

Dr. Davy thus describes the water of Whitbeck:—"It had the general character of the mountain streams of the Lake District, was perfectly clear and colourless, and tasteless. Of the several specimens obtained I found the specific gravity the same, and the same as that of distilled or rain water. When evaporated to dryness the residue was very small, a pint yielding about .25 of a grain; and, from the different specimens tried, not varying more than one-tenth of a grain. In each instance this residue was found to consist chiefly of common salt; it tasted of this salt, and in solution was copiously precipitated by nitrate of silver. Mixed with the common salt was a little magnesia and lime, both probably in combination with sulphuric acid, as sulphate of lime and of magnesia, the presence of the acid being denoted by nitrate of barytes; a trace, too, of oxide of arsenic was detected in each, and, it may be inferred, in combination with potash, a trace of which was also obtained. The arsenic was detected not only by the test of the ammoniaco-nitrate of silver, but also by reduction to its metallic state by sublimation after mixture with ferrocyanide of potassium. Of the several specimens of water tried, that procured in October, when the stream was about its ordinary size, afforded a somewhat stronger trace of the metal than either the earlier or the later: the one in August, 1861, taken when the stream was swollen after rain; the other in January, 1862, during a frost of several days' duration, when probably the water was frozen at its sources—the stream then being lower than common. In noticing, however, the later, I should except the last—that taken in August last, when the stream was of about its average volume, and the indications of arsenic nearly the same as those of October. In the instance that the trace was strongest, judging from comparative experiments with oxide of arsenic—experiments of reduction by sublimation,—the quantity of oxide contained in the pint was only about .008 grain, or .064 grain to the gallon."

Mr. Church says: "The reaction of the water as it issues from the earth was faintly but unmistakably alkaline; on testing the water after ebullition the effect was more decided. The water from many other sources in the neighbourhood of Whitbeck, where decomposing granite is of common occurrence, has an alkaline reaction. The water, on examination, gave distinct indications of the presence of arsenic. This element, which here probably exists as an alkaline arsenite, occurs, not as a mere trace, but in determinate quantity. I have satisfied myself that in some seasons of the year the quantity present approaches a good fraction of a grain of arsenic (metallic) in each gallon of water. The arsenical water is *habitually used for every purpose* by the inhabitants of the little village of Whitbeck."\*

From these analyses it will be seen that the arsenic exists in the very same form as that in Fowler's solution—namely, as arsenite of potass; and from the circumstance of common salt being also present, I have no doubt that a minute quantity of iodine is likewise contained in it. I may add, in reference to this point, that the sea is only a mile distant from the base of Black Combe, the mountain from which this stream descends.

Another great medicinal advantage offered by this mineral water is that it may be employed in the form of baths. For proof that arsenic, especially when in solution, is capable of being absorbed through the unbroken skin, I may refer to the

well-known and justly celebrated works of Dr. Alfred Taylor; and on the same authority, confirmed by other testimony, it may be stated that this substance does not accumulate in the system. Continued doses of the mineral water of Whitbeck may therefore be given without any fear of poisonous symptoms suddenly manifesting themselves. In fact, the chief beneficial effects of arsenic probably result from the greater activity induced by it in all the eliminating organs of the body, by which retained secretions and other noxious matters are discharged, and a more healthy action of the depurating tissues induced.

Of the general salubrity of the district now under consideration, and of its many agreeable features as a place of resort for invalids, I can speak in the highest terms, and from personal experience, having for the last seven years visited it annually as a pleasant and salutary change from Newcastle. It is easy of access from all parts of the kingdom. There are within a short distance, especially in Whitehaven, several medical practitioners of high character and great ability; and were a demand to arise for increased accommodation for strangers consequent on the use of the Whitbeck water as a remedial agent, there is every reason to think that the public-spirited nobleman who is the chief landed proprietor in that neighbourhood, and to whom the country is indebted for that beautiful part of England having been rendered more accessible, would afford all reasonable facilities.

I shall be glad if these few remarks serve to draw attention to the medicinal value of this and similar mineral waters, and need scarcely say that it will afford me much pleasure to supply to members of the profession any additional information in my power. For further particulars respecting the Whitbeck water, I may also refer to Dr. Davy's paper; and, in leaving this subject for the present, I may perhaps be allowed to congratulate my fellow-practitioners on the continued presence amongst us of this distinguished philosopher. The veterans of science are not numerous in this country; and assuredly there is not one whose life has been marked by more unceasing industry than that of Dr. John Davy. From the time of his discovery of phosgene gas, half a century since, up to his very recent publications on Military Medicine and Physiology, every year has witnessed some fruits of his patient devotion to the study of Nature and to the cause of humanity; and it should be cheering and instructive to all of us to recognise in his latest contribution to medical science the same untiring energy and love of truth for its own sake which have been conspicuous throughout Dr. Davy's long and honourable career, and which have added a more varied lustre to a name that posterity will not willingly let die.

