

mical composition of the potable waters of Great Britain; (3) discussions of special importance in connexion with the wholesomeness of certain kinds of water; (4) the condition of the water supplied to the metropolis, to a large number of cities, towns, villages, and rural districts throughout the country, and to the residences of Her Majesty and the Prince of Wales, which latter include Osborne, Windsor Castle and Frogmore, Balmoral Castle, Abergeldie, and Sandringham. There are also twelve appendices referring specially to rain and drainage waters, the quality of the metropolitan water for four years consecutively, the watershed and geological strata of the upper Thames, statistics of water-supply and mortality, tables illustrating the improvements of public health which result from proper works of drainage and water-supply, a special report on the cholera outbreak in the parish of St. James's, Westminster, in 1854 (with an illustrative map), and the analysis of potable waters by Dr. Frankland and Mr. H. L. Armstrong. Each and all of the parts into which the Report is divided will be noticed in further articles, as well as the appendices above-mentioned. The Commissioners have arrived at the following conclusions and recommendations: (1) That as to the chemical quality of water from different sources, rain-water collected at a distance from towns upon specially cleansed surfaces, and kept in clean receptacles, contains the smallest amount of total solid impurity; (2) that rain-water collected from the roofs of houses and stored in underground tanks is much more impure, and is often polluted to a dangerous extent; (3) that water collected from uncultivated land and allowed to subside in reservoirs, or filtered through sand, constitutes good water for domestic purposes; (4) that water collected from the surface or drains of cultivated land is always more or less polluted with organic matter, even after subsidence in lake or reservoirs, and hence is not good for domestic purposes; (5) that surface-water, draining wholly or partially from cultivated land, should be always efficiently filtered before being used; (6) that a large proportion of the river waters of Great Britain are dangerous, or are rapidly becoming so, from drainage from land, towns, and manufactories; (7) that shallow well-water is usually saturated with leakage or soakage from privies, drains, or cesspools, but it is generally, in spite of these disgusting and dangerous matters, bright, sparkling, and palatable; (8) that of the different varieties of potable water the best for dietetic purposes are spring and deep well-waters. It is concluded that polluted water cannot by any existing processes be rendered wholesome, that the propagation of epidemic diseases by polluted water is now so evident that it may be classed as a fact, that the mortality is not influenced by the hardness of potable water, that there is no trustworthy evidence as to the definite improvement of water by filtration, that if mains are properly laid no deterioration of water in its transmission need ensue, and that the constant-supply system is more sanitary and more economical in its results than any other.

In summarising the conclusions as to the metropolitan supply, it is reported that the Thames above the intake of all the companies receives the sewage of a large number of towns and other inhabited places, the washings of a large area of highly cultivated land, and the filthy discharges from many industrial processes and manufactures. The river is used also for bathing, for the washing of sheep, cattle, and dirty linen. For these and other reasons it is recommended that the Thames should be entirely abandoned as a source of water for domestic use. The same recommendations are also recorded (and on account of similar causes) as to the Lea. It is recommended that the public pumps should be all closed except that near the south-east entrance to Kensington Gardens and one at Maritime

Houses, in Mile-end Old Town, but that the use of the water supplied by the Kent Company, from deep wells in the chalk at Deptford, should be continued and extended. The proposed supply of water to the metropolis from North Wales and from the Cumberland lakes is considered costly and unnecessary, but an abundant supply of spring and deep well-water can be procured in the basin of the Thames, at a moderate distance from London, so that the metropolis and its suburbs can, with efficient management, be supplied on the constant system, the water being, before delivery, softened with lime. To inaugurate the introduction of such a system it would be necessary either to throw open the metropolitan water-supply to the competition of new private companies, or to transfer the control of that supply to a responsible body invested with the necessary powers for the purchase of the existing works and the acquisition of so much spring and deep well water as may be necessary. We have continuously and persistently advocated the latter scheme as the one thing needful in this gigantic and superlatively important matter, and are, therefore, very glad to find that the Commissioners give it a very strong comparative preference. The summary of conclusions and recommendations as to the rural districts must be postponed; but we may fitly end by complimenting very highly the Commissioners, and by urging their recommendations (as regards London) upon the attention of the Corporation and the Metropolitan Board of Works. No skilled Report was ever published at so happy a time, if these august bodies only know how to make it serve their own laudably ambitious purposes. We may remind them that water is of more importance than gas.

