**Parkes Pamphlet Collection: Volume 21**

**Publication/Creation**

1854-1866

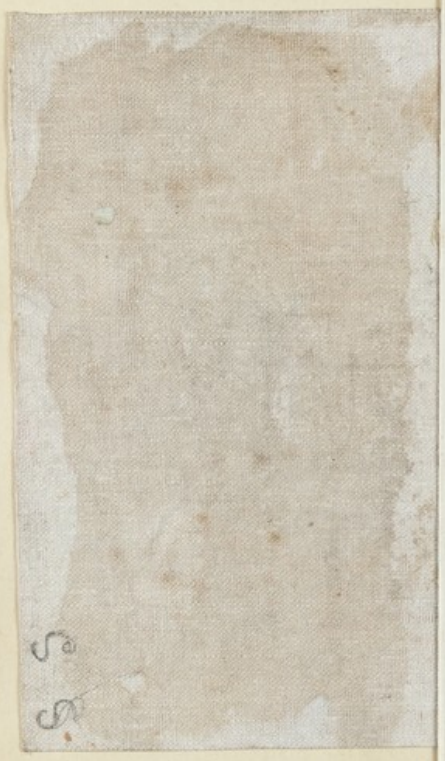
**Persistent URL**

https://wellcomecollection.org/works/kthzc6ub



wellcome collection

Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
https://wellcomecollection.org



Rec.d 9.th February 1870

# ADDRESS

ON

# PUBLIC HEALTH,

BY

ROBERT CHRISTISON, V.P.R.S.E.,

PROFESSOR OF MATERIA MEDICA IN THE UNIVERSITY OF EDINBURGH;
SENIOR PHYSICIAN TO THE QUEEN FOR SCOTLAND,
ETC., ETC.

DELIVERED AT THE MEETING OF THE

ASSOCIATION FOR THE ENCOURAGEMENT OF SOCIAL SCIENCE,

HELD AT EDINBURGH IN OCTOBER 1863.

EDINBURGH:
OLIVER AND BOYD, TWEEDDALE COURT.
LONDON: SIMPKIN, MARSHALL, AND CO.

MDCCCLXIII.

PRINTED BY OLIVER AND BOYD, EDINBURGH.

## PREFATORY REMARKS.

From a desire to give an impetus to the study and practice of Laryngoscopy, which my experience already leads me to look upon as a most valuable aid in the diagnosis of diseases incidental to the Larynx and adjacent parts, I am induced to reprint the following pages from the Medical Circular.

Pending their publication in that journal, opportunities were afforded to many of my medical friends to test the value of this new method of investigation, on patients assembled at my house for the special purpose.

At these meetings Dr. Czermak kindly rendered his valuable assistance, and fully substantiated every opinion which I have ventured to express, of the importance attributed to Laryngoscopy in the following pages.

The subject will be followed up in another direction, namely, in the exploration of morbid conditions of the nasal fossæ and Eustachian tubes, which so frequently are associated with impairment of the sense of hearing, and from which good results are confidently anticipated.

JAMES YEARSLEY.

15 Savile Row, W.,
August, 1862.

# ADDRESS ON PUBLIC HEALTH.

THE office whose duties I have had the honour of being appointed to discharge at these meetings has been filled in turn, since the birth of our Association in 1857, by men of no less mark than the Hon. Mr Cowper, Lord Shaftesbury, Lord Ebrington, Lord Stanley, Lord Talbot de Malahide, and Mr Fairbairn. When I made this discovery, I first became sensible that, in undertaking to deliver this address as their successor, I had incurred a greater responsibility than I was aware of in accepting it. As your president, I thought I could not repeat those general considerations which have been put before you so often and so ably by my predecessors, and which would, I feel, lead in my hands to little else than weariness on your part, and unprofitableness on mine. Turning next, among other suitable subjects, to the readiest which lay within my reach, the advancement made in our knowledge of public health since this Association last met a year ago, it appeared to me that the progress made in that time had not been in any way so remarkable, that the retrospect was likely to prove either a large enough or a pleasant enough theme. I have therefore been led to look for materials to the very opposite quarter. For some time past we have been told a good deal of what has been latterly done in this field. I propose rather to say something of what is still undone. An inquiry of that kind will be less flattering to our vanity, but it may turn out more serviceable, if we should succeed in discovering some well-defined desiderata for a better knowledge, and a better condition, of

the public health; and more especially if we can thus point out blanks in our knowledge, which may be filled up through means of encouragement held out by the Social Science Association.

I propose to look at my subject from a physician's point of view. I am inclined to think it is well that we should all sometimes look at public health from this direction. The branch of knowledge called public health is not essentially medical in all its details. It is far from indispensable that every inquiry concerning it be carried on by the physician alone. On the contrary, much has been done in this line, and well done too, by members of the Association, as well as by others, not belonging to the medical profession. But there are inquiries of great consequence to public health, which no one can fitly undertake without a wide acquaintance with medicine. Others, which may be carried on independently, may nevertheless require to be tested by reference to medical principles and medical experience. And, on the whole, the closer the bond of union is drawn between medicine and public health, the better will it be for the stability of the latter branch of knowledge. This truth seems to have been sometimes lost sight of lately; and perhaps it is on this account that some non-medical inquirers have arrived at conclusions which medical observation refuses to confirm.

Public health, in the simple acceptation of the term, means nothing more than the aggregate health of each individual in a community. But, as a branch of social science, public health deals as little as possible with individuals. Its principles rest on observations made on bodies of men. Inquiries into public health are carried on with reference to bodies of men, because in that way we escape the disturbing effect of collateral circumstances. For a reason somewhat analogous, such inquiries are best carried on, not by individuals, but rather by bodies of men, or by individuals acting under their authority, or liable to their check; because we are thus more likely to escape the bias arising from the prepossessions of individual minds. And further, when measures for raising the standard of public health are based on such inquiries, it is not left to individuals to carry them through. They generally require aid from the municipal powers, or the general government itself, of a country. Hence the importance of attaching the study of the public health to



this Association, as a department of social science. For inquiry will thus be encouraged; its conclusions will be tested by discussion in the hands of many well-qualified persons; and the resulting measures will go forth to the nation with the sanction of a public body, and with the aid of many who have either a share or an influence in legislation.

Public health, as a branch of social science, treats of the agents which influence, for better or for worse, the average bodily vigour, mental energy, healthiness, and length of life of the community. The main agents of this kind are the earth and its covering, the air, water and heat, food, drink, and exercise, occupation and habits, education, whether bodily or mental, and moral discipline. They act by favouring or engendering diseases, or, on the contrary, by circumscribing or extinguishing them. Very few diseases are exempt from the influence of one or more of these agents. But hitherto the researches of the inquirer into public health have been necessarily confined to certain great classes of diseases, and some special diseases of frequent occurrence.

The study of public health may be taken up from the basis of the agents that influence it. The study may be undertaken also from the basis of the diseases whose sway is ruled by these influences. The physician naturally prefers the latter order of inquiry. The relations of diseases and groups of diseases to the various agents I have enumerated, is a very large subject—much too large to be exhausted on such an occasion as the present. I may be supposed, therefore, to have been inconsiderate in choosing such a topic for this address. But I have thought it might interest you more, and be more in keeping with my own pursuits, if, instead of the eloquent general views usually dealt with by those in my position, I should endeavour to offer you a sketch of the mode in which the principal diseases or groups of diseases are influenced by the agents which affect the public health, and attempt to illustrate, by a few apposite instances, what has been already done, and what remains to be done, for lessening the prevalence of such diseases, and the mortality, ill-health, and pecuniary loss arising from them.

In carrying out this design, I shall take for my guide, wherever I can, the Government Register of Deaths, which ought to be our

main text-book in all inquiries relative to public health on the large scale. I must deviate, however, from the Register in its classification of diseases, which will not suit my purpose altogether; for diseases are by no means always so grouped there as to bear relation to the agents which cause or favour them. Keeping that relation in view, we might comprise at least five-sixths of the deaths in the Register in the nine following groups:—1. Epidemic diseases; 2. Inflammatory diseases; 3. Diseases of the brain and spine; 4. Diseases of the heart and bloodvessels; 5. Diseases of the digestive organs, not included in the inflammatory groups; 6. Diseases of the uterine organs; 7. Diseases of the urinary organs; 8. Diseases of depraved constitution; 9. Death from violence. The remaining sixth of the Register consists mainly of deaths whose causes are so vaguely given in the returns, that they are incapable of being arranged with any defined group.

I propose to take the Scottish Register for my guide. I suppose it is generally as exact as the English Register, and, though on a less scale, yet quite large enough; and it has the advantage of supplying facts from large populations the most different we could well find in civilized society as to situation and manner of life.

When the Medical Registrar for Scotland, Dr Stark, drew up in 1861 the "First Detailed Annual Report of the Registrar-General for Scotland" for the year 1855, he found the average mortality to be lower than in any other kingdom in Europe—viz., one in forty-eight annually. He therefore properly added a *caveat*, that this particular year might not yield a true average. I am happy to say that ulterior experience exactly confirms the original result, the average for seven years ending with 1861 being also one in forty-eight. It would be most interesting to trace the diseases which occasion that relatively low mortality, compared with those which cause the higher rates of less favoured lands—Lower Austria, for example, where the deaths actually reach one in 27·4—and thus to see whether in this way the agents which produce, and the influences which extend, disease, can be discovered, and then possibly mitigated or removed. But there is an insuperable difficulty in the constitution of the Register itself. It may surprise you to learn that even in Scotland, which is supplied with medical men not inferior



in professional skill to those of any other country, more than a fourth part of the deaths are returned to the Registrar in a shape which renders them useless for such an inquiry as that now referred to. A tenth part of the deaths in 1855 are returned without a cause being stated at all. Of the remainder, about a fifth are returned in a nomenclature which admits of being interpreted in two or more ways, or in any way one likes. The deaths in 1855 were 62,000. Of these, 5732 were returned without any cause being assigned; 5725 were referred to such vague causes as lung disease, asthma, atrophy, sudden death, teething, and diseases of unascertained seat; and 5685 were referred to the gradual decay of old age. The English Register is not quite so defective as this. Nevertheless, the deaths unreturned, or faultily returned, amount to a fifth of the whole.

Let it be understood, however, that no blame attaches to the Registrars. But there was an error on the part of those who organized the list of names of diseases to be used by the certifiers of death. Lung disease is a term which positively invites a man to carelessness. It should be extinguished. I suspect most returns under it should be transferred to the category of pulmonary consumption; but it may correctly mean one or other of at least four well-defined diseases. The term asthma is not more fortunate. When it causes death, it may mean bronchitis, or emphysema of the lungs, or heart disease. Dropsy is even worse. It is not once in fifty times the disease, but a mere symptom of the disease; which may be diseased heart, or kidneys, or liver, or lungs, or pancreas, or peritoneum. Deaths from atrophy, sudden death, teething, 1767 in number, are little else than so many confessions of ignorance. The 5685 deaths from old age are nearly on the same footing. Few people really die through gradual failure of the functions of life. Even the oldest, like young people, die mostly of special diseases. Nine-tenths die of bronchitis, diseased heart, diseased liver, diseased bladder, diarrhœa, and a wearing senile fever, which is apt in old people to be the issue of an attack of almost any acute disease. An observant physician seldom sees his patient truly die of the gradual decay of old age. I can safely say that I have hitherto seen only one man die in that way.

These faulty returns, useless for all statistical purposes, amount in the Scottish Register to 17,142 of 62,004, or between a fourth and a third of the whole. The fact suggests a grave matter for our consideration here. We take into high favour the statistical method of investigation. In our prospectus inviting papers, we give an express preference to those based on statistics. But, in truth, in questions relative to public health, the statistical method of settling them may be quite as open to fallacy as any other. There are questions, indeed, as to which this method is positively more fallacious than any other,—for example, than general observation and experience,—if the statistical basis be so loose as to embrace only two-thirds of the facts which the questions have to deal with. Some time ago I was desirous of verifying statistically an important fact as to public health, stated to me on very good authority as the result of general observation in one of the large islands of Scotland. On applying to the Registrar-General's office, in the hope of testing this statement statistically, I was informed that at that time Government had not sanctioned the necessary additional outlay for summing up the details of the Register. At last came forth the "Detailed Report" in 1861; and there I find that almost one-half of the deaths in the islands, of which this is one, are referred in the certificates so loosely to their causes, that they must be left out as unserviceable. For my purpose on that occasion, a register so defective was good for very little,—for much less, certainly, than the general impressions of an acute physician, which it was my aim to test. I have been repeatedly arrested in the same way in attempting to arrive at results for illustrating this address.

The insufficiency of the Register amounts to more than a simple defect. It may be thought, and it has been said of such defects generally, that a register is good for so much as the correct returns amount to,—in the Scottish Register, therefore, for nearly three-fourths of the population. For it is assumed that the faulty returns may be rectified by distributing them among the sound ones in proportional rates. This may be true for some purposes. If the inaccuracies might be safely held to bear upon all diseases according to their actual proportion in causing mortality, or in the correct



returns, the loss of even a third in so large a number as 62,000 deaths, might prove unimportant for most objects. But unfortunately we cannot safely make that assumption. Defects and errors in a national register with such a nomenclature as our own bear much more on some diseases than on others. The deaths from diseases so easily recognised, even by unprofessional persons, as smallpox, measles, scarlatina, erysipelas, cholera, croup, apoplexy, palsy, dysentery, hooping-cough, and even pure fevers, are far more likely to be returned correctly, and also entirely, than those from bronchitis, pneumonia, pleurisy, diseases of the heart, liver, and kidneys, tabes, and malignant diseases, as to which unprofessional persons are very dubious authorities on almost any occasion, and professional people evidently often careless or not well-informed. The former set may with reason be assumed as all returned, and nearly all correctly returned. On the contrary, the latter set are apt to be returned incompletely and incorrectly. They form, in fact, the great mass of deaths concealed under the heads of atrophy, asthma, lung disease, diseases of unascertained seat, sudden death, and old age; nor has the registrar any guide to a correct distribution of these loose returns among the exact ones.

I hope I may not be thought to have been wrong in bringing this matter forward on the present occasion. The Legislature has supplied us with a complex, costly, and, to the members of my own profession, troublesome machine, which, for want of a little repair and extra outlay, has hitherto put out only an inferior article. Such a state of things, in regard to what must be the fundamental basis of most exact inquiries into public health, ought not to exist in a country like our own. I submit that the Register ought to be put to rights, if possible, and that this Association may usefully lend its influence and aid for the purpose.

It must not be inferred from what has been said that the Scottish Register may not be applied with security to many statistical inquiries into the public health. On the contrary, it is a sound source of information for the very next topic which I propose to bring under your notice.

The first group of diseases I will notice is the first in the Register, viz., that of Zymotic diseases. They are so called, from the Greek

noun, ζωμη, signifying ferment, on account of a rather fanciful resemblance between their origin and the process of fermentation. They might have been equally called by the familiar term epidemic diseases—*i.e.*, diseases which tend to spread at times widely among the people; because, although this word has a more restricted meaning in professional nomenclature, it is used in common speech to include all diseases which ought to be comprised in the zymotic class. They are chiefly simple fevers, eruptive fevers, influenza, puerperal fever, diphtheria, croup, cholera, hooping-cough, dysentery, and others of less note. Of all groups of diseases they are considered the most important in respect of the public health; for, in the first place, they account for 24·1 per cent., or almost a fourth part, of the mortality of the country. Nor is there any mistake here; because the Register is not likely to be far wrong through faulty returns in regard to diseases so easily recognised even by unprofessional people; and, secondly, according to all recent experience, general no less than statistical, it is certain that much may be done, under the will of Providence, by human wisdom and human means, to lessen their ravages, and, above all, to put down their epidemic visitations.

This is a large subject, so large that I must be content with touching on a few salient points only.

Simple fevers include ague and marsh-remittent fever, inflammatory fever, typhus, enteric fever, and gastric fever. The four last-mentioned are classed in the Register under the single head of typhus. They account jointly for almost a fifth of the deaths from epidemic diseases, and for 4·47 of the total mortality.

The first point I shall ask you to note under this head is, that Ague is not accountable for a single death in Scotland. There are 107 heads in the Register, and that for ague is the only one which stands blank. Hydrophobia, which accounts for a single death, is nearest to it. But the entry under ague, which takes in also the more deadly marsh-remittent, is *nil*. And more than that, there is no ague in Scotland. I have asked many of my country brethren if they ever saw a true ague,—an unequivocal intermittent fever,—of home growth; but no one has been able to assure me that he has seen any in Scotland except such as I have myself seen—viz.,



caught abroad, or in the fenny parts of England. But ague was at one time very common indeed in many parts of Scotland. My father, a Berwickshire man, often told me that in his young days, probably about 1775, ague was so common among the farm labourers of that famous agricultural county, that a prudent farmer always set off on account of it a certain proportion of no-work days for his men in spring and autumn. The same was the state about the same time of the neighbouring county of Roxburgh. To Dr Mackenzie of Kelso I am indebted for information, unique and satisfactory, as to the dates of the prevalence and disappearance of ague in that part of Roxburghshire. There are dispensary records extant there for one of the oldest dispensaries in Scotland, beginning, in fact, with 1777.

The annexed table has been extracted from these records, showing the agues for every year successively from 1777 till 1806, after which ague disappears from the dispensary books:—

| Year. | Total admitted. | Ague. | Year. | Total admitted. | Ague. |
|---|---|---|---|---|---|
| 1777 | 302 | 17 | 1792 | 570 | 16 |
| 1778 | 306 | 33 | 1793 | 666 | 19 |
| 1779 | 460 | 70 | 1794 | 447 | 9 |
| 1780 | 675 | 161 | 1795 | 513 | 23 |
| 1781 | 510 | 103 | 1796 | 355 | 12 |
| 1782 | 440 | 61 | 1797 | 318 | 9 |
| 1783 | 510 | 73 | 1798 | 415 | 7 |
| 1784 | 459 | 40 | 1799 | 558 | 2 |
| 1785 | 573 | 62 | 1800 | 665 | 4 |
| 1786 | 563 | 48 | 1801 | 433 | 9 |
| 1787 | 525 | 24 | 1802 | 377 | 5 |
| 1788 | 577 | 25 | 1803 | 308 | 2 |
| 1789 | 546 | 48 | 1804 | 422 | 5 |
| 1790 | 640 | 18 | 1805 | 469 | 0 |
| 1791 | 715 | 13 | 1806 | 318 | 1 |

From this table it appears that the number of agues rose in 1780 to 161; by which time the total applicants for all diseases was nearly 700. Then it sank gradually to 18 in 640 applicants in the year 1790; and afterwards it went on fluctuating, but still on the whole diminishing, till in 1800 there were only 4 agues in 665 patients, none in 1805, and 1 in 1806; since which year no case of ague appears on the dispensary books. What, then, has been the cause of this striking improvement in the public health of Scotland? In what change of circumstances did it take place? This much is clear. We do

not owe the blessing either to the Government of the country or to the College of Physicians,—no, nor to Social Science. We owe it to incidental causes ruled to their end by another Power. In fact, it has been allowed to fall upon the country everywhere without having been even publicly noticed anywhere at the time,—an omission of which we certainly should not have had to complain had any man, or body of men, been able to claim credit for it. The real cause it may now be difficult to recover at so distant a date from the event; but this Association may lend its help. I can scarcely think that the great mass of old family records and remnants of old farm-books in Scotland should all be silent on such a subject; and surely an appeal from this Association should call forth the information.