Welbeck-street, July, 1863.

## REPORT OF THE CASUALTIES AT THE WIMBLEDON CAMP.

By JOHN G. WESTMACOTT, M.D.,

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RIFLE VOLUNTEERS.

It may perhaps interest such of the readers of THE LANCET as form the medical staff of our Volunteer Army to learn what casualties occurred during the encampment at Wimbledon (of twelve days), consisting of regulars, staff officers, volunteers, commissariat, armourers, commissioners, labourers, shoeblacks, &c., at one time numbering about a thousand. Although the fourth year of the meeting of the National Rifle Association, this is the first that any medical officer has been required to do day and night duty,—the camp having extended from year to year, till it has now become of some magnitude, and completely organized. The second year I performed the day duty *solus*. Last year I attended every morning until a surgeon for the day arrived—one from certain of the Volunteer corps who tendered their services. This year it was thought advisable to appoint one regularly to the Association, and I accepted the appointment. The continued fine state of the weather during the whole time will no doubt account for the comparatively healthy condition of the camp, and, barring the accidents that happened, the illnesses were not of any great moment. Thirty-four cases in all occurred which required treatment. The most serious were the accidents which happened the first two or three days—the worst, that of Michael Fagan (School of Musketry), who lost his right eye from a bullet splash off the

\* Chemical News, Aug. 25th 1860.

target. I rode over to the Guards' camp very shortly after the accident took place, and advised the poor fellow to be removed at once to the Guards' hospital, where he was placed under the care of Surgeon-Major Wyatt, who subsequently performed an operation, but without restoring the sight. I considered that I was not justified in keeping the man in the camp and searching for the piece of lead (the anterior chamber being filled with blood, and the iris &c. wounded), and then sending him up to town in a more dangerous condition than before meddling with the eye; I therefore simply directed cold water with lint to be kept constantly applied till his arrival at the hospital.

The list of the other cases is as follows:—Private William Bailey, 2nd Batt. Coldstream Guards, wounded in right shoulder, breast, and thigh by a bullet splash off the target; Private Alfred Smith, 1st Batt. Coldstream Guards, wounded in right groin and thigh from the same cause; Private James Bilham, 1st Batt. Coldstream Guards, wounded in left forearm from the same cause; Private Frank Davis, 1st Batt. Scots Fusiliers, wounded in right forearm and cheek from same cause; John Irvine, musketry instructor, 27th Staffordshire, wounded in right thumb from same cause. Isaac Thomas, corporal, 3rd Lancashire, had his right thumb struck by the nipple of the rifle breaking. J. Ward, private, 6th East York, had his shoulder much swollen and bruised from the rifle recoiling. Mr. Steward, optician, ran the spike of a telescope stand into the top of his left foot. I extracted a piece of glass from the left thumb of Thomas Meggy, gunner, Hon. Artillery Company; it had been embedded for three years. C. S. Smith, 5th Leicestershire, had his shoulder and wrist much bruised from the rifle recoiling; and O. Haw, colour sergeant, 7th Sussex, had his finger badly cut by the lock of his rifle. These are all the accidents I could hear of, and all that were treated by me. The subjects of them got perfectly well before the camp broke up.

The remaining cases were—diarrhoea, 7; retention of urine, 2; relaxed sore-throat, 3; ophthalmia, 2; erysipelas of hand, 1; effusion in knee, 2; catarrh, 1; ulcerated tongue, 1; headache with fainting and debility (from the heat), 4. With the exception of the two knee cases, which improved, all the rest became convalescent.

On the evening of the day of the review (July 18th), my duty being with my own corps (London Scottish), Surgeon Wakley kindly offered me an assistant in my tent, with an additional supply of instruments &c., which happily were not required. Some of the diarrhoea cases were thought to proceed from the water, but I rather think that the ingredients added to the water, together with the damp at night after the scorching day, were the main causes. On the whole, the camp may be reported as tolerably healthy; and I have to thank the Association for their kind consideration in furnishing my tent comfortably, and providing necessary appliances in cases of need.

July, 1863.