Correspondence.

"Audi alteram partem."

PROFESSOR MACLEAN, C.B., ON THE TRUE COMPOSITION AND THERAPEUTIC VALUE OF WARBURG'S TINCTURE.

To the Editor of THE LANCET.

SIR,—Dr. Carl Warburg, late of Vienna, now of London, acting on the advice of friends well acquainted with the antipyretic properties of his tincture, has communicated to me for publication the formula for its preparation, which I accordingly give below. Thirty ounces of the tincture, according to the formula, were prepared in my presence in the laboratory here.

It is well known that up to this time this has been a secret remedy. It is no business of mine to defend its author from the charge of vending a secret medicine, which he shares in common with some other members of the profession not unknown. The simple truth is that Dr. Warburg knew he had hit on a remedy of great therapeutic value, and, under the pressure of the *res angusta domi*, hoped by its sale to maintain his family.

The feeling in the profession against secret remedies was so strong that his expectations, after many years of trial and many disappointments, have not been fulfilled, and, as I have said, he has at last, wisely as I think, resolved to make his secret known.

Before passing from this part of my subject, I may quote, as pretty nearly expressing my own opinion on the subject of secret remedies, the following passage by the late Dr. James Johnson:—"No one will accuse us of favouring secret nostrums, but if the inventors of remedies will not publish their compositions, this is no reason why we should not test their efficacy when they come from practical and scientific men. Would any man in his senses, or who has any regard for the welfare of his patients, refuse to administer James's Powder, Battley's Sedative Liqueur, or Ruspini's Styptic, because the inventors refuse to make

known the composition of these remedies? Dr. Warburg has supplied gratuitously immense quantities of his febrifuge to the profession, and continues to do so, in order that his statements respecting its properties may be fairly put to the test. This is, perhaps, as much as could be expected." Dr. Johnson concluded his notice of the tincture by inviting "the attention of our brethren in this country to this remarkable preparation."

I first became acquainted with the remarkable properties of Warburg's tincture in the following manner. Many years ago, when attached to the Residency of Hyderabad in the Deccan, word was brought to the Resident, the late General James Stewart Fraser, that his son-in-law, the late Dr. Thomas Lancaster Bell, then employed as statistical surveyor of the Deccan, had been brought into the station of Warrunghal, about eighty miles from Hyderabad, in an almost comatose state from remittent fever, caught in a neighbouring jungle, where he was carrying on some scientific investigations, and that but slender hopes were entertained of his recovery. I hastened to his assistance. On arriving at the station I approached the house where the patient was from the rear, and seeing many sheets and other articles of bedding hanging out to dry, I naturally interpreted this into a mournful signal that all was over, that in fact I had arrived in time to bury but not to save my friend. Entering the house I was joyfully surprised to see Dr. Bell seated in an arm-chair in a state of complete convalescence. I then learned that he had been brought by his servants to the station just as an exacerbation of his fever had set in, being the third or fourth of his attack. Dr. Bell had taken quinine freely when first attacked, but was quickly reduced to such a condition of mental confusion as to be incapable of directing the treatment of his case. When seen by the medical officer of the station he was in a most alarming condition, and it was too evident that another exacerbation would prove fatal. It so happened that an officer belonging to the Mysore Commission was visiting a friend in the cantonment who was not only well acquainted with the efficacy of the tincture in malarial fevers, but had a supply of it with him. In the desperate circumstances of the case the station surgeon administered the remedy; it was followed by a profuse but not exhausting action of the skin (hence the drying process which had alarmed me), the fever did not return, and the patient made a rapid recovery.