I may be told that the disappearance of ague in Scotland is generally ascribed to the drainage of the country in the march of agricultural improvement, which began in the Border counties about the period referred to above. This is a tradition; but there are grounds for calling it in question. For example, I was assured, I think about 1820, by a well-qualified friend,—the late Mr Walker-Arnot of Arlary, father of the present Professor of Botany in the University of Glasgow, an able agriculturist and well-informed gentleman, who farmed his own property in Kinross-shire,—that he had been positively assured by the surgeon of his district,—a man much his senior in years,—that ague had all but disappeared from that county before the introduction of improved drainage; and that this gentleman ascribed the change rather to improved living among the farm labourers. Then we know that a long time elapsed before the practice of extensive drainage extended from the Border counties to other parts of Scotland, where, nevertheless, there is at present reason to believe that ague disappeared about the same time as farther south. And, moreover, there are still marshes in some parts of Scotland, but there is no ague. Three sorts exist,—peat-marshes, irrigated meadows with pure water for the liquid, and irrigations with foul water. But all are alike ague-free. The last sort might with reason be strongly suspected; for, as managed in the immediate neighbourhood of Edinburgh, they present that frequent alternation of considerable moisture and approach to dryness, that rankness of



vegetation, and that abundance of decaying organic matter, which are thought, when combined, eminently to foment intermittent and remittent fevers in countries liable to these diseases. But if there be any doubt as to the general salubrity of the now famous marshes of Craigentinny, as to which I shall have a word to say by and by, there is none at least as to the total absence of ague among their inhabitants.

There is good ground, then, for an inquiry, in which this Association could lend its aid, into the circumstances which have led to the disappearance of ague from Scotland. Dr Mackenzie has supplied one half of the test. Since getting his table I have not had it in my power to satisfy myself about the other half. Dr Douglas, writing his "Agriculture of Roxburghshire and Selkirkshire" in 1796, speaks of extensive draining having been effected in the former county by that time; but he also mentions incidentally in many places "marshes," "marshy lands," "a great deal of fenny land," and "a deficiency of drains." I hope the history of agriculture may yet supply more positive evidence. The results may be of great consequence. Many of our colonies are now overrun with ague and its sister remittent fever. It can scarcely be that a successful inquiry into the agencies by means of which ague has been extirpated from Scotland should fail to be of service to our countrymen towards freeing also from that scourge the lands of their adoption.

Scotland is very far from having attained the same happy deliverance from Continued Fevers as from those of the intermittent type. But there are some very remarkable facts in their recent history, which point to the possibility of such an event, and at any rate to the fruitfulness of further inquiry on the subject.

Four different forms of continued fever have been recognised by various authorities—inflammatory fever, typhus, enteric fever, and gastric fever. The Registers of England and Scotland recognise only typhus. I presume they do not necessarily hold that all four are of one kind. The general doctrine—which some doubt, however—regards them as all distinct, and I do not mean to call that doctrine into question at present.

The first is in every circumstance the most singular of all fevers—whether, for example, we look to its nature and form, or to its strict bearings on public health. It has been variously called synocha, inflammatory fever, simple fever, and relapsing fever. The last name, which it has of late generally borne, is nevertheless a misnomer. It no more deserves the name than ague deserves to be called relapsing fever. It is a fever of tolerably definite duration, extending mostly to seventeen days; but with the singular peculiarity that there is an interruption in the middle of it, varying from seven to ten of these days. It is far from being a deadly fever; but it causes great suffering, and debility so lasting, that it makes a working man unfit for labour for two months, first and last. Strange to say, in this city at least, where it has been better studied than anywhere else, it is never seen but as an epidemic. I have known four such visitations of it—in 1817–20, 1827–28, 1841–42, and 1847–48; but I never saw it in the intervals, nor has any of my Edinburgh brethren. Hence, at every fresh appearance, it is at first taken for a new fever. It occurs only at periods when work is scarce, wages low, provisions dear, and the labouring classes consequently in unusual distress. In accordance with this fact, it is met with in the labouring population alone—never in the easy ranks of society, unless through very decided exposure to infection. For, in the next place, it is an infectious fever. Of this I have produced elsewhere proof which has never been controverted.* But the infection is not a virulent one, and the progress of this fever by infection may be utterly extinguished.

This is the main fact to which I desire to draw your attention as social reformers. Healthy persons in communication with fevers of this kind accumulated in an hospital ward, or lying in less numbers in their own small unventilated chambers, are seized almost certainly if they remain long enough, and are not shielded by a previous attack. But from a single case of this fever, in a middle-sized, well-aired room, it is never communicated to the healthy. With these facts before us, of which I could furnish pointed proof, were there time, it is evident theoretically how such a fever is to

* See Dr Tweedie's Library of Medicine, vol. i. 154. 1840.



be extinguished. The favourite panacea of the present day for the prevention of all fevers—thorough drainage—is not the remedy. The best drainage leaves untouched the real foundation of the disease—viz., penury pent up in airless dwellings. But provide work for the unemployed, obtain from them in return due ventilation and cleanliness, and the epidemic will soon vanish. First, the new condition of things will make its infectious power harmless, and erelong it will cease to arise by spontaneous generation.

The carrying out of this theory into practice is, however, a formidable difficulty. How is work to be obtained in hard times for the unemployed? And, still more, how are the labouring classes to be taught the habit of ventilating their apartments? Success must depend on the resources, faith, and energy of a sympathizing community, and upon the convictions of its suffering portion. But, at all events, we have a fundamental principle of social economy firmly established—that no epidemic of inflammatory fever can long withstand employment of the workman and fresh air in his house.

Typhus, simple typhus, nervous fever, low fever, putrid fever—a disease so familiar as to need no description here, though very different in form from the last—presents many agreements in those characters which give them both interest in the eyes of the cultivator of social science. It has its epidemic visitations; and fearful ones we have seen all over Britain, especially in this city, where there have been no fewer than five during the last forty-five years—the last and worst having occurred between 1847 and 1849. It puts on the epidemic shape only at periods of want among the labouring classes. Howsoever it may arise in the first instance, it spreads by infection; but its infection is not intense, hence adequate space and ventilation make it innocuous in that way, in so great a degree as to have misled good observers, and made them doubt its infectious property. So far typhus agrees with inflammatory fever. But, *firstly*, it is far more deadly, one in ten being the probable average of deaths from it. *Secondly*, it occurs at all times, and not merely at epidemic seasons. Seldom does a week pass in a large town like Edinburgh, without one or more deaths from typhus appearing on the Register. *Thirdly*, in these non-epidemic

periods it is met with among the rich as well as the poor, and perhaps in as great a proportion to their relative numbers.

Nothing is known of the origin of typhus in non-epidemic periods. Infection will not explain the occurrence of such fevers —not those, at least, which show themselves in the easy ranks of life. With the most ordinary care, cases of it in that circle do not reproduce it in the exposed; whence, then, could it reach themselves by communication, who had not had any exposure to it within their knowledge? Neither does it originate, at least generally, in faulty drainage, or other sources of foul air. In the metropolis, indeed, it is at present a prevailing opinion—much in favour also, as I understand, in this Association—that the sources of foul air are likewise the sources of typhus; but such a rule will not apply in Edinburgh. Foul air undoubtedly favours the spread of both typhus and inflammatory fevers in their epidemic visitations; for, setting aside its possible operation in other less ascertained ways, it implies confined air, want of ventilation, and therefore concentrated infection. I do not mean to deny that foul air of some kinds may sometimes simply cause typhus; but there must be better proofs than now exist, before this can be admitted as the constant or even general fact. Foul air will not account for the origin of the scattered (sporadic) cases of typhus in non-epidemic times. As little will air, merely foul, account for either the rise or the fall of epidemics. Every physician of experience in this city has repeatedly seen in a family a solitary case of well-marked typhus, which no skill could trace to foul air in any shape, or from any source. No one ever heard here of the spread of typhus in the epidemic form being referable to an increase of foul air, apart from the resulting concentration of infectious effluvia from those ill with the disease. We have had within the last few years an instance of the fall of a great epidemic, the worst on record, without any commensurate amelioration of air, drainage, or other branch of cleanliness. This incident is so remarkable in its circumstances as to deserve careful consideration.

The annexed table shows the variations of fever in Edinburgh year by year since the century began, as derived from the records of the Royal Infirmary:—



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 12 mon. to Dec. 31, | 1800, | 329 | | 12 mon. to Dec. 31, | 1832, | 1394 | |
| ... ... | 1801, | 161 | | ... ... | 1833, | 878 | |
| ... ... | 1802, | 156 | | ... ... | 1834, | 690 | |
| ... ... | 1803, | 232 | | ... ... | 1835, | 826 | |
| ... ... | 1804, | 323 | | ... ... | 1836, | 652 | |
| ... ... | 1805, | 175 | | ... ... | 1837, | 1224 | |
| ... ... | 1806, | 95 | | ... ... | 1838, | 2244 | |
| ... ... | 1807, | 110 | | .. ... | 1839, | 1235 | |
| ... ... | 1808, | 111 | | ... ... | 1840, | 782 | |
| ... ... | 1809, | 186 | | ... ... | 1841, | 1372 | |
| ... ... | 1810, | 143 | | ... ... | 1842, | 842 | |
| ... .. | 1811, | 96 | | ... ... | 1843, | 2080 | |
| ... ... | 1812, | 103 | | 9 mon. to Oct. 1, | 1844, | 3339 | |
| ... ... | 1813, | 75 | | 12 mon. to Oct. 1, | 1845, | 683 | |
| ... ... | 1814, | 87 | | ... ... | 1846, | 693 | |
| ... ... | 1815, | 96 | | ... ... | 1847, | 3688 | |
| ... ... | 1816, | 105 | | ... ... | 1848, | 4693 | |
| ... ... | 1817, | 485 | | ... ... | 1849, | 726 | |
| ... ... | 1818, | 1546 | | ... ... | 1850, | 520 | |
| ... ... | 1819, | 1088 | | ... ... | 1851, | 959 | |
| ... ... | 1820, | 638 | | ... ... | 1852, | 691 | |
| ... ... | 1821, | 327 | | ... ... | 1853, | 574 | |
| ... ... | 1822, | 355 | | ... ... | 1854, | 168 | |
| ... ... | 1823, | 102 | | ... ... | 1855, | 201 | |
| ... ... | 1824, | 177 | | ... ... | 1856, | 180 | |
| ... ... | 1825, | 341 | | ... ... | 1857, | 132 | |
| 9 mon. to Oct. 1, | 1826, | 450 | | ... ... | 1858, | 111 | |
| 12 mon. to Dec. 31, | 1827 | 1875 | | ... ... | 1859, | 183 | |
| ... ... | 1828, | 2013 | | ... ... | 1860, | 152 | |
| ... ... | 1829, | 771 | | ... ... | 1861, | 122 | |
| ... ... | 1830, | 346 | | ... ... | 1862, | 136 | |
| ... ... | 1831, | 758 | | ... ... | 1863, | 196 | |

From this table it appears that after 1816, for a period of thirty-six years, the continued fevers of Edinburgh, of which typhus formed the largest proportion, seldom fell short in the Edinburgh Infirmary alone of 500 in any one year. In 1818 and 1819, the annual average reached 1300; in 1827 and 1828, nearly 2000; in 1837, 1838, and 1839, nearly 1600; in 1843 and 1844, above 2700; and in 1847 and 1848, 4200. It then suddenly fell next year to about 700, and kept that average for five years. But in 1854 it sank again abruptly to 170; since then the annual fevers have never exceeded 200. The average for the last ten years has been 158. Last year there were only 136; and this year, which ends for the hospital statistics on 1st October, there were 196. Until 1860, the statistics of the Infirmary did not distinguish the several forms of fever from one another. In 1847 and 1848, however, the annual average of typhus could not have fallen short of 2500; and after that it must have been between 400 and 500 until the year

1854. But in 1860 the number was accurately ascertained to be 67; in 1861, it was 50; in 1862, 14; and in 1863, 74. I am further indebted to the medical officer of the city, Dr Littlejohn, for the fact that the deaths from typhus for the whole town, registered in nine months since 1st January, have been 18. According to the average mortality of typhus, this number indicates 240 cases of typhus for the present year.

Now, about the period of this decrease, the drainage of that part of the city where the chief nests of fever always lay was improved. But the decrease began decidedly before the commencement of that reform. I am informed by our superintendent of drainage, that the works for improved drainage of the worst part of the city—the Grassmarket, Cowgate, Canongate, High Street, and the closes communicating with these—were only begun in 1854, were far advanced only in 1858, and are now all but finished. Neither can the rapid decrease of fever be ascribed to any satisfactory improvement in the cleaning of the lanes and houses of the working classes. I believe that long prior to the decrease, our police had done as much for the cleansing of the fever districts as the impracticable structure of the streets or lanes there, and the incorrigible habits of their occupants, would allow. And as for the home habits of these people, no such improvement of them has taken place in my time as will explain any other change of circumstances in their social economy.

Here, then, is a discovery which remains to be made in social science. Why is it that typhus, which had been almost a perpetual pestilence in Edinburgh for a third of a century, has been of late wearing itself out, and last year almost flattering us with its extinction? The cause has certainly not yet been discovered. My own strong impression is, that the secret will be found to be connected with the theory which has been much canvassed in the present day, the successive changes of type or constitution of epidemic diseases. But as this is a favourite theory of my own,[1] I shall not here insist on it further than by warning all inquirers into the origin of zymotic diseases in foul miasms, that they run great risk of ascribing to these, and the removal of these, fluctuations in the prevalence of such diseases which are often far more probably owing to a more recondite cause—a change in epidemic constitution. In the meantime, the experience of the physicians of Edinburgh presents us with the precept, also derived from the experience of other great towns, though, perhaps, nowhere else so categorically, that typhus never can prevail in the epidemic form in face of employment for the working classes and ventilation of their dwellings.

[1] See Edinburgh Medical Journal, 1857–58, iii. 578.



In the present line of inquiry, there is no occasion for noticing any other fever than enteric fever. Gastric fever, the only other sort arranged under the head of continued fevers, is not generally acknowledged at present by systematic authors. If it be a separate fever, it is one which, according to my own observation, occurs chiefly in the easy and wealthy ranks of life, and owes its origin mainly to high living and over-indulgence in the excitements of society, whether of the nature of business, study, or amusement. We have little to do with it therefore. Enteric fever is very differently circumstanced.

This disease, variously called dothinenteritis, entero-mesenteric fever, enteric typhus, typhoid fever, but most conveniently Enteric (bowel) fever, is the most deadly of all forms of continued fever. It was first distinguished from others in Germany in 1763, and was first accurately described in France by Bretonneau in 1812. It began to be distinguished from others in London about the close of the first quarter of the present century, and first of all by Dr Bright in 1827. A little later, a few cases occurring in hospital here attracted great attention. It has since increased in both cities, as well as in Britain at large. In London it has been common for many years, and is sometimes the commonest of all forms of fever. In Edinburgh its course has been very singular, and deserves careful attention with reference to English opinion as to its cause, and the sanitary conclusions to which that opinion leads.

For many years after Bright wrote about it as a frequent fever in London, we saw it seldom here—never in the proper inhabitants of the city, but only in persons brought ill with it from Linlithgowshire or Fife, or who had quite recently left these counties. It began to be studied here with great care on its being

recognised in the Infirmary in 1847, in a German lad only six months from his "Vaterland," on which occasion it was believed that no case had occurred in the hospital for a period of five years. By-and-by it became not uncommon. For some years past every practitioner meets with it. It occurs among old residenters and natives of the city. Within a few years it is encountered even among people in easy circumstances, and in the best houses of the town. In our Infirmary statistics, it was not taken account of separately from other fevers till 1860. In that year, according to a table supplied to me by Mr Macdougall, superintendent of the hospital, there were 41 cases of enteric fever; in 1861, 35; in 1862, 79; and in 1863, 67; during which period the fevers of all kinds did not exceed 150 in any single year till the present, when they reached 196. These are no great numbers, and yet sufficient to show a decided tendency to increase during the last fifteen years. Further, Dr Littlejohn, medical health officer for the city, informs me there have been seventeen deaths from enteric fever reported to the registrar since the 1st of January last, which will correspond with about 120 cases in twelve months, if the average mortality be taken at one in five.

Of all forms of fever none has been more confidently ascribed than this, by London writers, medical and non-medical, to faulty drainage and faulty provision of water-closets. If we are to believe what some have advanced on the subject, there is no case which may not be traced to foul air, derived mainly from one of these sources. Were this a well-established principle in social science, the extinction of so deadly a fever should be no very difficult matter. Through the publicity given to the discovery by this Association, and the influence of its members, we might hope to see protection established far and wide against the pestilence.

But I am sorry I cannot call on you to assent to this theory, and carry out its consequences; for there are insurmountable facts in its way. During the period that this scourge has been alternately growing and diminishing in London, has London become alternately worse and better drained, or have the habits of its working classes been alternately less and more cleanly? Does the disease generally appear where drainage is bad, or water-closets wanting or faultily



constructed? Does it attack workmen who live in the London drains, as well as those over them, near them, or far from them? I believe all these queries must be answered in the negative. And what is the case here? Our street drains in the Old Town have been much improved during the very period that enteric fevers have been increasing. The habits of the working classes in regard to cleanliness admit of reform undoubtedly, but certainly they have not been growing worse. Besides, the individual cases which have occurred here have been made the subject of careful inquiry, and in many of them it has been impossible to discover any peculiar source of foul air—anything different from what may be met with in thousands of dwellings where this fever has never shown itself. Of the seventeen deaths hitherto this year, nine occurred in localities to which no objection could be found. And what are we to say of its appearance among people of easy circumstances? In this sphere I have myself known several deaths from it during the last few years, and no fewer than three during the last twelve months. In the first place, why has it occurred in that class of society only of late? Surely not from any general increase in defective drainage, defective water-closets, or other sources of uncleanliness. As to the history of individual cases, I have been content to ascribe the disease, in obedience to the theory of London writers, in one instance to gross disregard of ventilation, and in another to a faulty water-closet. But in the last three I have seen no fault could be found anywhere. Further, this fever does not by any means generally break out where the streets are ill-drained, water-closets wanting, and habits filthy. In countless places of that sort in Edinburgh it is unknown. It may be worth while adding, in reference to an independent question likely to be discussed in this section, that enteric fever is not known in or near the "foul meadows" of Craigentinny.

I suspect, then, it must be allowed of this disease, as in respect to most other epidemic diseases, that we do not yet know its cause —that foul air merely favours its invasion; but that its true cause is something much more specific—some ζυμη, or ferment, which has hitherto eluded our search. In that case, while we shall do well to encourage better drains, more and better water-closets, and better

ventilation of dwellings, still we must not count upon thus extirpating enteric fever.

As I am anxious to bring under view some part of a very different subject—the class of diseases originating in a depraved state of the bodily constitution—I regret that I must here quit the subject of epidemic diseases, of which there remain many for consideration—such as cholera, dysentery, diphtheria, smallpox, measles, and scarlatina. Smallpox especially might have been aptly discussed this season before the Association, both on account of its increased prevalence last year, and because of the hints recently conveyed to the public that the English Vaccination Act is to prove a failure, as well as because a similar act is about to come into force in Scotland. But time will not allow of so extensive an inquiry as is necessary to complete the whole subject of zymotic diseases; and I must be satisfied with a brief allusion to only one more of them—Diphtheria—which happens to be connected with a sanitary question of strong local interest in Edinburgh.