## ON THE TREATMENT OF MALARIOUS FEVER BY THE SUBCUTANEOUS INJECTION OF QUININE.

By W. J. MOORE, L.R.C.P. Ed.,  
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SINCE the year 1858, when Dr. Wood brought forward the hypodermic method of administering morphia, the plan has been extensively tried. Moreover, the results following the injection of morphia into the subcutaneous areolar tissue have, on the whole, been satisfactory, and the use of the alkaloid in this manner has now become an established practice in various obstinate neuralgic disorders. Other agents, as atropia, have also been used hypodermically with varied success, and I have latterly employed a strong solution of quinine for the cure of intermittent and remittent fever by the method of subcutaneous injection.

The success which has attended the practice renders me desirous of calling attention to this novel mode of using quinine. I have so employed the remedy in upwards of thirty cases of intermittent fever, and in several cases of remittent, and with almost invariable success, the former class seldom requiring a second application, the latter generally subsiding after the fifth

or sixth injection. Since the period I commenced to use quinine in this manner I have been surprised and pleased to find in one of the medical periodicals that the same plan has been pursued by Dr. Chasseaud, of Smyrna, who reports 150 cures, and especially recommends the system in fever complicated with gastric symptoms, when the exhibition of quinine by the mouth is often "inefficient, difficult, and hazardous."

I use the strongest solution of quinine which can be prepared—viz., thirty grains of quinine, eight or ten drops of dilute sulphuric acid, and half an ounce of water. Of this I inject from half a drachm to a drachm, the former quantity containing some four grains of the active agent. With the exception of a little sulphate of soda if the bowels are confined, I use no other remedies whatever in uncomplicated cases of any type of malarious fever. When the spleen is enlarged, or if a leucocythemic condition is present, I prescribe, as an additional curative agent, one or other of the preparations of iron—very frequently the citrate of iron and quinine.

I generally inject beneath the skin over the outer belly of the triceps extensor muscle, and sometimes over the deltoid. I have, however, used the syringe with equal effect on the thigh and calf, and in cases of enlarged spleen have thought the action of the remedy increased by injecting over that organ. I use a small glass syringe with the screw action, and furnished with a sharp silver point some half an inch in length. The latter is introduced beneath the integument half an inch or less, and the pain is not greater than the prick of a pin. Indeed patients have frequently declared they would rather submit to this process than taste the bitter of quinine. I have never seen the slightest inflammation or irritation follow the operation except in two instances. In one of these this result was due to the instruments employed—namely, a small trocar and common glass syringe; in the other, to quinine in *suspension* being used instead of in *solution*. Indeed, I have reason to think that quinine in suspension is very irritating to the tissues, and this is what physiology would lead us to expect, as it is certain that when a fluid material is introduced into the areolar structure, it will be absorbed more directly than any solid mass could be. Therefore, to avoid irritation of the parts, and, also, to prevent "choking" of the syringe (and which instrument was procured from England), I insist upon a perfectly clear solution of the alkaloid.

The best time to inject is shortly before the expected cold fit, but it may be done during the first stage with the effect of lessening and sometimes stopping the whole paroxysm. Latterly when a patient presents at the morning visit, who expects an accession during the day, I have injected at the time, and nearly invariably the fever has stopped.

In cases of remittent I have endeavoured to inject during the remission, but do not wait for this period. In severe cases the injection should be repeated at intervals of six or eight hours.

I believe four or five grains of quinine injected beneath the integument are equal in their effects to five or six times that amount taken into the stomach; also, that the effects are more certain than when taken in the ordinary method; and, also, that relapsing attacks are less common than when the remedy is administered by the mouth.

Bombay, 1863.

## SHORT NOTES OF A FATAL CASE OF POISONING BY OPIUM. WITH REMARKS.

By RICHARD C. ELLIS, L.R.C.P. Edin.

THE patient was a stout and healthy little girl four years and a half old. Her mother, thinking the child required some aperient medicine, went for that purpose to a small general shop kept by a female in the suburbs of this town, on the 7th of August, 1862, and asked for half an ounce of syrup of rhubarb; but she got, in mistake, half an ounce of laudanum, the whole of which was given to the child on the same day at ten o'clock A.M. In fifteen minutes afterwards she looked heavy, felt drowsy, and asked to be put to bed; but, as she was accustomed to sleep in the forenoon occasionally, no notice was taken of this circumstance by the mother, who, in the meantime, busied herself with her household duties, and paid little attention to the sleeping child until two o'clock P.M.,