After such an experience as this, I did not fail to use it in similar cases, as opportunities offered, and by its means rescued many who were in as great peril as in the case related above. My experience in the treatment of malarial fevers by Warburg's tincture has not been confined to India. My friend and colleague, Surgeon-Major Madden, will remember the case of a young officer of the Royal Engineers, who had the misfortune to be quartered in a building much below the level of the surrounding ground on which stand Brompton Barracks, Chatham, where he was nightly exposed to the poisonous emanations conveyed by the wind from the unwholesome marshes of the Medway. He contracted a sharp remittent fever, which resisted quinine given in free doses. The case became alarming, and I was asked to see him. I at once administered Warburg's tincture in the manner to be presently described, and this young man never had another exacerbation.

A supply of this tincture was sent to the Gold Coast for use in the late expedition, but from all I can learn it was not much used by the medical officers of the force. After the war the *Victor Emanuel*, that model hospital-ship, now unfortunately dismantled, was anchored off Netley. From the medical stores of this ship I obtained all the "Warburg" remaining, and used every bottle of it in the treatment of the formidable fevers disembarked from the Gold Coast at Netley, in every case with success when not complicated with hepatic abscess.

I have only to add, in concluding this account of my personal experience of the remedy, that in the article on Malarial Fevers contributed by me to Dr. Russell Reynolds's System of Medicine, I spoke highly of this febrifuge, for which I was taken to task by a writer in the *Indian Annals of Medicine*; and for the last fifteen years, in my lectures on Tropical Medicine here, I have made known its value to the gentlemen belonging to the public services going through the course of special instruction in the Army Medical School.

To the best of my knowledge Warburg's tincture was first introduced into Southern India, for use on a large scale, by the late Lieut.-General Sir Mark Cubbon, K.C.B., Commissioner of the Mysore Province, who will long be remembered in India as one of the most successful administrators of his time, and of a service prolific in splendid examples of a governing race. Having himself used the remedy with success, he placed at first 500 and subsequently 1000 bottles of it at the disposal of the late Dr. C. J. Smith, being well known as surgeon to the Mysore Commission. Ere long its reputation was established at Mysore among the officers of the Commission (much exposed to malaria in the discharge of their duties), and I believe I am right when I say that none of them ever ventured into a malarious locality without being armed with "a little bottle of Warburg."

I have not space at my command to say more of its use in Southern India, where it was always better known and more used than either in the Bengal or Bombay Presidencies. Many great engineering works in Southern India, carried on in "deadly jungles," were brought to a successful issue mainly by the protection afforded to the workmen by this medicine. Some remarkable evidence on this point was placed before the Royal Commission which inquired into the health of the Army of India by my friend Major-General Cotton, R.E.

I have only to add that many very eminent members of the profession in this country, among whom I may instance Sir Andrew Halliday, the late Sir James Gibson (Director-General of the Medical Department of the Army), the late Dr. Babington, Mr. Skey, and many others, were led to use this febrifuge, and have left on record strong evidence of its value as a therapeutic agent. The same is true of many distinguished physicians and teachers on the Continent.

It will be seen that quinine is the most important ingredient in the formula, each ounce bottle containing nine grains and a half of the alkaloid. Its presence has been detected by every chemist who has attempted its analysis, and never doubted by any medical man of experience who has used the tincture. Many will say, "'After all,' this vaunted remedy is only quinine concealed in a farrago of inert substances for purposes of 'mystification.'" To this objection my answer is, I have treated remittent fevers of every degree of severity contracted in the jungles of the Deccan and Mysore, at the base of mountain ranges in India, on the Coromandel Coast, in the pestilential highlands of the northern division of the Madras Presidency, in the malarial rivers of China, and in men brought to this hospital from the swamps of the Gold Coast, and I affirm that I have never seen quinine, when given alone, act in the manner characteristic of this tincture; and although I yield to no one in my high opinion of the inestimable value of quinine, I have never seen a single dose of it given alone, to the extent of nine grains and a half, suffice to arrest an exacerbation of remittent fever, much less prevent its recurrence, while nothing is more common than to see the same quantity of the alkaloid in Warburg's tincture bring about both results.