This terrible disease is far from common in Edinburgh. I am glad to say I have seen but one instance of it originating in town, and that was many years ago, before it had begun to be much talked of in any part of Britain. No epidemic disease has been by many late writers in England more confidently referred to foul exhalations as its cause, and even its only cause. I shall not take up that question here, however. My own observation gives me little help in forming an opinion. Let me merely say that, as I, in the single case I have seen in Edinburgh, so likewise many of my professional brethren, in the course of their observation, have failed to trace diphtheria to any source of foul air. But it is remarkable that it seems to have shown a slight attachment to our irrigated meadows to the east of the city. An intelligent practitioner in Leith, Dr Paterson, informs me he saw, last year, five cases at a place on the borders of the district.

I scarcely think, however, that, taken along with the negative evidence I have received from others who practise among the natives of these marshes, these cases, which may have had a more local cause still, can be held singly to convict the irrigated meadows.



For I wish to add the information, that I have recently been making careful inquiry respecting this famous and somewhat unsavoury institution; that many years ago my own prejudices were all against the meadows; that I have been compelled to surrender them; that I am satisfied neither typhus, nor enteric fever, nor dysentery, nor cholera, is to be encountered in or around them, whether in epidemic or non-epidemic seasons, more than in any other agricultural district of the neighbourhood. About twenty-five years ago it was stated that the cavalry soldiers at Piershill Barracks, which are situated very near them, were unusually liable to the zymotic diseases caused or promoted by foul emanations, and also that meat could not be kept in the officers' larder on account of the absorption of foulness and quickly following decay. Either, however, there was some mistake committed through prepossession, or the meadows are now worked on a better system. But, at all events, I have the assurance of Mr Lockwood, surgeon of the Scots Greys, that, during their late occupation of Piershill Barracks for two years, the messman of the regiment never observed the meat to be injured, nor did he himself observe among the men anything but remarkable freedom from diseases at large. I think it right, in reference to the late introduction of the Craigentinny system of irrigation into the vicinity of other large towns, that these precise facts should be known.

Of all the diseases in our civilized and modern condition that human flesh is heir to, none have a larger share in causing mortality, and none are more fruitful still in inquiry, reflection, and warning, than the great group of diseases classed as dependent on deteriorated or depraved states of the constitution of the body. One tribe of these, the most numerous of them all, comprises Scrofula, Tabes, Consumption, and Water in the Head, which are usually classed together as tubercular diseases. The next in point of frequency, called Malignant diseases, because they creep from organ to organ, and lead surely to death, embrace scirrhus, fungus, and other forms of cancer. Gouty and Rheumatic diseases form a third tribe, and Diabetes a fourth; but all these are insignificant in their ravages compared with the others. All diseases of the class agree in apparently requiring for their development a depraved condition of

the blood, or of some other component of the human organism; and from other diseases partaking of that character, they differ in being prone to descend from father to son, and increase in that respect by concentration through marriage. With the exception of gout and rheumatism, which medicine can do much to eradicate, they generally make sure of their victim at last. But they are slow to finish their work; and while it is doing, they are the most grievous of all maladies to bear. They are most grievous not only to the victim himself, but likewise to all who have to minister to him in his sufferings. It is a crowning misery, but too little adverted to, that the tending and comforting him, as it falls to the lot of his affectionate family, becomes the duty of those who by similarity of constitution are least fitted to undergo safely so hard an ordeal. Add to all this, that these diseases are the main source of the deterioration of the human race in all physical attributes among such civilized communities as our own, and the Association cannot fail to discover ample inducement to study their influence upon public health.

The Scottish Register in its present form does not fully meet the student's wants in this branch of inquiry. But a useful step or two may be taken with its help, as it stands, in tracing the influence of Consumption, which may probably be held to exemplify and stand for all the rest. The entire class account for no less than 20 per cent. of the total mortality in all Scotland—for 4100 deaths annually in every hundred thousand of the population. Consumption alone accounts for more than half of this proportion,—viz., 11·5 per cent. of the total mortality, and 237 deaths in a hundred thousand of the population. It has been known for some time that the proportion falls under this average in country districts, and exceeds it in large towns, and Dr Stark's summary of the Register of 1855 shows that these differences are by no means small. I am not aware whether it has yet been noted, that the difference to the prejudice of the great towns of Scotland is much greater than their notorious difference in general mortality; or, putting the case differently, that the advantage in favour of the country seems conversely to increase in a greater ratio than the diminution of the general mortality, and, *cæteris paribus*, always in an increasing ratio according to the



degree of rurality, if I may use the word, of the country district. These important facts can be made out so satisfactorily from the Register, that I do not hesitate to offer you some proofs in illustration.

Taking the population of Scotland in 1855 at three millions, and assuming that the deaths from consumption were nearly all specified, or at least uniformly so, which is probable, the total mortality in a hundred thousand was 2080, and that from consumption 237. Dividing the mainland into large towns of 10,000 people and upwards, and the rural mainland, comprising all smaller towns with the pure country, it appears that the mortality from all diseases for the rural mainland in 1855 is 1800, and in the towns 2580—or in the ratio of about 4 to 3 against the latter. But the mortality from consumption in a hundred thousand people was in the rural mainland 186, and in the great towns 333, or not much short of double.

But let us look into the facts more narrowly, and the real difference will be found vastly greater. In Glasgow, whose population in 1855 amounted to 356,000, and where all town causes of mortality greatly abound, so that the annual deaths reach 2890 in a hundred thousand, or almost one in 38 persons, those from consumption are so high as 385. Edinburgh and Leith, with a population of 206,000, present a mortality not much inferior,—viz., 2380 in a hundred thousand, or one in 42; but there is a greater difference in the deaths from consumption, which are 283. Contrast, however, with even the latter proportions the data derived from the very rural counties of Caithness, Sutherland, Ross, Cromarty, and Inverness, comprising a population of 240,000, and we find that the general mortality falls to 1617 in every hundred thousand, and that from consumption to 179. The consumptive mortality is already less than half of that of Glasgow. But these Celtic mountainous counties are not so favourably circumstanced as other rural counties with respect to other sanitary influences—such as climate, food, and medical aid. Turn then to the agricultural Lowlands of Scotland. In the fine agricultural counties of Roxburgh, Peebles, Selkirk, and Haddington, if we exclude two small towns, Haddington and Hawick, which, though under the town standard of the Register (10,000), own to the high mortality of one in forty,

there is a population of 97,000, in which the total mortality sinks to one in 65, or 1546 in a hundred thousand, and the deaths from consumption to 138. In Fife, deducting 25,000 inhabitants of two unfavourably circumstanced towns, Dunfermline and Kirkcaldy, the population amounts to 130,000; and here the general mortality is 1750 in a hundred thousand, or one in 57, and the deaths from consumption 125—only a third of the proportion in Glasgow. But neither in Fife, nor in the four counties south of the Forth which I have grouped together, even when the unhealthy towns are excluded, is the population so free from the disturbing influences of mining and manufactures as may be desirable for a perfect contrast. In the county of Berwick, however, we have the most perfect example in Scotland of a population combining the richest agriculture with freedom from the deteriorating influences of mining, manufactures, and large towns. None of its towns contains above 3500 inhabitants; there is, I think, only one large factory in it, a paper manufactory; and there are no mines. Here, accordingly, the total deaths in a hundred thousand fall to 1410, or 1 in 70, and the deaths from consumption to 104. The general mortality is nearly one-half of that of Glasgow, and the share contributed by consumption is as nearly one-fourth of the proportion in that city.

| | Mortality 1 in | Consumption in 100,000 |
|---|---|---|
| Glasgow, . . . . . | 38 | 385 |
| Edinburgh and Leith, . . . | 42 | 283 |
| The North Highland counties, . . | 62 | 179 |
| Four Lowland agricultural counties, excluding two towns, . . | 65 | 138 |
| Fife, excluding two towns, . . | 57 | 125 |
| Berwickshire, . . . . | 70 | 104 |

It will be objected to these results, as the basis of evident deductions, that, as I began by rating the general authority of the Register low, its trustworthiness in the particulars now made use of must be proved. This is easily done. The data for the North Highlands may be insecure; but in all other respects it so happens that I have used the Register where it is most worthy of confidence. The returns for Glasgow, Edinburgh, and Leith, and the Lowland agricultural counties, are very nearly complete; and in all these parts consumption has so well understood a meaning, that, in using



the term, the errors must be few, and at all events pretty equable. Others may object that I am limited to the statistics of a single year. True. That may affect the general mortality and certain diseases; but there is no ground for supposing consumption to be one of the diseases whose range varies one year with another. The basis in the case of Berwickshire is narrow, for the population in 1855 did not exceed 36,500. Still, until Government shall favour us with a larger basis, by enabling the Registrar to publish several years of "detailed reports," it is in the meantime a remarkable fact, supplied by every part of the Register for 1855, which can be aptly and fairly used for this inquiry, that wherever great towns, manufactures, and mining concentrate and confine great bodies of the people, there will consumption be found to spread its ravages in a much greater ratio than the increase of the general mortality; and, conversely, that the more the influence of these deteriorating agents can be excluded, the more does consumption progressively decrease, and in a much greater ratio than the decrease in the deaths from disease at large.

This general rule applies also, and even with greater force, to the three other diseases of the tubercular class—scrofula proper, tabes, and hydrocephalus. The certificates sent to the Registrar cannot be so much relied on here for accuracy as in the case of consumption. But the errors must be nearly equable for such parts of the Register as I require to use for the main facts. The proportion of deaths caused in all Scotland by scrofula, tabes, and hydrocephalus together, is, for every hundred thousand persons, 96, being a little more than 4½ per cent. of the total mortality. But the inequality of the distribution of these deaths between town and country is extreme. In Glasgow, for example, the proportion in one hundred thousand is 177; in Edinburgh, 96; in the six Lowland agricultural counties, 32; in Berwickshire, singly, 21. Where a pure and rich agriculture predominates, the havoc caused by these disasters is reduced almost to a sixth of what it is in a great town, such as Glasgow; and in the purest of rich agricultural districts it is brought down even to a ninth.

The tribe of malignant diseases are supposed by some to take the place after middle life of hydrocephalus, tabes, and consump-

tion, whose season is from infancy to confirmed manhood; and therefore the former have been considered to belong, like the latter, to the developments of the scrofulous or tubercular habit of body. In that case it might be expected of them that they should follow the law of prevalence, which rules tubercular diseases proper. The Register unfortunately cannot be used to test this conclusion closely. The greater part of malignant diseases are concealed in the Register under the head of other diseases. Cancer, the only heading for them, accounts almost exactly for 1½ per cent. of the mortality. But at least as much lurks under the heads of chronic diseases of the stomach, liver, bladder, kidneys, and womb; another set, at least as numerous, are returned under old age, atrophy, and dropsy; and, on the whole, the entire tribe cannot be reckoned under 6 per cent. of the general mortality. For estimating their comparative prevalence in different circumstances, the only returns which can be safely used are those under the head of cancer. The result is quite at variance with the law for tubercular diseases. Town and country seem to share alike in the inflictions of this grim visiter. But the details are so contradictory to one another, that the data appear unsafe. Thus, in a hundred thousand people the number for all Scotland is 29; for the six Lowland agricultural counties, 35; for the six largest towns, 29; for the four last of these—Aberdeen, Dundee, Paisley, and Greenock, 26; for Edinburgh, 54; for Glasgow, 18. On the whole, it would appear that town life cannot be charged with the evil of fostering malignant diseases; and their causes, whether original or accessory, still remain to be discovered. But it is very different with the much more numerous tribe of tubercular diseases. In a first-class town, such as Glasgow, tubercular diseases account for 20 per cent. of the total mortality; in an agricultural county like Berwick, for 8 per cent. only. In a given number of townspeople at least four die of tubercular disease for one in the same number of countrymen. Nor is this all the evil which life in a great city must lay at its own door. Tubercular diseases mainly are at once the cause and the test of the deterioration of a race in physical excellence. This mishap, though a more hidden consequence than an increased death-rate, is one no less sure to follow; and it is in the long run even worse for the wellbeing of a nation.



Philanthropists and legislators, in dealing with the unhealthiness of towns, have, until lately, had chiefly to do with epidemic diseases as their main source of excessive mortality. But it is apparent that tubercular diseases are a still more serious source of destruction. It is also most probable that the abatement of their ravages will need a different description of measures from those which have been proved to be serviceable against diseases of the epidemic class. The discovery of the necessary measures is a duty which it peculiarly becomes this Association to press upon the Government of the country, and also upon the great, the wealthy, and especially those whose business of life it is to amass wealth through the labour of the working classes, and whose requirements have occasioned the concentration of the people in overgrown towns, with all its concomitant evils.

On considering the whole circumstances attending the development or the circumscription of tubercular diseases, as brought out by a scrutiny of the Scottish Register, and adding the reflections drawn from long professional experience, I cannot at present see any more probable source of the fearful growth of these diseases in great towns than the want of open-air exercise. Several excellent inquiries have been published, which point to certain trades as greatly contributing to develop tubercular diseases. A systematic general inquiry of the same kind might bring to light the fact that it is only a few trades which have to account for the high town mortality; and then our course would be clear and simple. But I confess I have no hope of so simple a solution of the problem. All special inquiries hitherto made, except in the instance of one or two trades which have a special evil of their own to contend with, point in the same direction for the cause of concentration of tubercular disease in great towns—viz., a conjunction of defective exercise and exclusion from the open air. If this prove, on a more extended inquiry, to be the great or universal cause of evil, there is no remedy within reach except the spreading out of a city, the finding lungs for it in the shape of parks and gardens, the surrender to the working classes, and, above all, to the sedentary trades, of a proportion daily of that time which is now too entirely demanded of them for the toils of their craft, and the creation among them of a taste for the

active exercises which were the pastimes of their ancestors. Something has been doing lately in this direction by philanthropists, who have felt a necessity for action through a species of instinct, or through general observation of the present fitness and unfitness of things; and every now and then we have to record the generosity of an individual thinker and actor in this field. But we have now before us, from sundry quarters, such precise and concurring evidence of the enormous extent of evil arising from the present mode of town life among the working classes, that, looking especially to the still increasing growth of our already overgrown great towns, and the stationary or rather retrograding numbers of our rural population, there is loud call indeed for public, systematic, extensive, though it may even be costly, ameliorations.

I am very unwilling to quit the deeply interesting subject of constitutional diseases, with which I propose to conclude my remarks, without adverting shortly to a most remarkable fact which has been lately made a matter of controversy relative to the circumstances which influence the dominancy of the most important of them all, consumption. I will therefore crave your attention for a very short time longer, because I have it in my power to throw a little light upon the question.

In 1848, an intelligent young practitioner of the Island of Lewis, when he graduated at Edinburgh, wrote a thesis on the medical topography of the island, for which he was awarded one of the University medals of the year. In this thesis the author, Dr Macrae, mentioned that in his experience he had never met with the disease, pulmonary consumption, in any islander. The statement excited great surprise at the time, but was lost sight of soon by most people, though never by myself, to whose share the thesis fell for examination. As soon as the Scottish Register was established, I asked Dr Stark, the Medical Registrar, to look into the matter; but an insufficient staff prevented him from doing so till the "Detailed Report" for 1855 was undertaken and published so lately as 1861. Dr Stark there takes up the question; speaks of a "tradition" prevailing in the Western Isles as to their exemption from pulmonary consumption; notices the fact that one medical gentleman had confirmed the tradition; but says that the Register does not bear out the proposition; at the



same time acknowledges that the returns are so incomplete, and the term consumption so vaguely used in the Isles, as to render the Register an unsafe guide; and, after all, thinks he can make out, after proper allowance for errors, that consumption is very decidedly less frequent in the Isles than in Scotland at large. I find, however, that the Register itself positively proves consumption to be still less frequent in the rich agricultural lowlands of Scotland than Dr Stark has made it out to be, with allowance for errors, in the Western Islands. But the truth is, the returns to the Registrar from these islands are so very faulty, that, after looking carefully into the subject, it appears to me they are wholly unfit for use in such a question.

I therefore referred again the other day to Dr Macrae, begging to know his ulterior observation upon a much larger experience than in 1848. He replies, that he continues to obtain the same result; that consumption in Lewis is almost entirely confined to strangers temporarily resident there, and to natives who have resided and contracted the disease elsewhere, chiefly as domestic servants in the southern towns of the mainland; and that natives who stick to the island are exempt from the disease, except in a few rare instances, where it had been brought on under long privation of food and exposure to cold. Adverting to the defects in the Register, and the jumbled mode of using the term consumption in the returns, he adds, that he investigated the reported cases for the last three years in the Stornoway district, which contains a population of 8500 inhabitants; that the total deaths were 444, or 1 in 61; that 24 deaths from consumption were registered; that every case had been seen at one period or another of its course by a medical man, so that he could trace it out accurately; that 8 of the 24 proved to have been bronchitis—a common mistake; 2 tabes, and 1 dropsy; that of the 13 true consumptions 5 were residenters from the mainland, and 4 native servants who had returned ill of the disease from service in Glasgow. Thus we have only 4 cases in three years among the true resident natives of the island, or 16 only in 100,000. I have similar testimony from a very able authority in another island, Dr M'Coll, of Mull, who brings the experience of thirty-three years to the inquiry. He informs me that in his island, which

contains 12,000 inhabitants, he has scarcely ever known consumption occur, except among immigrants bringing with them the constitution of the mainland, or natives who had gone thither early to contract it, but returned to die on the soil of their birth.

I do not know a more interesting fact in the whole statistics and pathology of this melancholy disease than the apparent exemption of our western islanders from it. Nor is there any limited statistical inquiry more worthy of being encouraged by our Association, and satisfactorily cleared up as to its amount and causes, than this wonderful immunity, which is now no mere "tradition."

I feel that I must apologize to this meeting for having detained it so long with a somewhat excursive inquiry. More especially ought I to do so, because I do not claim to have brought before you anything positively new, at least of the nature of general principles. My purpose was to revive some old principles concerning public health, which have been latterly kept rather in the shade, to illustrate them and others by placing them before you in a new and stronger point of view, and to confirm prior observations by my own. I shall be content if I may be thought to have succeeded in some measure in these objects.

PRINTED BY OLIVER AND BOYD, EDINBURGH.

# ESTIMATION

OF

# ORGANIC MATTER IN WATER,

WITH REFERENCE

# ESPECIALLY TO SANITARY PURPOSES.

BY

R. ANGUS SMITH, PH.D., F.R.S., F.C.S.,
GOVERNMENT INSPECTOR OF ALKALI WORKS.

LONDON:
LONGMANS, GREEN, READER, AND DYER.
1866.

Printed by Eyre and Spottiswoode,
Her Majesty's Printers.

# ESTIMATION
OF
# ORGANIC MATTER IN WATER,
WITH REFERENCE
ESPECIALLY TO SANITARY PURPOSES.

---

Water manifestly containing organized matter is to be avoided, but it may frequently be purified by some mechanical mode of separation, such as simple straining.

If the water contains organic matter in solution, or a condition approaching in all appearance to solution, it may be wholesome or unwholesome. The mere existence of organic matter is no proof of impurity. We must know if it brings animalcules or vegetable life or products of putrefaction. We must know the *quality* as well as the quantity. If the matter is peaty, consisting of the ordinary humous class of acids and salts, the colour may be very dark and the water very unpleasant to look at without being in any way, so far as I have ever heard, injurious to health, although such water cannot be quite so wholesome as pure water, since the oxygen of solution is diminished. The taste and other sensible qualities will be the chief guides.

If the matter is wholly or nearly colourless it may still be wholesome or unwholesome. It may, for example, contain the juices of plants of a wholesome character. If these juices are fresh they may do no injury, but they will not remain long fresh; they will putrefy. Water containing organic matter ready

to putrefy ought to be avoided, as we cannot tell when the moment of danger begins, whilst the quality at best is never known to us exactly.