I am prepared also to hear that I am giving undue importance to this remedy. But I cannot forget that, taking one year with another, fevers destroy twice as many people as small-pox, cholera, and all other epidemic causes put together.* Therefore it is that a therapeutic agent vouched, on testimony which I submit is trustworthy, to be more efficacious in a certain class of diseases than any other known remedy, is a matter of supreme importance to our native fellow-subjects, and to the well-being of the sixty and odd thousand British soldiers who hold this great possession for the Crown and people of India.

In conclusion, I venture to express a hope that, the reproach of secrecy being now removed, a more extensive and fair trial may be given to this remedy, particularly in the public services, than it has yet had, and that, if it be found to be such as I have described in this notice, its author will not be left to find his only reward in the consciousness of having deserved well of his kind.

The tincture is administered in the following manner:—One half ounce (half of a bottle) is given alone without dilution, after the bowels have been evacuated by any convenient purgative, all drink being withheld; in three hours the other half of the bottle is administered in the same way. Soon afterwards, particularly in hot climates, pro-

* Dr. Cornish, Sanitary Commissioner, Madras.

fuse, but seldom exhausting, perspiration is produced; this has a strong aromatic odour, which I have often detected about the patient and his room on the following day. With this there is a rapid decline of temperature, immediate abatement of frontal headache—in a word, complete deferescence, and it seldom happens that a second bottle is required. If so, the dose must be repeated as above. In very adynamic cases, if the sweating threatens to prove exhausting, nourishment in the shape of beef-tea, with the addition of Liebig's extract and some wine or brandy of good quality, may be required.

In the terrible remittent fevers described by Livingstone and his followers, the form of purgative prescribed by the great traveller, and known to his people as "Livingstone's Rousers," may be premised. By no authors is the necessity for careful nutrition and due stimulation so much insisted on as by the companions of this immortal explorer, notably by the Rev. Mr. Waller, who, I believe, is a physician as well as a missionary.

DR. WARBURG'S TINCTURE.

R Aloes (socotr.) libram,
Rad. Rhei (East India),
Sem. Angelicæ,
*Confect. Damocratis, ana uncias quatuor;
Rad. Helenis (s. Enulæ),
Crocī sativi,
Sem. Fœniculi,
†Cret. præparat., ana unc. duas;
Rad. Gentianæ,
Rad. Zedoariæ,
Pip. Cubeb.,
Myrrh. elect.,
Camphoræ,
‡Boleti laricis, ana unciam.

The above ingredients to be digested with 500 ounces of proof spirit in a water-bath for 12 hours; then expressed and ten ounces of disulphate of quinine added; the mixture to be replaced in the water-bath till all quinine is dissolved. The liquor, when cool, is to be filtered, and is then fit for use.

Your obedient servant,

Netley, Nov. 1875. W. C. MACLEAN.

THE MEDICAL SOCIETY OF LONDON.

To the Editor of THE LANCET.

SIR,—At a meeting of the Council of this Society held yesterday, attention was directed to an article on the Metropolitan Medical Societies, which appeared in THE LANCET, October 9th, in which, after awarding its due meed of praise to the work done by this Society, you remark, "It is much to be regretted that no Transactions of this Society have yet been published." I am requested by the Council to state that a volume of Proceedings was issued to the Fellows in October, 1874, and that a second volume edited by the Secretaries is now in the press and will shortly be in circulation.

I have the honour to remain, Sir, your obedient servant,

C. THEODORE WILLIAMS, M.D.,

Nov. 6th, 1875.

Honorary Secretary.

SMALL-POX IN SAXONY.

To the Editor of THE LANCET.