To ascertain the nature of the organic matter, the water is allowed to stand for a day or two, in which case it may be found that organized bodies show themselves. Sometimes plants seem completely to fill the vessel, having come out of a moderately clear solution. When standing, in this case, the water must be prevented from evaporating, and it must be in glass, so as to be exposed to light; a temperature suiting vegetation is also to be given. Animalcules may appear in great numbers; they are an indication of nitrogenous matter, and one proof of the presence of substances capable of putrefaction. It may be that some form of putrefaction will be the only result, but whether this occurs alone, or along with organized forms, an excess of organic matter is proved.

Water that will not bear the test of standing will in most cases be rejected at once. If no other can be obtained, it ought to be used before the putrefactive process has begun, but this is very dangerous. The next best method is to wait till after putrefaction has terminated and the products are separated as much as possible. This is popularly known to be the case when the water has for some time become clear and colourless and free from smell and taste.

Water with green organic matter in suspension or semi-solution is generally full of germs of living things and nauseous to the taste.

A microscope is very useful in detecting the smaller forms of life. Good water is clear and colourless, or only slightly browned by peat. Clear bright water shows no microscopic objects. It is quite a mistake to suppose that all water contains animalcules. Those who have sent abroad this saying could not have known what pure water is.



If the signs of organic matter are clear, it may not be needful to go farther, but to reject the water at once. After standing for two or three days, varying with temperature, and showing nothing to the eye except a little film of green on the bottom of the vessel, we may conclude that not much organizable matter is there. We may then proceed to the chemical examination.

### *Weighing the Organic Matter.*

If nothing apparently organic is seen, or if there be no time to allow it to germinate, we may try the following method. About half a gallon is boiled down in a platinum vessel, or it may be boiled in porcelain and transferred with care, when only a few ounces are left, to a platinum, or even to a small porcelain capsule. The residue is dried and weighed. It is then burnt so as to oxidize the carbon, and weighed again; the difference gives the organic and volatile matter of the residue. 212° F., or 100° cent., is not sufficient to remove all water, but as it is a temperature so easily obtained it is convenient to consider it enough, especially as we cannot obtain the organic matter by weighing with absolute exactness. We may obtain an excess of water by the use of 212°, on one side, but again organic matter begins to be given off from some residues even at that temperature. Professor Miller and others advise about 300° F.; it is at any rate well to state the temperature in the account of the analysis.

The burning must not be effected at a very high heat or several salts will be decomposed or evaporated; but at best some will suffer, and the use of a little carbonic acid and water, or carbonate of ammonia, to restore the lost amount is advisable. A little distilled water and a few expirations into it through a glass tube will be sufficient for most

cases; of course after this the ash must be heated again.

Professor Miller advises the addition of 0·3 grammes of carbonate of soda to a litre of water, or 20 to 25 grains to a gallon, making allowances in the weighing.

*Use of Permanganate of Potash, or Chameleon.*

It must be remembered that the amount of organic matter obtained in the above way may be equal to several grains in a gallon, and yet be quite innocent; for example, it may be a little peaty matter. One method of trying the quality is given above; another of a very convenient kind is by the use of permanganate of potash, or mineral chameleon. It will here be called chameleon, as the former term is very long. It is very highly coloured, and its decomposition is known by the disappearance of the colour.

Chameleon is decomposed by putrid organic matter, and by several unwholesome gases, rapidly or instantaneously. It is decomposed by fresh organic matter, and especially organized matter, less rapidly. The putrid portion may be estimated readily; the latter is more uncertain.

In using this test, it is well to take not less than 5,000 grains of the water, or still better 1000 grammes, *i.e.* one litre, but if a small specimen only can be obtained, then 1000 grains may be used, and it is well always to give the figures for 1000 for uniformity, or by multiplying by 70 to change them into the amount per gallon. Grains or grammes may be used indifferently, the solution being made to contain simply so much in 1000.

A convenient plan is to use 2 grains of the pure crystallized chameleon to 1000 of water. This of course is the same as 2 grammes to a litre of water.

The chameleon is poured conveniently from a Mohr's burette, or better still, when the water is



very pure, from a dropping tube in which 1 c. c. (cubic centimetre) is 6 to 8 inches long. Add a drop of the chameleon, and wait till the colour disappears; add another, and so on till the colour remains permanent. We learn by experience. The organic matter which decomposes the chameleon in a minute or two must be noted carefully, but generally there is a greater quantity which decomposes very slowly; the result obtained from the latter is, I believe, of less value. By decomposing in a minute or two, it is meant that when a few drops are added producing a slight colour, this undergoes a change in a minute or two. But generally considerable permanency is obtained in 10 or 15 minutes; then the slow decomposition begins, of quite another quality of organic matter requiring hours or even days. This matter must be estimated either by the weighing process described, or by the farther action of the chameleon to be described. The amount decomposed instantly is a true measure of the putridity, it is believed. If there is very much organic matter, it is often very difficult to know when to stop, as the brown masks the red colour. But this must not bring discouragement, as experience will teach exactness, and if it does not, it then will be no great loss in such cases, in a sanitary point of view, as in them there is decidedly too much organic matter, and the water may be condemned. From the same point of view, it is of less consequence whether the amount be a minute quantity more or less. It is well to make broad lines of distinction, and to condemn freely when there is rational hope of obtaining a purer water.

The amount of available oxygen in 1 of the solutions of chameleon described is 0·0005, which may be either grammes or grains, or almost exactly 1 of oxygen in 2000 of the solution. If we wish to know the amount of oxygen used, we simply divide the amount of chameleon by 2000. It is probable that

the use of the oxygen column is the only exact method of recording the results, and it is probable that the amount of oxygen required is the only exact measure of the impurity of the substances. We obtain in this number the amount of oxygen which is required for purification.

Whilst looking over this plan in manuscript, I received Dr. Miller's paper, proposing also to use oxygen; he prefers a solution of chameleon, containing 3·95 grains, equal to 1 grain of available oxygen to 10,000 of water, or 1 cub. cent. = 0·001 gramme, or say 1 milligramme of oxygen. This is a very convenient method, but it has been thought proper to keep the tables as given for various reasons, chiefly arising from this, that it has not been found so convenient to keep or to titre a very weak solution. In some cases a very strong solution is required; we can easily dilute it, but we cannot concentrate it readily. After estimating its strength, we dilute it (if we require a weak solution) to any amount we think proper, and as the strength changes, the amount of water to be added will also change. If the amount of oxygen is given as the result of the analysis instead of the amount of chameleon solution, the strength of the latter does not require to be kept uniform. The analyist requires only to know its strength at the time of using it. For very bad water, the strong solution may be used, and when greater delicacy is wanted it may be diluted. The weak solution here used is made by adding 9 of water to 1 of the strong solution.

To make the chameleon solution very pure water must be employed, and very pure crystals as well as very pure vessels; it is better kept in considerable quantities such as a quart or two. It must be tried occasionally, say every month in a cool climate: calculation must be made as allowance for any change which it may undergo. For example, if it has lost



1 per cent., we must calculate how much the number would have been had there been no loss of strength. If calculation is not agreeable, a less quantity of solution may be made at a time, and that which is over may be thrown away, a fresh amount being made to the normal strength whenever the original weakens, or a certain amount of the crystals may be weighed and added to the solution; but this has been found less convenient.

The estimation of the value of the chameleon is sometimes made with a solution of chloride of iron, sometimes oxalic acid. For ready reference, a table is made showing the amount of a solution of iron which corresponds to a certain amount of chameleon. The sulphate of ammonia and iron has proved to be very valuable, keeping for several years in crystals, and acting instantaneously. The writer has not found oxalic acid equally sharp and quick, but eminent chemists use it—Mohr and Miller for example.

VALUES OF THE STRONG SOLUTION.

| Permanganate of pot. or chameleon 2 grammes in 1,000 c.c. | Oxygen. | Ferrum. | $FeO, SO_3 + NH_4O, SO_3 + 6$ Aq. | $KO,Mn_2O_7$. |
|---|---|---|---|---|
| c.c. | gr. | gr. | gr. | gr. |
| 1 | 0·000500 | 0·0035 | 0·0247 | 0·002 |
| 2 | 0·001000 | 0·0070 | 0·0494 | 0·004 |
| 3 | 0·001500 | 0·0106 | 0·0742 | 0·006 |
| 4 | 0·002000 | 0·0141 | 0·0989 | 0·008 |
| 5 | 0·002500 | 0·0176 | 0·1237 | 0·010 |
| 6 | 0·003000 | 0·0212 | 0·1484 | 0·012 |
| 7 | 0·003500 | 0·0247 | 0·1732 | 0·014 |
| 8 | 0·004000 | 0·0282 | 0·1979 | 0·016 |
| 9 | 0·004500 | 0·0318 | 0·2227 | 0·018 |
| 10 | 0·005000 | 0·03535 | 0·2474 | 0·020 |
| 100 | 0·050600 | 0·3535 | 2·4747 | 0·200 |
| 1,000 | 0·506300 | 3·5353 | 24·747 | 2·000 |

The numbers in the above table run in the following proportions nearly:—

| Chameleon solution. | Oxygen. | Iron. | Sulphate of iron and ammonia. | $KO,Mn_2O_7$ Crystals. |
|---|---|---|---|---|
| 2,000 | 1 | 7 | 49 | 4 |

It is convenient to use six figures of decimals, as they may also be read as whole numbers, meaning so much in a million.

VALUES OF THE WEAK SOLUTION.

| Permanganate of potash or chameleon solution. 0·2 grammes in 1,000 c.c. | Oxygen. | Iron *Fe.* | $FeO,SO_3 + NH_4O,SO_3 + 6$ Aq. | $KO,Mn_2O_7$. |
|---|---|---|---|---|
| c.c. | grm. | grm. | grm. | grm. |
| 1 | 0·000050 | 0·00035 | 0·00247 | 0·0002 |
| 2 | 0·000100 | 0·00070 | 0·00494 | 0·0004 |
| 3 | 0·000150 | 0·00106 | 0·00742 | 0·0006 |
| 4 | 0·000200 | 0·00141 | 0·00989 | 0·0008 |
| 5 | 0·000250 | 0·00176 | 0·01237 | 0·0010 |
| 6 | 0·000300 | 0·00212 | 0·01484 | 0·0012 |
| 7 | 0·000350 | 0·00247 | 0·01732 | 0·0014 |
| 8 | 0·000400 | 0·00282 | 0·01979 | 0·0016 |
| 9 | 0·000450 | 0·00318 | 0·02227 | 0·0018 |
| 10 | 0·000500 | 0·003535 | 0·02474 | 0·0020 |
| 100 | 0·005060 | 0·03535 | 0·24747 | 0·0200 |
| 1,000 | 0·050630 | 0·35353 | 2·47470 | 0·2000 |

In the oxygen column 6 and 3 may be left out. The first and under might be called the first quality of water; from 0·1 to 0·2, the second; 1 would be the 10th.



It is considered better to acidify the water before adding the permanganate; this is done by adding three drops or water-grain measures of sulphuric acid to 1,000 grains; some water will demand more; the object is to attain acidity equal to about 3 drops of sulphuric acid in 1,000 grains of distilled water. I find Dr. Miller says 50 grains of sulphuric acid of 1 of acid to 3 of water, added to 8 ounces of water. Acid enables the oxygen to act on more matter and more rapidly, and the calculations are made on the supposition that acid is used; the proportions from different waters are not much changed by acid. Alkalies prevent the action although they may prepare some of the matter to be more readily oxidized; when the colour has been difficult to see, the chameleon has been used with alkali instead of acid, in which case a green colour is obtained, which is more easily recognized in many cases and serves as a corroboration.

As an example of waters, No. 1 was ditch water, not clear; No. 2 was greenish; No. 3 was very green—horse-pond water. Treated with chameleon strong solution the results were,—

| | Alone. | With $SO_3$. | With KO. | With KO first, then acidified. |
|---|---|---|---|---|
| 1st. | 0·4 | 1·0 | 0·2 | 1·0 c.c. |
| 2nd. | 2·1 | 4·4 | 1·0 | 4·4 „ |
| 3rd. | 4·0 | 11·0 | 2·4 | 10·4 „ |

Manchester water decolorized 0·2 c.c. per litre to 0·05 at most, when 1,000 grains were used. The above numbers are cubic centimetres. If grains were used they would appear 15·4 times greater; referring to the table the amount of oxygen will be,—

For Manchester water with acid 0·000025 oxygen.
For 1st of the above - - 0·000500 „
„ 2nd „ - - 0·002200 „
„ 3rd „ - - 0·005500 „

Let us call the Manchester water 1, we have then—

| | | | | |
|---|---|---|---|---|
| 1st water | - | - | - | 20 |
| 2nd „ | - | - | - | 88 |
| 3rd „ | - | - | - | 220 |

which are abundant differences, although greater than will generally occur, as the waters were unquestionably bad.

If the weak solution were used, we should have in the above,—

| | Cub. Cent. | | Grains used | |
|---|---|---|---|---|
| Water. | Alone. | With $SO_3$. | Alone. | With $SO_3$. |
| 1st. | 4·0 | 10· | 61·7 | 154·3 |
| 2nd. | 21· | 44· | 324· | 679· |
| 3rd. | 40· | 110· | 617· | 1697· |

The numbers expressed in grains seem inconveniently high. This solution is too weak for very bad water. The amount of chameleon used ought to bear a very small proportion to the total water tested.

The oxygen column would of course be the same with both solutions. For the Manchester water it is 25 one-millionths of a grain if we use grains, of a gramme if we use grammes. It is calculated for an experiment with 1,000 grains of water or 1,000 grammes indifferently.

The Manchester water is an instance of very good water. It is believed that it is not necessary to seek a lower number than that here given, but each can use the solutions as he pleases. Care must be taken that protosalts of iron are not present. They decompose chameleon, and must be estimated; the amount which they decompose must be subtracted from the chameleon solution in estimating the organic matter.



Dr. Letheby informs me that he allows the water to stand with the permanganate for 24 hours, and that by multiplying the amount of oxygen consumed in this method by 8, he obtains very closely the amount of organic matter which is given by weighing. This may be found very convenient. It does not apply to the numbers here given for chameleon, as they are found rapidly. Let us take an example:—Water No. 3; multiplication of oxygen by 70 brings into grains per gallon, by 8 into grains of organic matter per gallon, $0{\cdot}0055 \times 70 \times 8 = 3{\cdot}08$ grains in a gallon; but had this water been allowed to stand with chameleon for 24 hours, the amount decomposed would have been greater, and the multiplication by $70 \times 8$ would have given a higher number than 3·08, which is decidedly too low for such bad water. (The exact quantity was not found.) It is well to estimate the slowly decomposing matter, and if not done by weighing, it may be done as Dr. Letheby does it, or thus; when the rapid destruction of the chameleon ceases, add a measured excess, let it stand 24 hours, and estimate next day by the iron solution the amount decomposed. The reasons are already given for believing that this slowly decomposing matter may be entirely innocent, and I have therefore looked on its estimation as only auxiliary. It is, however, valuable as indicating the amount of matter capable of becoming putrid, and the amount of time during which the water is capable of doing evil, supposing a certain amount of the impurity to be removed in a putrid state daily.

The water ought to be tried in the condition in which it is to be used; thus if it is to be kept before using, it should be kept before testing. If done both before and after keeping, the progress of putrefaction or of purification, as the case may be, will be observed.

As an example I may give the numbers obtained by examining an impure water lately sent to me. It contains—

| | Chameleon Solution Strong. Pts. to 1000. | | Amount of Oxygen. |
|---|---|---|---|
| *Putrid matter*, decomposing chameleon *instantly* without acid - - | 5·5 | | ·002750 |
| *Matter readily putrefying*, or decomposing chameleon rapidly with acid, 10·5; of this 5·5 are decomposed without acid, leaving - - | 5·0 | 10·5 | ·002500 |
| | | | ·005250 |
| *Matter capable of putrefying*, shewn by additional amount after 24 hours - - - | 40·62 | | ·020310 |

For immediate purposes, the most important number is 10·5, obtained in less than half an hour. For prospective purposes, the important number is 40·62, obtained in 24 hours. This is a very putrid water. The difference between 25 of oxygen in a million, as in Manchester water, and 20,000 in a million as here, is great. The figures are written as fractions to show their relation to the chameleon, but are better read as whole numbers.*

### *To test the Solutions.*

3·535 grains of pure iron dissolved in pure muriatic acid will decolorise 1,000 grains of the permanganate. As this salt, the protochloride of iron, does not keep well, it is better to have crystals of the sulphate of

* 0·001 per litre is converted into grains per gallon by multiplying by 70; ex. gr. 0·001 × 70 = 0·07 grains per gallon.



ammonia and iron, and to dissolve a weighed amount when required. The table shows how much permanganate is equal to a given amount of iron and of this salt.

### The Origin of the Organic Matter.

It is remarkable what a clear insight is given into the quality of water by simply boiling down a few thousand grains and burning the residue. We can by the eye and the smell detect humous or peaty acids, nitrogenous organic substances and nitrates, and estimate their amount to a very useful point of accuracy. There may be times when this is the only experiment that can be made. After doing this and trying other methods many hundred times, I still return to it as delicate and little liable to fail. The want of numerical results is a serious objection, rendering the plan unfit for use when public reports are to be made of the analyses, but it is an excellent guide for the chemist in his laboratory. We may even decide by it the animal or vegetable origin of the matter.

*Does the organic matter come from animals or vegetables?*

This is a question of interest and importance. The elements in both animals and vegetables are the same, and even the proximate principles are not to be distinguished at least in a state of partial decomposition as found in water. It is proposed to use the presence of the chlorides, and especially of common salt, as a guide which will be found nearly certain in some cases, and with proper precautions in others, quite certain.

We consume not less than 100 grains a day, or about 6 grammes of common salt; some give the amount much higher. This salt is daily given out.

From all animals there is a large outflow of salt. Their blood contains it largely; it is a necessity of their existence. Salt is the constant and indestructible accompaniment of the animal, living or decomposing after death. If much salt is found in water containing organic matter, nitric acid will generally be found also, and if not nitric acid, animal matter unoxidized, or both. In the case of dead animals organic matter is destroyed or retained in the soil, phosphates and other inorganic substances are also retained, the salt is gradually removed by water.

Pure spring or river water gives only a slight precipitate with nitrate of silver, which appears of a blueish tinge, not being dense enough to become white. (There must be a slight excess of pure nitric acid when testing for the chlorine.) When there is more than this slight precipitate, nitric acid is generally found, especially if the water has passed through porous materials.

These tests must be used and the inferences drawn with great discretion. We know that near the sea there may be found a certain amount of chlorides in the springs, rising according to circumstances, until the water becomes brine. The same thing occurs near great deposits of salt, such as in Cheshire and elsewhere. There are also saline wells scattered over most countries, the origin of whose chlorides is quite unknown to us. There is in the rain driven violently from the sea an amount of common salt sufficient on crystallizing to dim the windows of houses many miles inland. In manufacturing towns where coal is burnt, the rain contains more chlorides than rain in the country. Many large districts of tropical countries contain nitrates and common salt in the soil; but these salts in all probability result from oxidized animal matter. Chlorides are found in some districts



in this country rather in excess of the average from superficial causes. But notwithstanding all these exceptions, which appear for the moment numerous, I must still consider that the test is one which may be generally used.

In England it is almost universally the case that the presence of much chlorine in drainage water indicates drainage from animal matter, and no water containing chlorides to a great extent ought to be used without careful examination as to the source. One grain per gallon is too much, and is, in many places, to be suspected of being caused by impure drainage. Of course we must in this case, as in all inquiries, be careful that no disturbing causes intervene. In this country chlorides may be given out from manufactories in which are constantly made chemical experiments sufficiently large to interfere with our accuracy if we are not very careful.

Sewage contains chlorides, and the amount is the most certain mode of ascertaining the quantity of real sewage which is or has been present. In small sewer rivers the amount of sewage may be ascertained in this way when there are no manufactures giving out chlorides.

It may be supposed here that I am adding many qualifications, but the same may be done in the case of nearly all experiments. No experiment is of value unless it is viewed on all sides to prevent the admission of errors, and I do not know that more care is required in this case than in general. In the case of chlorides we learn readily the average amount in a district, either in the rain or the drainage, and we detect the smallest increase. Any amount of common salt above the average of the district obtained in a well in a city or camp or near habitations of men or animals, is an almost certain proof of impure drainage; when the clue has been followed up, I have found

the origin in a sewer or some such spot, times without number and for many years. The presence of the sea or of manufactories or of disturbed strata with mineral waters, will seldom, after all, cause any error with a careful person.

Nitrates are very common in small quantities. They are found in water from manured land, in gardens, wells near houses, and, as a consequence, in nearly all town wells; in great abundance near church-yards, if the drainage is direct. They are not necessarily found in sewage which has not flowed through strata. The amount from atmospheric sources is so minute that it will not interfere with any inquiry regarding the wholesomeness of water at present.

Although caution must be exercised in drawing conclusions from the presence of the chlorides, their absence may be held as conclusive against the presence of decomposed animal matter and excretions of animals in large quantities.

If chlorides and nitrates are found together in water we may take it for granted that animal matter has existed there or does exist in the water. Of course a very rigid scientific inquiry says at once that vegetable matter may be present, especially from grain or seeds, but practically this need not affect the question, especially in a sanitary point of view, because if this accumulation of vegetable matter occurred capable of giving as much nitrogen as animal matter, it would be sufficiently and, perhaps, equally hurtful when putrid.

If chlorides and nitrates are found in water still capable of decomposing chameleon, the presence of animal matter, or injurious gases or nitrites, may be assumed, a part only being oxidized.

If the chlorides and nitrates are present, but the power of decomposing chameleon absent, then the



animal matter has disappeared; but whether minutes or ages before is not shown by chemistry.

If the permanganate or chameleon is decomposed, whilst the chlorides exist in their normal quantity and nitrites and nitrates are absent, we may assume that vegetable matter is present and not animal matter.

If the chameleon is decomposed instantly, the matter is in a decomposed state and proportionately dangerous at the time.

If the chameleon decomposes slowly, the matter is nearly or entirely fresh, and may not be dangerous at the moment, but may soon become so. To find this the trial by standing may be made.

The decomposition of the chameleon may be caused by the organic matter present or by nitrites. The presence of nitrites or nitrous acid will show if the organic matter is only recently oxidized.

Generally there may be found organic matter and nitrites together, shewing that some is oxidized and some ready to become so.

Schönbein has found traces of nitrous acid in the efflorescence of walls. In judging of the time we must make allowance for this, and not judge from small traces such as he alludes to.

When nitrites and organic matter are found together, they may be estimated separately. The chameleon will be decomposed by both. 158 of chameleon solid is equivalent to 95 of nitrous acid, or 1,000 = 601. It will be necessary to find one of the substances separately, and to subtract it from the whole, in order to find the amount of the second.

The amount of nitrous salts may be found by using ozone paper, that is, paper with iodide of potassium and starch. The water to be tried is made acid with a little dilute sulphuric acid not more than three drops to 1000, and a drop put upon the paper. If nitrous acid is present it becomes blue. This

blue is obtained immediately, by putting a drop of the solution on ozone paper when there is 1 of $NO_3$ in 30,000 of water, and by waiting patiently, and giving time, it may be seen with much less.

In order to find how much nitrite is in water, the solution may be diluted until the reaction ceases to be distinct even after waiting. The amount in the water will then be 1 in 100,000. If, in another case, when we find the reaction distinct in water, we take 100 grains and add 900 to it, and find it beginning to be indistinct, the undiluted quantity must have been 10 times stronger than the diluted. The amount in the 1,000 grains is 1 in 100,000; the amount in the 100 grains is 10 times greater, or 1 in 10,000, and thus we may arrive sufficiently near to the total amount. The amount of water added in order to bring the reaction to the adopted minimum is the measure of the strength of the solution.

A test like this depends partly on the eye and partly on the delicacy of the test paper. The same result will be attained if the same eye and tests are regularly used.

The method of testing with paper is not so refined as the use of a larger amount of water, say 1000 grains; with this amount, the presence of 1 of $NO_3$ in $3\frac{1}{4}$ million of water may be detected on adding starch and iodide of potassium: 3 drops of sulphuric acid are also added to the 1000 grains, *i. e.* 3 grains by measure. If no nitrous acid is present, no blue colour will be seen with this amount. If nitrous acid is present, the colour will begin in a few seconds. Some may prefer one way and some the other.

The methods given of estimating the amount of nitrous acid are minimetric, proceeding by dilution instead of concentration. The value with gases is better known than in liquids, but it is believed that



it will be sufficiently exact with the latter in cases where pure scientific accuracy is not attainable and not necessary, and where it is important to save time, labour, expense and patience.

Suppose we find that a specimen of water contains 0·001 gramme of nitrous acid in 1000 grm., or in the quantity used, we find by calculation that this is equal to 0·000421 of oxygen, or as the table shows, to 0·842 of the solution of chameleon used.

Now suppose 1000 of the water decolorise 5 of chameleon, we must subtract from 5 the amount which would be due to the $NO_3$, 5·0—0·842=4·158, which then is the amount in c.c. of chameleon solution decomposed by the organic matter. 1 of $NO^3$ requires 0·421 of O to become $NO_5$.

0·001 of nitrous acid = 0·000421 of oxygen,
or 0·001684 solid chameleon,
or 0·842 of the solution of chameleon of ·2 in 1,000.

It will be seen that if we find the amount of O to which $NO_3$ is equal, we require only to multiply by 2000 to obtain the amount of solution of chameleon. But we may do it still more easily by simply multiplying the amount of $NO_3$ obtained by 842 as a whole number. This gives the amount of chameleon solution to which it is equal.

The estimation of both is interesting, but it is much more important to obtain the total chameleon used, as the presence of $NO_3$ must be considered a great objection to water, partly on its own account, and partly because of its origin.

It is to be observed that water containing much animal matter becomes extremely acid. It is a common thing to find water extremely clear with no apparent organic matter, even on standing, also extremely acid and retaining nitrates. I have found

it so filled that it appeared to flow less readily than pure water, and had a most nauseous taste. It was close to a churchyard, and was considered excellent water. This perversion of taste is difficult to understand, but it must be combatted; it is not natural and causes illness and death. This acid water is an excellent solvent of metals, and if lead is present the solution becomes rapidly so strong as to taste of the metal. This acidity in conjunction with nitrates does not, so far as I know, exist when the organic matter is very old, probably because the organic acid is oxidized. Some of it, probably all, is caused by the formation of organic acids. Similar organic, and entirely colourless solutions, acid, but free from nitric acid, may be found by allowing peaty water to stand without evaporation, but in contact with air, for some years.

In the nitrous waters no organic matter will be apparent on burning unless there is more than the acid can oxidize. A very white ash is, therefore, a suspicious circumstance, and unless the matter is extremely free of organic matter this white ash is a certain indication of nitric acid. If there is a great deal the ash melts readily. By white is meant white as soon as it is incinerated.

These acid nitrous waters contain phosphates generally. Phosphate of lime, or even alumina and iron, may be precipitated from them by ammonia, if they are direct from animal matter, and have not passed through porous matter sufficient to deprive them of some of the less soluble substances.

There are many interesting questions to be asked regarding nitrates. I am inclined to think that their presence shows that the most dangerous state of the organic matter is past. When they appear in any solution the chief escape of putrid gas seems to have ceased; the water may, however, be still dangerous



to use, and of course is revolting to the imagination. It will be well to examine how far these suspicions are correct. When complete nitrification has occurred, all that class of evils arising from organic matter direct are prevented.

This paper was written for a special purpose, and does not pretend to say all that may be said regarding organic matter in water. As to the purification there are many points to be observed. It has been generally held that nitric acid is the ultimate form which nitrogenous substances of organic origin assumed, but we must remember that plants have the power of decomposing nitrates, and of using the nitrogen for their own purposes. There are conditions, therefore, in which the organic matter may be entirely removed from water, and when we remember how readily soils absorb phosphates and potash we easily see why common salt should chiefly be left. The oxygen of the nitrates may even be used for the purification of water, whilst the earthy salts and phosphoric acid are precipitated. This operation of decomposing the nitrates seems to be the final one which is at hand for purifying water, and probably explains the marvellous results we frequently see. This decomposition is performed by living plants apparently, but some observations seem to indicate that the effect may be produced by the organic dead matter in water. The nitrites found in plants by Schönbein may possibly have been formed from the nitrates by deoxidation.

The exact length of these processes in nature is not yet found, but it may be remarked that in any case it is well not to depend on such purification being manageable in our hands. Nature purifies best very slowly and in darkness, and although the chlorides are not removed they are rendered palatable when the water is highly charged with car-

bonic acid, which acid takes the place perhaps of previous carbonaceous impurities. Allowing however for all the power which the filtration into deep soil may produce, it still remains true that the most agreeable of all water is that which has fallen from the clouds on a not very impure surface, and been afterwards elaborated by oxidation in porous strata. If we follow this out we shall find that water poured on the ground very impure may be taken out of wells at some distance, absolutely pure from all trace of its origin, the chlorides and some alkaline sulphate but chiefly common salt excepted. The amount of sewage which a district will bear without allowing the wells to be tinged is a matter easily ascertained. I do not generally look for ammoniacal salts as an indication of organic matter; they may occasionally be examined with profit. If I gave my reasons for paying them less attention, I fear I should arrive at other points and find it difficult to cease. Professor Way has shown the absorptive power of the soil for ammonia, potash, and other substances accompanying organic matter.

The whole resolves itself, therefore, into the following:—

Allow the water to stand a little, to see if vegetation or putrefaction is developed, so as to be able to describe the quality of the organic matter.

Boil down some of the water, and burn the ash, to obtain a general idea of the nature of the organic matter, smell of burning, and appearance of ash.

Weigh (in some cases) before and after burning to obtain the amount of combustible and volatile matter.

Test with chameleon of the strength of 2 to 1000, using a large quantity of water if convenient, but giving the amount for 1000 or for a gallon.

Give the amount of chameleon decomposed without acid, and the amount decomposed with a few



drops of acid added to the water, noting rapid and slow action and the oxygen used.

Look for chlorides and nitrates. The chlorides, with proper regard to circumstances, indicating animal matter. Nitrates do not seem to be found without chlorides.

Estimate the amount of nitrous acid. If there is much, it indicates recent organic matter or oxidation going on. If the organic matter is recent some may be found unoxidized, or the source of it may be sought. Seek acidity and phosphates.

By this means we obtain, in some cases with certainty, in some with probability,

1st. The *organic matter decomposed or putrid*, or at least certain gases which it has left behind capable of decomposing permanganate.

2nd. *Organic matter readily decomposed* and probably ready to become putrid.

3rd. *Organic matter slow to decompose*, but still, in many cases, capable of becoming putrid.

4th. From the nitrites, *recent organic matter.*

5th. From the nitrates, *old organic matter.*

6th. *Vegetable organic matter.*

7th. *Animal organic matter.*

In most, if not in all cases, the nitrites and nitrates may receive the above characters. The amount of organic matter cannot be estimated from the nitrates, but we may from them estimate the minimum easily.

These short notes of views are given as the experience gained in this country. A larger field of observation may show them to fail.

Seeing nothing better at present, we may believe that water of which 1000 take 50 one-millionths (0·000050) of oxygen from chameleon, is sufficiently free from organic decomposing matter. We cannot tell what is the least amount which renders water unfit for use, but 0·005 of oxygen, which may be

read 5000 times a millionth part or 5000 millionths, prove water to be extremely bad. The water which took this latter amount was impure to the eye. Between 50 and 5,000 we have 100 stages. We may call all below 50 No. 1, or first-class water, from 50 to 100 second-class, and so on with every 50. It is probable that the first twenty will be the only numbers actually required, as the sight may determine the others.

Experience will show if it is necessary to divide the first class into two parts, such as 1A and 1B; it will not be necessary with the others.

The nitrites may be considered as hurtful as organic matter until their effect is better known. Their presence is suspicious and their company bad.

It would be safe to treat the nitrates in the same manner, until more information concerning their effects is obtained.

I cannot doubt at present that the organic matter when thoroughly nitrated is deprived of most of its evil qualities; for example, it can no longer affect the atmosphere, and it cannot act like putrid matter when used with food. The actual objection in a physiological point of view must be considered by medical men. My own objections are, that a very little nitrate renders the water vapid, and that the imagination revolts from it because of its origin. I believe there are other actual objections, but leave it to others to prove them. Some information concerning their presence in the waters of India would be valuable.

# APPENDIX.

## Abridged Form of Report with French Measures.

When there is plenty of water take 1000 grammes or a litre, and use the strong chameleon first. If too strong use the weak.

| | Chameleon c. c. | Oxygen. | |
|---|---|---|---|
| Putrid matter - - | - 1·1 | 0·000550 | or 550 in a million. |
| Decaying readily 2·5—1·1=1·4 | | 0·000700 | 700 „ „ |
| Total after 24 hours | - 6·0 | 0·003000 | 3000 „ „ |

If nitrous acid is present the first line may be divided into two parts. Suppose this acid took 0·5 of chameleon :—

| | |
|---|---|
| Nitrous acid - - - | - 0·5 |
| Putrid matter - - - | - 0·6 |
| Putrid and instantly decomposed. | 1·1 |

Amount of chlorides and nitrates considerable, and not found in surrounding water. Animal matter probable in certain water: after standing smells putrid: or otherwise.

Amount of vegetable or animalcular life developed.

## Abridged Method of Procedure with Grain Measures.

Take 10,000 or more grains, if the water is not very bad :—

| | Chameleon in grains. | Per 1000. | Oxygen. |
|---|---|---|---|
| Putrid matter - | - 11 | 1·1 | 0·000550 |
| Decaying readily 25—11=14 | | 1·4 | 0·000700 |
| After 24 hours - | - 60 | 6· | 0·003000 |

For the total quantity add, say, 10 cub. c. to the litre, and let it stand 24 hours. 10 c. c. of chameleon would be decolorized by 247 parts of a solution of sulphate of ammonia and iron of 1 to 1000. If after standing 24 hours with the water the 10 c.c. are decolorized by 150 parts, then we say 247 : 10 :: 97 : 3·93; then 3·93 is the amount, and this is equal to oxygen 3 =0·001500

·9 =0·000450

·03=0·000015

0·001965

The same if grains are used.

APPARATUS.

The apparatus ought to be wholly in grains or wholly in French measures, when persons are not very familiar with both. A convenient set will be:—

A litre measure.

A bottle containing more than a litre, in which the experiment is performed, and the water shaken when required.

A Mohr's burette of narrow bore and fine graduation.

A dropping tube with tenths of a cubic centimetre at least half an inch long clearly marked.

Pure crystallized permanganate of potash.

Pure sulphate of iron and ammonia.

---

# WHAT FOOD TO EAT.

BY

W. W. IRELAND, M.D.,

(*Late of H.M. Bengal Army.*)

AUTHOR OF THE "HISTORY OF THE SIEGE OF DELHI," AND OF "RANDOLPH METHYL: A STORY OF ANGLO-INDIAN LIFE."

---

LONDON:

FREDERICK PITMAN, 20, PATERNOSTER ROW, E.C.

1865.

F. PITMAN,
20, PATERNOSTER ROW, E.C.

# PREFACE.

INCAPACITATED, by a wound received in India, from the active duties of his profession, the author would feel much gratified if he could still be of use to his countrymen, and sincerely hopes that the advice contained in these pages will be of some little service.

The relative value of butcher's meat in the dietary of a family must, at the present time, be an anxious question in many households. The subject likewise has relation to public health, to the dietary of prisons, and to the victualling of all large bodies of men fed upon a uniform scale.

It has also a certain connection with several points in political economy and history.

The author is aware that this attempt is merely rudimentary, yet he sincerely believes the views upheld are, in the main, correct. Though not inclined to give way to indiscriminate and unsupported censure, he will be ready carefully to consider every fair and candid objection; and will try to gain further knowledge from the advance of biological science, which he will do his best to communicate to the public.

MELROSE, *November*, 1865.

# WHAT FOOD TO EAT.

It has been most truly said, that the question of human food is of all scientific inquiries the most important.

The exercise of bodily and mental power so materially depends upon the nature of one's diet, that it is marvellous more attention has not been paid to the subject by the public. The question is one which it is difficult to approach with an unbiassed mind. The kind of food a man eats is so closely connected with his habits, pleasures, and profit, and a radical change in his dietary might involve so many disadvantages of a personal and social character, that, if he ever examines the subject at all, he almost always begins with a strong desire to arrive at certain foregone conclusions. Fortunately the progress of biological science has enabled us to reach several incontrovertible facts, which render futile much of the dogmatism of past generations, and which will yet put to shame many of the thousand errors of vulgar ignorance.

The question whether man ought to live upon a mixed animal and vegetable diet, or upon a purely vegetable one, has occupied the attention of philosophers long before the days of Pythagoras; and in spite of the accumulation of an immense number of observations, is still a matter of disagreement. If the reader wishes fully to comprehend the question, he must follow its bearing over the scientific basis of chemistry, anatomy, and physiology; and when he has completed this introduction, it is to be hoped that he will be prepared to understand the less difficult and more practical parts of the inquiry.

Some may imagine that such an introduction might be dispensed with; as the Irishman, who on being told that the first lesson in dancing cost a guinea, and the second half a guinea, wished to begin with the second; but there is no royal road to science, and no popular one either. If any one wishes to be put in a position to exercise his own judgment upon a question like this, instead of submitting to the response of some medical oracle, he must endeavour to understand the matter of the first few pages of this paper. He may learn it from some other work, undoubtedly, but learn it he must, and the study cannot be made without a certain amount of mental effort. As well—to use an illustration of Victor Cousin's—might the dove expect to fly without the assistance of the air which both sustains and impedes her flight, as a man might expect to have any fixed ideas upon a question of this sort before he possesses a certain amount of introductory knowledge.

We will, however, see if we cannot give our unprofessional readers the necessary amount of knowledge without seriously trying their patience.

Three separate kinds of aliment are needed to support life:—the respiratory, or heat-givers; the nitrogenous, or flesh-formers; and the mineral, which goes to form the harder parts of the body, such as the bones and teeth, and to supply some salts necessary to the composition both of the fluids and solids of the body.

The respiratory food, or heat-giving food, absorbed into the system enters the blood, when the carbonised matter it contains is subjected to the action of the oxygen of the air, which enters the arterial system through the lungs. The carbon combining with the oxygen, produces carbonic acid; and the free hydrogen* of the food, combining with the oxygen, produces water.

In this, as in every chemical combination, heat is given out. This is the main source of the animal heat; consequently those products which are richest in carbon are the most fitted for maintaining the

* For the sake of convenience, the free hydrogen of the food is generally calculated as carbon.



temperature of the body. The chemical compounds made use of for this purpose in the human organism are fat or oil, starch, sugar, gum, and alcohol. All these substances can be derived from the vegetable kingdom. Fat is found indifferently in the flesh of animals, and in certain vegetable products.