SIR,—In No. 17 of Volume II. of your valuable paper of this year, it is said (p. 610), in the article Small-pox: "No official accounts of Saxony are forthcoming." I am glad to give you the desired account. As to the year 1871, the official information on the total small-pox deaths is not quite certain; but I believe that there may have been at least 9000; in the year 1872 there were 5863; in 1873, 1772. In these last two years 30 per cent. of the deaths were in children under the age of one year.

* This confection, which consists of an immense variety of aromatic substances, was once official, and is to be found in the Ph. Lond., 1746.

† Dr. Warburg informs me that this ingredient was added to correct the otherwise extremely acrid taste of the tincture. Many other substances were tried, but none answered so well as prepared chalk.

‡ This is the *Polyporus laricis* (*P. officinalis*, *Boletus purgans*, or *Larch agaric*), "formerly," says Pereira, "used as a drastic purgative, and still kept by the herbalist."

The number of the population of Saxony was on the 1st December, 1871, 2,556,244. The small-pox death-rate per 1000 of population was therefore: 1871, 3.5; 1872, 2.2; 1873, 0.7.

I am, Sir, yours faithfully,

R. GUENTHER, M.D.,
Medical Officer of the Privy Council.

Dresden, 5th November, 1875.

GLASGOW.

(From our own Correspondent.)

THE various medical classes in connexion with Glasgow are now in full working order. The opening address to the students at the University was delivered by Dr. George Buchanan, the Professor of Clinical Surgery, and was fairly received by a noisily appreciative audience of the young alumni. On the following day the Dean of the Medical Faculty, Dr. Alexander Lindsay, gave the inaugural discourse at the Andersonian University. The well-known ability and experience of the lecturer secured him a large audience. Instead of choosing any stereotype subject, Dr. Lindsay spoke of some of those conditions that rule in the world of matter, selecting more particularly the laws of diversity, unity, and economy, and illustrated and dwelt on the divisions under these heads. His address was well received, and was delivered without the aid of note or manuscript. In addition to the two schools mentioned, we have the nucleus of an extramural school, and lectures on surgery and medical jurisprudence are being delivered. The University authorities have resolved to recognise these lectures as qualifying for graduation. This is as it should be, but the same privilege should be extended to the lectures at the Andersonian. The majority of the medical profession in the University were at one time lecturers at the Andersonian before their advancement to their present chairs, and, when acting as such, vigorously and justly clamoured against a monopoly of teaching. On their promotion they appear, however, to forget their former views, and abandon a liberal policy. The ostensible cause given for the non-recognition of the teachers is the fact that, according to the conditions of the founder of the school, those elected to the various chairs should be called professors of the subjects they expounded. They thus, it is said, become rivals, not merely in teaching, but in the actual possession of a title. I venture to think that such reasoning is unworthy of any university, and trust a more generous one may be adopted. The recognition of extramural lectures has enhanced greatly the reputation of Edinburgh as a medical school, and the same mode of procedure to all here it is presumable would promote in every way the true interests of medical science.

Favoured by excellent weather, Dr. Russell has for the last three weeks been able to report a wonderfully healthy condition of affairs, the mortality tables indicating an average of only 21 per 1000, against 31 of the same month of last year.

There has been since the commencement of August last a somewhat bitter feeling between the directors of the Royal Infirmary and the Police Board, which culminated in a meeting between the different representatives on 3rd Nov. Full details are given in the daily papers, and will doubtless give rise to much discussion. Briefly stated, the matter under dispute was this. In the suburban burghs enteric fever had been prevalent for some time, and Dr. Russell was anxious to obtain information as to the locality of such cases which had been removed to the Royal Infirmary, and with the ostensible object also of having such cases sent to the Fever Hospital at Belvidere, which is under the control of the municipal authorities of Glasgow. The infirmary directors declined to accede to this request, and a somewhat personal and hasty correspondence in the daily papers took place between the superintendent of the infirmary and Dr. Russell. The conclusion come to at the meeting will be seen from the following summary from one of our daily papers:—

"A conference took place yesterday between the managers of Glasgow Infirmary and the Health Committee of the Police Board, with the view of arrangements being made for