Liebig says, in his Chemical Letters, that the equivalent of the fat of beef or mutton is found in cocoa beans, that of human fat in olive oil, the principal ingredient of butter in palm oil, and that of horse fat in train oil and in certain oily seeds. Fat is by far the best food for keeping up the animal heat: forty parts of fat, it has been calculated, will give out as much heat as ninety-seven parts of starch or a hundred parts of sugar, just as it would require more peat than pinewood to keep a room heated. The other heat-givers may—for all purposes of nutrition at least—be considered as being entirely derived from the vegetable kingdom, always excepting milk sugar.

Thus it appears that the materials for supplying the seven or eight ounces of carbon, which in our climate are required every day to keep up the bodily heat, can be derived either from the vegetable or from the animal kingdom. The Esquimaux, who lives entirely upon flesh, is obliged to use a very large quantity of animal oil in order to keep up his animal heat in the snow hut in which he dwells; but this could be as effectually done by the use of vegetable oil: bread made from maize flour, which contains a large proportion of oily matter, having been found by Sir John Richardson, in his Arctic voyage, to be much more efficacious than fat meat, both in supporting the animal heat, and repairing the daily waste of the tissues. The general opinion that man may conveniently live upon a vegetable diet within the tropics, while he requires a greater proportion of animal food on approaching the poles, is almost exactly the reverse of the truth. Meat, unless it be very fat, is but a poor heat-giver; and wheaten flour, oatmeal, or maize are amply sufficient in all, save the most inhospitable regions, to maintain the requisite bodily temperature.

The flesh-formers are those parts of the food which go to make up the softer tissues of the body, such as the muscles, skin, brain, and nerves. These flesh-forming compounds, in addition to carbon, hydrogen, and oxygen, all contain a considerable proportion of nitrogen, and a small proportion of sulphur. Caseine, albumen, and fibrine are the forms in which these flesh-formers are known to occur. They are all similar in chemical composition, and readily transformable into one another within the living organism. They are all, primarily, products of the vegetable kingdom. If they are found in the tissues of animals, it is simply because they have passed into their systems from vegetables without decomposition. They are highly complex bodies; and unlike the heat givers, such as fat, starch, and sugar, which can be formed out of the decomposition of the flesh-formers, *these* can never be formed out of fat, starch, or sugar. A cow takes up the albuminous matter in the grass, separates it from other vegetable products, and converts it into animal albumen and fibrine. If the cow be killed by a tiger this albumen and fibrine become a part of the muscles of the tiger; the tiger is tracked and shot, and its carcass is eaten by the jackals. The jackal is killed in its turn, the original fibrine and albumen in the seeds of the grass pass into the body of a crow; and supposing the crow is not eaten the fibrine and albumen of its tissues are either decomposed and pass away in the different excretions of the bird; or, if the bird be killed and left to putrefy, the fibrine and albumen are resolved by the air into the original elements from which they have been built up by the grass.

"It may justly raise a question," writes Dr. Lyon Playfair, "if it be right to consider all the flesh-formers of equal value, whether they are derived from vegetable or animal aliments. Would, for instance, the 22 oz. of caseine, in 100 oz. of split peas be equal to the same amount of albumen and fibrine found in 100 oz. of beef? In all probability they would not; for when nature presents us with three materials of like composition, fibrine, albumen, caseine, she has no doubt specific functions for them to perform in building up the



animal frame. But experience certainly shows us that if we present all these three materials to the body, it can exercise, labour, and be kept up in strength, whether they are derived from animals or from vegetables." In truth, a question of this kind is beyond the reach of the chemist, who has simply to decide upon the varying composition of different substances; and until he can point out some chemical difference between vegetable and animal fibrine, or albumen, he has no right to assume such a difference. We observe that vegetable food is most nutritious to some animals, while it is uniformly rejected by others, and even find the explanation of this in the structure of the alimentary apparatus in each. A rabbit can at first only live upon milk, but its stomach soon becomes unfit for such nourishment, and it will then feed upon beans and peas, which a lion or a tiger would refuse, even if starving; yet the beans and peas contain as much nourishment, of the same chemical composition in 100 parts, as the flesh which supports the lion; and without the assistance of extraneous observation—of anatomy and physiology—a chemist would be utterly unable to show any reason why a lion ought to prefer flesh to peas and beans.

For what kind of food does man appear to be the best fitted, by judging from an examination of his alimentary apparatus?

Had I not bestowed great care on the study of this question, I should not venture to differ from some authorities who have stated that, from an anatomical examination of the human species, compared with that of animals, whose natural diet is well ascertained, one can fairly conclude that our species is omnivorous. As Mr. Lawrence, in his "Lectures on Man," has observed: "This statement seems rather to have been deduced from what we have learned from experience on this subject, than to result fairly from an actual comparison between man and animals."

Man varies from every other species at present existing, in having a row of teeth which rise to a nearly equal line. In carnivorous animals the lower jaw bone is so jointed that it can only move up

and down, like a pair of scissors. Their back teeth scarcely present any flat surface, rising at the crown in sharp protuberances. They are thus adapted, not so much for masticating as for cutting or clipping. The canine teeth are large, and are used as weapons of offence. On the contrary, in man, as in herbivorous animals, the roundness of the articulating head of the lower jaw admits of a rolling motion, which enables the molar, or back teeth, whose grinding surfaces are opposed to one another, to masticate the food, and thus subject it more perfectly to the influence of the saliva. This fluid is principally useful in dissolving starch, a substance which is not acted upon by the gastric juice. The salivary glands are always small in carnivorous animals, save when, as in the case of the serpent, the woodpecker, and the ant-eater, they are used as a means of securing their prey. On the contrary, they are large in herbivorous animals, such as the horse, the cow, and the rabbit. It has been observed that these glands secrete very little saliva during the time the young animal subsists on milk.

The human teeth, in their structure and development, very nearly resemble those of the higher apes, such as the orang-outang and chimpanzee. The canine teeth in the whole of the monkey family are large and formidable.

In flesh-eating animals the intestinal canal is much shorter than in those which feed on herbs. The food of the former is more rapidly absorbed, and would be more inclined to putrefy, if it remained long within the intestines. The stomach of a carnivorous animal approaches more nearly to a pouch or dilatation of the intestinal canal, and is fitted for a rapid passage and easy egress to the food.

The stomach of a herbivorous animal is a sack lying oblong to the descending tube of the œsophagus, whose entrance is nearer the middle of the stomach. In grass-eating animals the stomach is very large, and often complicated in structure. In animals living in great part on roots and seeds, such as the hare and rabbit, the stomach is simple, though much more dilated than in carnivorous animals. The reason why the intestines are large and complicated in herbivorous animals obviously is, that, along with their food, they take in a large amount of vegetable fibre, from which the nutritive parts of the food require to be separated by a long and tedious process of digestion. Those animals which use a more concentrated food, such as fruits or succulent roots, do not require so large and complicated a digestive apparatus. On this account, the intestines of birds who live on seeds are often no longer than in those species which feed on flesh.



The stomach and digestive apparatus of the higher anthropoid apes approach to the appearance of those of man much more nearly than those of any flesh-eating animal. The whole length of the intestine is much greater, both in man and in the monkey, than in carnivorous animals. The cæcum and colon are, likewise, more capacious.

In ruminant animals the intestinal canal is from fifteen to twenty times the length of the body; in the carnivora it is about four times the length of the body; in man about six times; while in many rodents and monkeys it is shorter than in man. Hence, we may fairly conclude with Cuvier that the natural food of man, judging from his structure, appears to consist mainly of the fruits, roots, and other succulent parts of vegetables.

The assertion that monkeys are omnivorous animals, seems to be repeated more with the view of avoiding an embarrassing physiological question than with the desire of giving due weight to the real facts of the case. Admitting that some of the higher classes of apes really eat the eggs and young of birds, it is not the less true that they derive their nourishment almost entirely from the vegetable world, while those monkeys that partly live on insects are distinguished by teeth which in their form approach more nearly to those of the carnivora. The vegetarians might feel satisfied if it were admitted that man was by his structure as little fitted for eating flesh as the orang-outang or gorilla.*

* The gorilla, the most ferocious of apes, seems purely a vegetable feeder. An American writer, quoted in the *Dietetic Reformer*, vol. ii. No. 19, says of the young

But it is impossible to leave out of sight that man is gifted with a brain, and possesses hands enabling him to separate the more nutritious parts of every substance which promises him food, and to prepare it, by cooking and other means, for the action of the juices and absorbents of the intestinal canal. Only in conditions the most wretched and helpless does man live upon such food as could support life without culinary preparation. How deplorable would be his condition if, as in the golden days of Ovid, man lived upon acorns and cornels! and how poor the nourishment, even from his favourite cereals, had not his ingenuity prompted him to invent a variety of expedients for separating and cooking the nutritious material stored up in the seed for the nourishment of the embryo plant.

Let us now consider the physiological effects which follow the eating of animal and of vegetable food.

After the food has been subjected to the action of the teeth and the saliva, it passes into the stomach, where it is acted upon by the gastric juice which oozes out to receive it. The solvent power of this fluid is assisted by the motions of the stomach, which chases the food about till it is reduced to a fine pulp, which is then allowed to pass through the pyloric orifice of the stomach into the small intestines. Now digestion is accomplished more easily with vegetable substances than with the ordinary flesh meats. From the well-known

ones: "I have never been able to tame any of them, or to accustom them to eat anything but wild nuts and berries of the forest. Though one would naturally suppose from the canine teeth of the ngina, that he sometimes lives on meat, I must say that I never met in the stomach of any specimen anything else than vegetable matter, such as nuts, wild berries, and fruits and leaves." Yet Owen tells us the dentition of this animal approaches more nearly to the carnivorous type than man. "The apes and monkeys," remarks this great anatomist, "which man nearly resembles in dentition, derive their staple food from fruits, grain, the kernels of nuts, and other forms in which the most rapid and nutritious tissues of the vegetable kingdom are elaborated; and the close resemblance between the quadrumanous and human dentition shows that man was, from the beginning, adapted to eat the fruit of the trees of the garden."



experiments of Dr. Beaumont upon a man whose stomach had been opened by a wound, and which opening never closed, it appears that soft boiled rice is digested in an hour; barley soup in an hour and a half; boiled tapioca, barley and milk in two hours; potatoes and beans in two hours and a half; while chicken broth and roast beef require three hours; roast mutton, three hours and a quarter; boiled veal, four hours; and roasted pork, five hours and fifteen minutes. Tripe was, however, reduced in one hour, and fish seemed as quickly digested as most vegetable substances. New white bread seems to be peculiarly difficult of digestion. But it must not be forgotten that digestion is not completed in the stomach. In passing from it into the small intestines, the food is acted upon by the copious secretions of the pancreas and liver, as well as by the secretions of the glands of Liberkuhn and Brunner.

It is the function of the pancreatic fluid to act upon the fatty portion of the food; and thus, while the starch of vegetable substances has undergone the agency of the saliva, the fat of animal food has to wait for the corresponding action of the pancreatic fluid. Besides, animal substances are much tougher, more difficult of mastication, and not so easy to dissolve. Chopped meat is always easier digested than meat eaten in larger morsels, and ought to be preferred by persons who have weak stomachs. The food continues to be turned over by the motions of the intestines, and is absorbed by the lymphatics, which spread themselves over the surface, and collect in the lacteal duct, through which the whole nourishment of the body is then poured into the blood.

It will appear, if this rapid view of the case be correct, that the opinion that man is more adapted to a mixed animal and vegetable diet than to a purely vegetable one, cannot derive assistance from the observations of chemistry, anatomy, and physiology. On the other hand, such an inquiry utterly fails to confirm the assertion of the vegetarian, that animal food, even in a small proportion, is injurious; though it may be fairly conceded that up to this stage of the controversy the vegetarian has had the advantage. Vegetarians have a

right to complain of the mass of prejudices against which they have to combat; and they have again and again given lessons in the mere rudiments of science to men from whose scientific reputation something better than reckless assertion and false deduction was to be expected.

Apparently, it is easier to make the discoveries of a Bell or a Lavoisier, than to reason against the feeble sophisms of custom and prejudice. The unfair dogmatism and superficial and hasty assertions of some scientific and medical men are even more deserving of contempt than the notion of the ignorant vulgar, that a vegetarian is a man who lives upon potatoes, turnips, cabbages, and broccoli. But it will be necessary at this point to give our reasons why the vegetarian theory of diet cannot be, and ought not to be, reduced to practice.

There is too wide a difference between man and the other animals to allow us to decide the question by a mere examination of his teeth and alimentary canal. Nowhere does man subsist upon the food which, from such data, might be safely prescribed for an unreasoning brute. If within the tropics a fanciful philosopher might find the natural and unsophisticated food of man, he would be very ill-pleased if forced to subsist himself upon this theoretical nourishment. No argument from the mere anatomical appearance of the alimentary canal can be pushed so far as to prove that man ought to abstain from flesh meats, when their harder parts are carefully separated, and they are adapted by cutting and cooking for the food of man. Even if it be granted that man, anatomically considered, seems better adapted to live upon a vegetable diet than upon an animal diet, what right has any one to suppose that he is totally unfit for the moderate use of flesh? We must refer the matter to experience; but experience proves that man can exist and maintain a high amount of vigour upon an almost exclusively animal diet. From the poles to the equator, countless tribes have existed, and still exist, whose main nourishment is the animals which they kill in the chase, and in whose destruction they



exhibit a high amount of strength, courage, endurance, skill, and invention. Shall we say, then, that these tribes are living upon a diet unfit for their nature? and should we advise them to abandon their present method of living?

Let us consider at once what would happen if vegetarianism were admitted as a truth of universal application. Grant the thesis that man ought only to live on herbs, and consider attentively the changes which would follow on the face of this earth. "It is a mistake," remarks Dr. Pickering,* "to suppose with many that pastoral or nomadic life is a stage in the progressive improvement of society. The condition is inscribed on the face of nature, and widely extended regions minister to the wants of man, where, nevertheless, cultivation is impossible. Take, for instance, the vast interior of the Eastern Continent. We have, in the first place, a great desert tract extending through Northern Africa, Arabia, and Western India, the domain of the Barabra, Tuarick, and Arab. The presence of man in this terrestrial void is often solely dependent on the milk of the camel. Next follows, on the north and east, a pastoral region of still greater extent, where the face of nature is somewhat softened, so that the horse and bullock can obtain sustenance, and hence the development of the Tartar or Scythian tribes."

Thus it appears that, supposing the vegetarian theory to be correct, entire continents would require to be abandoned ere their inhabitants could dream of obeying the laws of their existence; and all mankind would be forced to collect in those regions which are fit for agriculture. Even in the most fertile countries of the world, such as India, there are large tracts which can only give grass enough to feed cattle during the rainy seasons, or which are only fit for supporting fleet animals, like deer and antelopes, who can rove about to crop here and there the scanty herbage; and the Laplander could not exist without his large herds of reindeer, which feed upon lichens and other vegetation totally unfit for human food.

* "Races of Man." Bohn's Edition, p. 5.

Here, it is clear, no one can dwell but the hunter and herdsman; and in some of the most civilized countries of the world, such as Switzerland, Scotland, and France, there are vast tracts of land utterly useless to a nation of vegetarians, but which afford abundant sustenance to a pastoral people.

It is a favourite notion of the vegetarians that the adoption of their views would prevent a great deal of the cruelty to which the animal kingdom is subjected by man, who is painted as the ruthless destroyer of the whole creation—the being who ferociously sacrifices the animal creation to a perverted appetite. Naturally gentle and frugivorous, says the vegetarian, man has placed himself, by this perversion of taste, on a level with the wolves, without having the excuse which may be made for them.

> "They, too, are tempered high,
> With hunger stung, and wild necessity;
> Nor lodges pity in their shaggy breast.
> But *Man*, whom Nature formed of milder clay,
> And taught alone to weep; while from her lap
> She pours ten thousand delicacies, herbs,
> And fruits, as numerous as the drops of rain,
> Or beams that gave them birth; shall he, fair form,
> Who wears sweet smiles, and looks erect on heaven,
> E'er stoop to mingle with the prowling herd,
> And dip his tongue in gore?"
>
> THOMSON.

Finer lines than these never were written; yet a moment's reflection will make it clear that if man did not kill animals in order to eat their flesh, he must destroy a very large number of them in order to defend his own existence. Tigers, wolves, and other beasts of prey are, as far as possible, extirpated in every civilized country; and, especially after their disappearance, those animals which may be classed under the head of game, if not systematically destroyed, would soon become numerous enough to devour all the crops on which man was to exist. And it is not likely that the day will ever



come when farmers will shoot or trap hares and partridges, and throw their carcasses on the dunghill. Further, if men gave up using butcher's-meat, graziers might indeed cease rearing cattle; but would not this very considerably diminish the amount of animal life and animal enjoyment on the face of the earth? The sheep and the ox lead a quiet and happy existence, protected from the rage of wild-beasts, as well as from the failure of food to which they would have been subjected in the undomesticated state; and surely the pain of their death-blow from the butcher is less than what they would endure had they been left to perish from disease, from starvation, or even from old age. It is undeniably a law of nature that higher organisms should supplant lower ones, either by using them as food, or by seizing upon and monopolizing their means of subsistence. In the case under consideration, man must, as a general rule, either exterminate the species, or support himself by allowing the individuals to enjoy life for a certain term, and then killing them for his use. If man restrict himself to a purely vegetarian diet, what is to become of the immense fisheries of the herring and cod, which form so profitable an employment to the inhabitants of our coasts, and afford such an abundance of cheap and nutritious food? And are we to lose all the products derived from the animal kingdom, such as leather, wool, tallow, and whale oil? The truth is, vegetarianism could not possibly be carried out on the grand scale.

Vegetarians may exist very usefully among people who practise a different rule of diet, as the Brahmins do by the side of the flesh-eating Mahomedans of India, or the low-caste Hindus. But nowhere on the great continents, or in the larger islands of the world, nowhere, perhaps, save on some of the isles of the Pacific, could we expect a race of pure vegetarians to exist. Even those Buddhist nations, such as the Burmese, the Ceylonese, the Chinese, and the Japanese, either have tribes among them who use flesh and fish, or, in despite of their own religion, they have themselves been prompted by common sense to live in part on animal diet.

It will now be necessary to attempt to determine, from the facts

we possess, what are the effects of a purely animal diet upon the human constitution. Remembering the known chemical identity of animal and vegetable food, we need not be surprised if we find no very marked difference between the effects of an animal diet, and those of a vegetable diet. Even in the lower animals, species are not uncommon, which feed, indifferently, upon animal or vegetable products. In the case of the bears, we have animals which, from the structure of their teeth, would seem to be almost entirely frugivorous, but which, nevertheless, will, when pressed by hunger, hunt for flesh. The polar bear, the largest and most formidable of the species, feeds entirely upon flesh, though in captivity it, like the rest, thrives upon vegetable food.

Nevertheless there are, as regards the human race, certain differences discernible between the effects of an animal diet, and those of a vegetable diet. It is deplorable that these differences have been so little studied, and that so much has been left to flippant observation and hasty deduction. It may perhaps be necessary to inform the unscientific reader that many of the results which have been given to the world have not been ascertained with sufficient exactness to entitle them to take the rank of scientific truths.

There is no doubt that a purely flesh diet would not agree with man in the civilized state. "Fifteen pounds of flesh," says Liebig, "contain no more carbon than four pounds of starch; and while the savage, with one animal and an equivalent weight of starch, could maintain life and health for a certain number of days, he would, if confined to flesh alone, in order to procure the carbon necessary for respiration, be compelled to consume during the same time five such animals. Man, when confined to animal food, respires, like the carnivora, at the expense of the matters produced by the metamorphosis of organized tissues; and just as the lion, tiger, and hyæna, in the cages of a menagerie are compelled to accelerate the waste of the organized tissue by long-continued motion, in order to furnish the materials necessary for respiration, so the savage is, for the very same object, forced to make the most laborious exertions, and go



through a vast amount of muscular exercise. He is compelled to consume vital force merely in order to supply matter for respiration." This exercise is taken without any consciousness of its necessity.

Animal food has undoubtedly a stimulating effect upon the nervous system. The Guachos of South America live almost entirely upon beef; but as they pass the whole day in the saddle, continued exercise taken in a high temperature prevents them suffering inconvenience from such a diet. Darwin, who tried this manner of life, found that he could subsist tolerably well on an animal diet, but that it would only agree with him when combined with hard exercise in the open air. Alexander, in his travels in Southern Africa, gives an account of several native hunters, who lived almost entirely upon flesh. They were men of the most extraordinary athletic powers, and so fleet that they could run down and kill zebras. Boxers, when in training, live almost entirely upon flesh, at the same time taking very severe exercise. The Roman gladiators, according to Celsus, subsisted principally upon flesh, though the Greek athletes appear to have lived mainly on a farinaceous diet. There is little doubt, from these and innumerable other facts, that the highest bodily vigour may be maintained upon an *almost* purely animal diet, but a purely animal diet would certainly render men liable to scurvy. It was the want of fresh vegetables that made this disease so rife amongst the soldiers during the Crimean war. Some hunting and fishing tribes, as the Samoides, Fuegians, and Kamschatdales, have become weak upon an animal diet, from their supply of food being generally uncertain, and from their remaining for lengthened periods either in a half-starved state, or living upon ill-cured or half-putrid flesh. It may be questioned whether the restlessness and taste for out-door exercise which follow a purely animal diet are favourable for the highest activity of the brain. Those nations who derive their chief nourishment from flesh meats, have been renowned more for their skill in hunting, and in the arts of war, than for their skill in the arts of peace, which latter arts are indeed almost incompatible with their manner of living.

A flesh meal raises the pulse four or five beats higher than does a vegetable one, and the animal heat one degree higher. More oxygen is used by the lungs, and more carbonic acid is given out. An animal diet increases the number of the red globules of the blood, but as the quantity of the albumen and fibrine is not augmented, it is not clear whether this is any advantage. The proportion of urea in the secretion of the kidneys becomes greater; and as the production of uric acid is also increased, there is a tendency to gout and gravel where men take a large quantity of animal food without sufficient exercise. The tendency towards irritability of the system is also increased, which leads to several nervous diseases. The teeth are more liable to decay with flesh-eaters; but a little extra care in cleaning would probably suffice to obviate this.

Satisfied with the partiality of my countrymen for their roast beef, and very little afraid of their passing over *en masse* to the vegetarians, I have been disposed to deal lightly with these amiable *doctrinaires*.* One thing which ought to be reprehended in the vegetarians is the vulgar appeal made to the terrors of the ignorant by representing that animal food is the source of diseases which they ought to know are really, at least in their severe form, of rare occurrence, such as the intestinal worms, whose origin has been popularised in the recent treatise of Dr. Thudicum, inserted in a Blue Book. Now here they overlook two facts, namely, that the ova of parasitic animalcules are often introduced through the vegetable kingdom,† and that most distressing maladies have resulted from the use of

* The work of Mr. John Smith, "Fruits and Farinacea the proper Food of Man," with notes and illustrations by R. T. Trall, M.D., New York, contains a good summary of the dietetic doctrines of the vegetarians. On the other side of the question, see the Treatise of Dr. Emile Marchand, "De l'influence comparative du Régime Végétal et du Régime Animal sur le Physique et le Moral de l'Homme." Paris. Baillière. 1849.

† Dr. Cobbold tells us that all decomposing animal and vegetable matter maintains entozoa, and there is no doubt that entozoa are introduced into the system by means of vegetable food. He recommends that all ordinary market garden produce should be carefully washed before being used. See *Medical Circular*, September 28th, 1864.



diseased vegetable substances. Witness the dreadful epidemics which have followed the appearance of ergot or spurred rye amongst the cornfields in Germany, Switzerland, and Sweden.

On the other hand, animal food being more stimulating than vegetable, is of great use in cases of recovery from prostrating diseases. Take the case of a poor labourer principally fed upon such vegetable food as his scanty earnings will purchase. He meets with some severe accident, let us say a heavy fall from a scaffold, with fracture of the thigh bone, or with an extensive burn. The cheeks and lips are pale, the skin is cold and clammy, the pulse scarcely perceptible, his heart threatens to stop altogether. The surgeon seeks by repeated doses of wine to sustain the action of the heart till the shock has passed away. Gradually the circulation returns, and the blood again colours the cheek; perhaps the pulse becomes too rapid. He is kept on a farinaceous diet for some time, but the confinement and loss of exercise tell heavily upon his strength; his face becomes pale; his muscles hang flabbily about his bones; if he attempts to sit up, he becomes faint; a breath of cold air makes him shiver; his spirits are low; his thoughts dismal; all his strength has been exhausted in the struggle for life, and he has none left to raise him to his former healthy condition. Few who have witnessed the effects of a considerable proportion of flesh meat with a little wine upon such an enfeebled system, will be disposed to deny their stimulating powers. The spirits rise; the patient begins to get up and totter about; then to walk, then to go out. The natural colour returns to his cheek; his eye becomes brighter; his step brisk, firm, and manly; he is soon able to leave the hospital, and return to his work. In the case of a vegetable feeder, I believe the recovery from a prostrating disease is necessarily slower. At the same time the system of the vegetarian being less irritable, he frequently survives wounds which would kill a man accustomed to eat flesh and drink wine. The wonderful recoveries made by our sepoys in India are an example of this.

The *stimulating* properties of flesh can, in a great measure, be

separated from the muscular fibre; and this "extract of beef" has been found to be highly valuable in the treatment of diseases of debility.* "When given," says Parmentier, "with a little wine, to a severely wounded soldier who has lost much blood, it immediately raises his failing strength, and puts him in a condition to bear removal to the nearest field hospital."

There is no doubt that a vegetable diet can maintain the human frame at a high amount of vigour. Indeed, the majority of the labouring classes in every civilized community have been obliged to content themselves with such food. The morsels of flesh they now and then obtain are too trifling to be allowed to complicate the question. Then we have all the strict followers of Buddha, and many castes of the Brahminical creed, who religiously abstain from the flesh of slain animals, and many tribes in the South Sea Islands—tribes remarkable for their stature and bodily vigour, and who subsist almost entirely upon fruits and roots, the nutritive value of which has been but little examined.

Facts like these cannot be scientifically accounted for by any difference in climate. Moreover, they are confirmed in this country by the members of the Vegetarian Society, whose health appears to be excellent, though this may partly be owing to their temperate habits and attention to all the other rules of health. The Brahmin who lives in the cool valleys above Simla, still preserves with his vegetable diet the superiority of his race over the Kori, the Chamar, and the Mehtir, who eat flesh.

In hot countries, people who live much upon food containing a great deal of starch and other carbonized matter, such as rice and maize, are apt to get very fat. It is to be remembered that the dietary of Mr. Banting is mainly composed of animal food. Epilepsy is sometimes cured by putting a patient on a vegetable diet. From facts observed in India, I am disposed to believe that vegetable feeders can live without food longer than those who use a flesh diet. It is possible that this may be owing to the greater capability possessed

* See Liebig, "Annalen der Chemie und Pharmacie," 1865, p. 126.



by farinaceous food of resisting decomposition. Majendie found that human chyle eliminated from vegetable food could resist decomposition longer than that derived from flesh.

In England there is a very strong popular impression that man cannot maintain a high state of health and bodily vigour unless his diet comprises a considerable quantity of animal food; and it is common enough to meet with individuals who imagine that the working-classes, as a rule, partake of flesh daily. The English, who, of all civilized nations, are the greatest flesh-eaters, often delight to trace their strength, riches, and success to their sirloins of beef; while the Chinese wonder how the western barbarians can exist without rice; and the people in the vine-growing departments of France think that no one can get strong without taking wine. To appeal to the practice of foreign nations has little effect upon such prejudices.

It is fortunate that a careful inquiry into the dietary of the labouring classes of our own country has incontrovertibly established the fact, that the use of flesh meat is so small amongst the majority of our agricultural labourers that, practically, they may be considered as vegetarians. Dr. E. Smith* tells us the proportion of people amongst the poorer classes who used meat or bacon was 92 per cent. of all the families included in the inquiry. "In England the per centage was 99, in Wales 84, in Scotland 72, and in Ireland 59. The quantity was, in the whole kingdom, 14 oz. per adult weekly. In England it was 16 oz., in Wales, 12¾ oz., in Scotland 10¼ oz., and in Ireland only 4½ oz. Here again England obtained the largest, and Ireland the smallest quantity, the former being nearly four times the latter."

It will easily be guessed that most of this small quantity of food is consumed at one or two meals. Nor, is there any proof that where a vegetable diet was the rule, the people were less vigorous than those who obtained a considerable amount of animal food. In some parts of Ireland, Dr. Smith tells us, butcher's-meat is almost

* Sixth Report of the Medical Officer of the Privy Council, 1864.

unknown. "I was desirous," he writes in page 288 of his Report, "to ascertain the opinions of persons so circumstanced as to the necessity for the use of meat; and when I met with a thoughtful and intelligent labourer, I asked the question. The answer generally was, that they should like to have more of it, but it was not necessary either for health or strength."

"The general condition of the people in Ireland," he remarks in another place, page 283, "although wearing an aspect of great wretchedness to English eyes, is not now unfavourable to health. Throughout the country I found them a fine, well-built, and often athletic race, with children sufficiently fleshy and rosy, and bearing all the marks of health. The wife, moreover, was usually more robust and healthy-looking than is observed in England." The strength of the Irish is proved by the experiments of Professor Forbes.

Of South Wales, Dr. E. Smith writes, "It is remarkable for the very small quantity of meat and separated fats eaten, and for many families who never obtain them, and proves that much health and strength may be maintained by a dietary of bread-stuffs, milk, and cheese. I have been exceedingly struck with the healthy appearance of most of those who most rarely eat meat or bacon."

Any one who is practically acquainted with the manner of living of labourers in Scotland, and the well-to-do peasantry of France and Germany, not to speak of Southern Europe, must know that these people derive almost their sole nourishment from vegetable food, meat or bacon being only used in small quantities to flavour soup. In truth, if people will resist evidence of this kind, it seems to me that no evidence at all can possibly affect them. The agricultural population everywhere is the source and foundation of a nation's strength, labour, and productiveness; and we should be very badly off if we had to depend upon the pale and tiny offspring of city clerks and shopkeepers, who imagine that man must pine and die if he does not breakfast on a mutton chop, and dine upon roast beef and pork sausages.



We come now to the only remaining question before us: Whether the best diet is that which consists of certain proportions of animal and vegetable food, or, on the other hand, of vegetable food alone? There appears, at first sight, it must be admitted, no reason why the former theory should not be correct. Both animal and vegetable food may be useful in their own degree, and yet hurtful when exclusively employed. Strange to say, the more comprehensive our views become of the dietary of various nations and individuals, the more difficult does it become to point out any different effects arising from the use of either diet. Nations as well as individuals often use improper food, whether vegetable or animal. Many persons cannot obtain food in sufficient quantity; and there are few who do not indulge in some food injurious to health. But leaving this out of consideration, it is very difficult to make out any case on either side. It is possible that there may be some differences; but neither the vegetarians nor their opponents have succeeded in pointing them out.

Professor Carpenter remarks, "that a well-selected vegetable diet is capable of producing (in the greater number of individuals) the highest *physical* development of which they are capable. It may, on the other hand, be affirmed with equal certainty, that the substitution of a moderate proportion of animal flesh is in no way injurious, whilst, so far as our evidence at present extends, this seems rather to favour the highest *mental* development." There is, however, no solid grounds upon which we may arrive at a trustworthy opinion on this important question. There are a large number of loose facts which might be called into evidence, either one way or the other, but not much chance of any two philosophers of an independent turn of mind agreeing about the relative bearing of these facts. The causes which influence the mental development and activity of individuals and of nations are so complex, and their modes of action so ill ascertained, that no one but a special pleader will pretend to see through the matter. We have to separate the influence of diet from the influences of race, climate, geographical position, educa-

tion, social customs, government, national wealth, and history; and if we allow, as we must, a certain influence to all of these causes, very little influence will be left for the mere quality of diet, setting aside its sufficiency or insufficiency.

A few points are worth thoughtful consideration. The most civilized races have passed through the stages of the hunter and the herdsman to arrive at the agricultural stage. The first of these conditions is the most carnivorous, and the one in which the intellect is least cultivated. In the second stage, the use of milk, curd, and cheese, supersedes, to a certain extent, that of flesh. Men collect in larger communities, and cerebral activity is excited by causes to which diet has always been subordinate. Such tribes (of which the Moguls, the Huns, the Turks, and the Gauls in the time of Cæsar,* are good examples) are hardy and athletic, and from their manner of living are peculiarly fitted for war. They are good archers and pitiless marauders. If they are not able to defeat more civilized tribes in the field, they destroy their crops, cut down their fruit trees, and burn their dwellings, and thus weaken and ruin them without any loss to themselves.

The habits, manner of life, and disposition of the Huns, Turks and Moguls, are well described by Gibbon in his accounts of the conquests of Attila, of Zinghis Khan, Timur Khan, as well as in the travels of Marco Polo. The unwillingness of these nomadic tribes to turn their attention to agricultural pursuits, may, in a great degree, account for the desolations they caused. They

* "Cæsar De Bello Gallico," lib. vi., tells us that "the Gauls do not study agriculture; the greater part of their living consists of milk, cheese, and flesh." But he also notices that they spend their whole life in hunting and military exercises. In an old chronicle, quoted by Dr. Latham in his "Variety of the Human Species," we are told of the Majiars, who in the 10th century subdued Hungary, "they never knew the ways of either a town or a dwelling, and they never fed upon the fruits of human labour until they came to that part of Russia which is called Susudal. Till then their food was flesh and fish. Their youths were hunting every day; hence, from that day to this, the Hungarians are better skilled than other nations in the chase."



delighted to reduce the conquered territory to hunting and grazing grounds.

"After the Moguls had subdued the northern provinces of China," says Gibbon, "it was seriously proposed, not in the hour of victory and passion, but in calm deliberate council, to exterminate all the inhabitants of that populous country, that the vacant land might be converted to the pasture of cattle. The firmness of a Chinese mandarin, who insinuated some principles of rational policy into the mind of Zinghis, diverted him from the execution of this horrid design."*

It is a widely diffused opinion that eating flesh renders people fierce and cruel; and this view has been maintained by the vegetarians, and has been admitted by writers who were not vegetarians. But to argue that a beast of prey is ferocious from some unknown principle in its food, is a very unsatisfactory assumption. An animal which preys upon other species must necessarily be fierce and aggressive; and the habits of nomade tribes are surely sufficient to account for the roughness of their disposition. Gibbon has admirably shown how their manner of living must act on their character; and these influences are finely touched by Frederick Mistral in the portrait of Ourrias, in his beautiful Provençal poem of Mireio. "Alone with his cows, Ourrias pastured them all the year. Born in the herd, reared with the oxen, he had the build of an ox, the savage eye, the swarthy colour, the stubborn mien, and the rough soul. How often had he, pitiless ravisher, torn the calf from the teat of the cow, and broken a bundle of cudgels upon the enraged mother, till she fled from the storm of blows, lowing and turning back her head amongst the young pines? How many bullocks and heifers had he not thrown down by the horns, to brand them with

* "He represented to the Emperor of the Moguls that the four provinces (Petchell Chantong, Chansi, Leatong) which he already possessed, might annually produce under a mild administration, five hundred thousand ounces of silver, four hundred thousand measures of rice, and eight hundred thousand pieces of silk." Gaubil, "Hist. de la Dynastie des Mongous," pp. 58, 59.

the hot iron, on the plains of the Camargue? there he got the scar which hung between his eyebrows like a thunder-cloud."

Surely it is not difficult to understand how tribes who spend their lives in driving cattle, and who slaughter them with their own hands, have a tendency to be rough and cruel; yet the Laplanders, who live principally upon flesh, are an unwarlike and good-natured people, while the Japanese, who for many hundred years back have been in a great measure vegetarians, are described by those who have visited them, from the days of Francis Xavier* till now, as a keen, fierce, and warlike race. Nor does it appear that an Englishman is more cruel than a Brahmin Sepoy or a Chinese Buddhist.

The endless disquisitions of the vegetarians on the innocent food of man in the golden age, and their suppositions that a flesh diet leads him to every kind of sensual indulgence, need not keep us long. It is in vain that they tell us that the good moral effects they expect from a vegetable diet are neutralized by the use of Indian hemp and opium. This only shows a gross misapprehension of the customs of the majority of the people in India and China. It would be very difficult to persuade any one who has lived in the East that abstinence from animal food conduces either to innocence or humanity.

In the third stage of civilization, a large proportion of the population almost entirely subsist upon vegetable food. This has been the case with the civilized nations of antiquity. The taste and the intellect were often highly cultivated; but knowledge was, as a rule, confined to the upper classes, who managed to obtain a certain proportion of flesh meat. On the other hand, it must be conceded that many of the ancient Greek philosophers and several intellectual castes, as the Brahmins, the Pythagoreans, the Essenians, the Manicheans, and many other mystics abstained entirely from flesh. And

* Francis Xavier visited Japan in 1549. In his letters he remarks the absence of sheep and oxen, as Alcock did in our own time (see "The Capital of the Tycoon," chap. iii., p. 84). Fish and small game are the only animal food eaten by the Japanese. The *Histoires Ecclesiastiques du Japon*, of Solier and Crasset, in their introductory chapters, confirm the vegetable diet of the Japanese, while the body of their volumes furnish testimony to the sanguinary character of these fierce vegetarians.



these people were very far from believing that this abstinence did anything but increase their mental vigour. The case of the Brahmins is very instructive. Both physically and mentally they are the finest men in India, and are revered even by the Mahomedans. They have furnished as large a roll of intellectual men as all the other castes put together. They habitually fill a number of offices demanding talent and education, and have furnished some of the best soldiers to our Sepoy army. Now these men have always been vegetarians. The Rajputs, the next highest caste, though they are allowed to eat the flesh of goats and wild-boars, depend for their nourishment mainly on the vegetable kingdom. I am far from advancing that this superiority of the Brahmins is owing to their diet, but it is surely sufficient to prove that an animal diet has no marked superiority over a vegetable one. I am thoroughly convinced that the castes who use flesh meat are neither stronger nor more intelligent than those who abstain from it.*

The Romans, at the period of their greatest prosperity, as well as at their decline, freely used an animal diet; and this species of food was probably more accessible to all classes during the middle ages than it is at present. In modern times, certain nations, such as the English, Americans, and French, use a larger amount of flesh in their dietaries than others; but this is probably more the result than the cause of their superior material prosperity, since we find that individuals who abstain from flesh do not fall behind the rest, either in strength or intelligence. All inquiry appears to lead to the same result, that the comparative influence of a vegetable with a mixed diet is not very marked. If there had been any considerable difference, either the one way or the other, it would have been long ago established.

* My experience in India has failed to convince me that people are fonder of vegetable food in warm countries, or that they have any distaste for flesh. The English in India are as carnivorous as at home; and those Hindustanis who are allowed to eat animal food consider it as a dainty from which their poverty too frequently excludes them. Some among the low-caste Hindus indeed affect to despise flesh, but this is an imitation of the Brahmins.

If from nations we descend to individuals, the results are still the same. In modern times a large proportion of men, who have manifested great mental power, have derived their sustenance from both kinds of food. At the same time some have done a great deal of work entirely on vegetable food, and that without observing their mental power to be in any way diminished. John Howard and Wesley* have each given the most unhesitating testimony to this effect. Arnauld, Pascal, Nicole, and Shelley, may be mentioned as further examples. Descartes, at one period of his life, seems to have preferred a farinaceous diet. John Smith, in his work, "Fruits and Farinacea the proper Food of Man," tells us that "our immortal Newton, while writing his great work on Optics, lived entirely without animal food."

In the face of these facts and many others, it seems rather a questionable assertion that the powers of the brain are diminished by a vegetable diet. I do not know that any one has ever stated the question better than Professor Bennett, at the British Association for 1864,—thus reported in the papers:—

"It was perfectly clear that if a man was fed at all, he must derive from the

* Of the illustrious philanthropist, John Howard, his biographer tells us that "he ate no flesh, drank no wine or spirits, bathed in cold water daily, and that at fixed intervals; retired to bed early, rose early. Such was the programme of his personal course. This regimen enabled him to penetrate safely dungeons into which gaolers and physicians dared not follow him."—*Life of Howard*, by Hepworth Dixon. Second edition, p. 231.

Southey, in his "Life of John Wesley," tells us that he lived upon a very abstemious diet, from which animal food was excluded. His biographer remarks: "Those theoretical physicians who recommend spare diet for the human animal, might appeal with triumph to the length of days which he attained, and the elastic constitution which he enjoyed." Wesley seems to have been one of those highly excitable men from whom all stimulating food ought to be withdrawn. It might have brought him into a madhouse. "In consequence," we are told, "of his having taken wine and meat one day at the General's express desire, as a proof that he did not think these things unlawful, he was seized with fever, and confined to his bed." As far as I can judge, the experience of Wesley cannot be held out as a suitable case for the imitation of ordinary men; but it must perplex those immature speculators who imagine that a high degree of mental and bodily vigour cannot be maintained on vegetable food.



quantity of food he took a certain quantity of nutrition; and what he should like to ask Dr. Smith was, how it happened that the peasantry in some parts, though taking a very small amount of nutrition, did a very large amount of work upon it? They knew that the Scotch peasantry were a very hardy race, that they did a great amount of work, and he was not aware that, as a peasantry, they were in any way inferior in bodily health and vigour, mental qualification, martial bearing, or any other quality, to the peasants of any of the three kingdoms; yet, from the details with which they had been furnished, it seemed that the Scotch people took porridge morning, noon, and night. It might be said that the oatmeal, which Dr. Johnson said was food for horses in England and men in Scotland, was one of the most nourishing things that could possibly be taken; and that if an individual could only get milk to mix with it, he might do very well. In milk and oatmeal were found all the nourishing principles a man required. In the University of Edinburgh there were many Scotch students coming from agricultural populations, who brought with them at the beginning of each academical session a large sack of oatmeal, on which they contrived to live, and get through an immense amount of mental labour; and they knew that from this class some of our greatest public characters had sprung. A certain amount of fatty matter, a certain amount of albumen, and a certain amount of mineral, mixed together in particular proportions, acted very well; and it appeared that these elements were found in oatmeal and milk. Therefore, notwithstanding the diversity of food amongst our agricultural population, the principles of nourishment were identical in all, and the matter was reduced to the simple and physiological question as to whether the peasants got the certain amount of solid nourishment which they required every day."

The weight of authority is so useful in encountering prejudice, that I am tempted to cite the experience of Benjamin Franklin, whom the vegetarians are fond of claiming as an ally. "During a calm, which stopped us above Block Island, the crew employed themselves in fishing for cod, of which they caught a great number. I had hitherto adhered to my resolution of not eating anything that had possessed life; and I considered, on this occasion, agreeably to the maxims of my master, Tryon, the capture of every fish as a sort of murder committed without provocation, since these animals had neither done, nor were capable of doing, the smallest injury to any one, that should justify the measure. This mode of reasoning, I conceived, to be unanswerable. Meanwhile, I had formerly been extremely fond of fish; and when one of these cod was taken out of the frying-pan, I thought its flavour delicious. I hesitated some time between principle and inclination, till at last, recollecting that, when the cod

had been opened, some small fish were found in its belly, I said to myself, if you eat one another, I see no reason why we may not eat you. I accordingly dined on the cod with no small degree of pleasure, and have since continued to eat like the rest of mankind, returning only occasionally to my vegetable plan. How convenient does it prove to be a *rational animal*, that knows how to find or invent a plausible pretext for whatever it has an inclination to do!"

Franklin persuaded one of his companions to adopt his views on diet. "I doubt," said he "whether my constitution will be able to support it." "I assured him, on the contrary," says Franklin, "that he would find himself the better for it. He was naturally a glutton, and I wished to amuse myself by starving him. He consented to make a trial of this regimen, if I would bear him company; and, in reality, we continued it for three months. Our victuals were prepared and brought to us by a woman in the neighbourhood, to whom I gave a list of forty dishes, in the composition of which there entered neither flesh nor fish. This fancy was the more agreeable to me as it turned to good account, for the whole expense of our living did not exceed for each eighteen-pence a week. I have since that period observed several Lents with the greatest strictness, and have suddenly returned again to my ordinary diet, without experiencing the smallest inconvenience, which has led me to regard as of no importance the advice commonly given, of introducing gradually such alterations of regimen."

Franklin evidently did not notice that his mental powers were either increased or diminished by his vegetable diet; and had there been any difference, it would doubtless not have escaped so keen and wise an observer.

The theory of diet, lauded by medical men, and practised by the public, is to derive the part of the flesh-formers from animal food and of the heat-givers from vegetable food. A beefsteak with potatoes is a good example of this form of diet, the great proportion of the components of the flesh going to support the tissues, and the great proportion of the potatoes going to keep up the bodily heat.



If one tried to live on beef alone, he would have to take an unnecessary amount of exercise to wear down the tissues into materials for respiration. If one tried to live on potatoes alone, he would have to distend his stomach with an immoderate quantity of potatoes in order to take in a sufficient proportion of flesh-forming aliment. Hence it has been calculated, that upwards of 100,000 grains of carbon are actually lost every week to an Irish peasant, who lives almost entirely upon potatoes, which contain only 1·4 of flesh-formers. Many other vegetable products contain too little of the flesh-forming material to permit of their being used alone as food, and hence they are very properly combined with flesh meats. But some vegetable productions, on the contrary, contain even a larger proportion of plastic material, and a smaller proportion of respiratory food than the leanest muscular tissue. Dry peas, for example, contain 22 per cent. of flesh-formers, beans 26 per cent., lentils 27 per cent., whereas butcher's-meat only contains 19 per cent. The vegetable substances mentioned all belong to one family—the Leguminosæ, whose nutritive value is too little appreciated. "It is the highest of all vegetable foods," says Dr. Smith, in his "Practical Dietary for the Working Classes," "since it somewhat exceeds that of wheaten flour in carbon, and has more than double the amount of nitrogen. The quantity of carbon and nitrogen in one pound of peas is 2,730 grains and 255 grains, and as peas can be obtained for 1*d.* to 1½*d.* per pound, their economy is higher even than that of the maize. The low price of good bread, and the usual abundance of potatoes, alone prevent a large increase in the consumption of this excellent food. . . . Peas should never be cooked whole, but only when split, or when ground into meal. They are the common food of the Egyptian peasantry." They are ranked by Celsus as the most nourishing ("valentissimum voco in quo plurimum alimenti est") of all foods. Their proportion of flesh-formers is, however, too large; hence men have been led by long-tried experience to eat them with substances rich in carbon: peas with butter is a well-known dish; haricots in oil is an example taken from the South of France. The

Hindu adds to his rice, which contains 81 per cent. of carbonised food, and only 6·5 of plastic material, a certain proportion of lentils rich in caseine; and, in order to supply the stimulus afforded by flesh-meats, he flavours it with a considerable amount of fresh spices.

It may be asked, will the bodily vigour suffer in any degree from the want of the stimulus of flesh-meats? In truth, this question is a most difficult one. The excitement produced by the use of flesh is less in its kind, or at least acts less upon the nervous centres, than that derived from vegetable products, such as wine, beer, tea, coffee, or chocolate; and the keenness and restlessness which result from the use of animal food may be a valuable property where a great deal of work has to be gone through; but its importance may easily be exaggerated. The vulgar are apt to lay more stress upon occult influences than upon known ones. "The subtle, stimulating influence" of meat may, to prejudiced minds, be so subtle an imponderable, that it could be introduced into any scale in which the evidence could be weighed, and yet so heavy as to weigh down the scales to the side desired. As far as practical experience goes, this stimulus can be withheld without any injury to health. There is rather too much stimulus in our diet and habits than too little, though the *Times* and the *Examiner* have been unjustly blamed for putting in a word against tea and coffee being treated as so much carbon and nitrogen. It has been advanced that coffee, and we may infer tea also, though not conducive directly to the nourishment of the body, nevertheless has the effect of diminishing the waste or combustion of the tissues, or in prolonging the presence of nutritive substances in the blood, so that it is said men can work longer, and abstain from food longer, with the addition of a little coffee, than they could otherwise do. This interesting question has been long before the scientific world, and some exact observations, with a good many inexact ones, have been made: but the scientific world is far from being agreed upon the matter. Throughout this treatise I have, as far as possible, avoided debatable points, which can neither be safely acted upon nor fully discussed.



No people, as Isaac Disraeli long ago remarked, are such gorgers of animal food as our own; and this indulgence leads to a train of diseases which might easily be avoided. A man is, we will suppose, accustomed to a great deal of active exercise and waste of nervous tissue, from the mental application and anxieties of business. In his diet, flesh-meats form a large proportion. Feeling that this diet has sustained him during the best years of his life, he obstinately clings to it, and recommends it to every one else, without considering whether their habits have been equally active. Suddenly he retires from business; but he still keeps up his old diet scale, and feels some anxiety when his appetite falls off, though this is but the natural result of the diminished waste of tissue. He tries to stimulate his appetite; and if he escapes chronic indigestion, the quantity of flesh-meat which he takes renders him restless and irritable. More enters his blood than is required; hence gout, gravel, plethora, hypertrophy of the heart, and several other diseases besetting our nation. As already said, there is no reason to suppose that a moderate quantity of flesh-meat is injurious. What a moderate quantity is, it would be difficult to say; but it may be affirmed that with most well-to-do Englishmen it would be better if they took less.

We are now threatened with a famine of butcher's-meat. A dreadful epidemic has invaded our island, and seized upon our cattle, and has spread with a rapidity which absolutely defies description. In spite of everything that can be done, its terrors still confront us, and the only cure veterinary surgeons seem to trust in consists in stopping the course of the disease by knocking their patients on the head. The actual mortality amongst cattle this year cannot, of course, be specified; and though the dismal forebodings of Professor Gamgee may not be fulfilled, still the actual loss of live stock has been great, and the Cattle Plague Commission are satisfied that it is the rinderpest of Germany and the cattle murrain of Russia which we have amongst us. And what is worse, it seems that the pestilence may become a permanent resident with us, and keep up the price of meat for years to come.

The prices of beef have already mounted so high as to raise the prices of other kinds of flesh, and to place them, to a great extent, out of the reach of the lower portion of the middle classes, as well as to render them a serious expense to others. Those who believe roast beef to be the "source of England's greatness," may well tremble lest her greatness should pass away And, though the terrible prophecies of Professor Gamgee will, perhaps, not be realized, the Cattle Plague Commission are satisfied of the truth of that gentleman's thesis:—that it is the rinderpest of Germany and the cattle murrain of Russia which we have amongst us. By the last accounts it is daily extending its ramifications. The great danger surely justifies the severe measures the Government has taken with the property of its subjects; and it would be well if private individuals understood their duty as clearly. From a newspaper notice it appears that a number of gentlemen of high position and attainments, "in view of the great destitution that must follow inevitably from the dearness of meat, propose to establish depots for the sale of uncooked animal food at the bare cost price, in the thickly inhabited metropolitan districts." It is to be hoped these charitable gentlemen will not refuse to listen to the advice of John Stuart Mill:* "In a real scarcity, nothing can afford general relief, except a determination by the richer classes to diminish their own consumption. If they buy and consume their usual quantity of food, and content themselves with giving money, they do no good. The price is forced up, until the poorest competitors have no longer the means of competing, and the privation of food is thrown exclusively upon the indigent, the other classes being only affected pecuniarily. When the supply is insufficient, somebody must consume less; and if every rich person is determined not to be that somebody, all they do by subsidizing their poorer competitors is to force up the price so much the higher, with no effect but to enrich the" butchers.

* "Principles of Political Economy," book v. chap. x. § 3.



For my part, far from believing, like a well-known professor, that the rise of butcher's-meat a halfpenny the pound would increase our national mortality, I believe that we could lack all the meat which is lost in the cattle plague, and yet that, if we replaced it by a *well-chosen* vegetable diet, while the price of meat would remain nearly stationary, the national health would improve. For, vegetable food not being so tempting, we should get rid of much of the over-eating in which many people indulge, and a great deal of money would be saved which might be more usefully spent on other things. Nothing is more distressing to one who hopes for the well-being and advancement of the working classes than to hear of the large sums which they consume on luxuries that only help to deteriorate their condition.* If half of the fifty-three millions expended by them on spirits, beer, and tobacco, were spent in a better manner, few would venture to deny either the fitness of the working man for the franchise, or the certainty of his progressive improvement. No one, however, can blame the poorer classes for spending their money on butcher's-meat and other tasty articles of food. Physicians like Dr. E. Smith have indeed shown them what is the cheapest food, and how to make the best of their small wages; but, like their betters, they often prefer taking the counsel of those who advise them to gratify their appetites.

A distinguished philosopher,† in his work on Education, laying down the axiom that children require more nourishing food than adults, would, contrary to the received opinion, commence giving them flesh at two or three years of age. He says,—

"This relatively greater need for nutriment being admitted, as it must be, the question that remains is, Shall we meet it by giving an excessive quantity of what may be called dilute food, or a more moderate quantity of concentrated food? The

* It is not meant that wine, spirits, and other stimulants should be entirely abstained from, but that the agreeable effects derived from them are in a great measure lost by habitual use; while, as nutriment, their value is not worth considering. They should be reserved for social and festive occasions.

† Mr. Herbert Spencer.

nutriment obtainable from a given weight of meat is obtainable only from a larger weight of bread, or from a still larger weight of potatoes, and so on. To fulfil the requirement, the quantity must be increased as the nutritiveness is diminished. Shall we, then, respond to the extra wants of the growing child by giving an adequate quantity of food as good as that of adults? or, regardless of the fact that its stomach has to dispose of a relatively larger quantity even of this good food, shall we further tax it by giving an inferior food in still greater quantity?"

Now the amount of flesh-forming nutriment is greater in beef than in bread, but the amount of respiratory food is too low; and consequently, though a child might exist upon bread alone, it could hardly do so on flesh. Moreover, the proportion of flesh-formers in beef is less than in the numerous products of the family of the Leguminosæ, such as beans, haricots, peas, and lentils. What then becomes of Mr. Herbert Spencer's argument? In France, children are often fed upon flesh meats when very young, but they are not so healthy as English children, and their mortality is greater. One might believe that it would be better to supply the wants of the body by a small quantity of highly concentrated food, such as eggs, cheese, and fat meat. Yet these substances in large quantities are not so easily digested, and are more liable to be injurious than substances theoretically less promising. Without fresh vegetables, we should all soon die of scurvy; and without a certain bulk to our food, we should find that it did not agree with us. The well-known experiments of Majendie prove that animals fed upon pure albumen and fibrine will in the end die of hunger; and the attempt of Dr. Hammond to live on pure albumen and distilled water could not be prolonged more than nine days. A certain proportion of innutritious material in our food secures the nutritious part being better digested, and keeps the excretions more regular. Till our theories of nutrition square with practical experience, the theory must give way. Nature will not be helped in the way we wish. She despises our scientific dodges, and loses her way when sent on our short cuts. If a man cannot digest his food, by all means let him take the loan of the pepsine of the calf; but let every one who wishes to have healthy digesting juices of his own, look charily at concentrated food, and eschew essences and extracts.



Dr. Lyon Playfair, writing in *Good Words*, remarks, "In the Indian mutiny, the rice eaters of Bengal were not the men who made our empire totter, but the pulse feeders and the flesh eaters of the upper provinces. The gallant Goorkhas, who gave us aid in our distress, were omnivorous like ourselves, and as fond as we are of hunting down game and eating it. England would never dare to trust her defence to an army of vegetarians." But the pulse-eating Hindu is as good a soldier as the flesh-eating Mahomedan; and the Goorkhas at Jhutog, who helped us so bravely at Delhi, judging from their pay and the price of food in the hills, must have been practically almost vegetarians. The assertion of glorious old Sir Charles Napier, that a Goorkha would not mind the sex of a beef-steak, and that a cow would be in great danger if straying beside their encampment, is a sad mistake. So violent is their Hinduism in this respect, that, in their cantonment at Dehra, Europeans for a long time did not venture to eat beef; and during all the time Reid's Goorkhas held Hindoo Rao's hill, they got very few morsels of flesh. And it is singular that the Irish furnish the largest proportion of our army; the Scotch a larger proportion, according to their population than the English; and yet the Irish and the Scotch are less carnivorous than the English. The Russian soldiers, we are told by Dr. Carpenter,* live entirely upon a vegetable diet, and we have little reason to despise their courage or their powers of endurance. I do not think that our soldiers should be denied flesh: certainly not. There was wisdom in the Prussian plan of giving the men a double ration of beef on fighting days during the Schleswig war; but let there be no exaggeration. Let Dr. Playfair's historical analysis be as quantitative and qualitative as his chemical one. Why has he placed the influence of diet above that of race and climate? The rice eaters of Lower Bengal, with its moist and relaxing climate, are weak and

* See Dr. Carpenter's Articles on Vegetarianism.—*British and Foreign Medico-Chirurgical Review*, 1850, vol. vi., pp. 91 and 399.

cowardly; but so are its flesh eaters and its pulse eaters. Let it never be forgotten that the comparative influence of a mixed diet and a vegetable one is not great enough to make it a predominant cause. Dr. Carpenter tells the people that the want of flesh meat is prejudicial to the activity of the brain; Mr. Herbert Spencer says it leaves them ill nourished; and Dr. Playfair leaves them to suppose that it makes them timid and unmanly. Well, no one likes the thought of being dull, stupid, weak, and cowardly. No wonder then that the working classes would rather buy inferior meat and sheep's liver, or even the indigestible and unsavoury Monte Video beef, than live on wholesome farinaceous food. No wonder that they would rather spend their money on high-priced butcher's-meat than send their children to school. It certainly is better to nourish a growing brain than to exercise an enfeebled one; and, if Dr. Carpenter be right, which he will find some difficulty in holding, the division between the upper and lower classes is just, natural, and inevitable. The superior intelligence of the former is at once accounted for by the superiority of its diet, and the inferiority of the lower classes can only be removed by a larger allowance of animal food than they will probably ever obtain.

It is an important fact that, for one acre required to maintain a vegetable feeder, three would be necessary to keep him on a mixed diet; and we shall never have so many acres to spare. The increase of our population, with the increased means of comfort commanded by the inhabitants of our trading and manufacturing towns, has led to an increased demand for animal food. Now it may be stated as a round truth, that while we can import corn from foreign countries, we must raise our beef and mutton at home. No doubt we can get a little from the neighbouring coasts of Holland and France, but the cost of transit is heavy, and these are wealthy countries, able to compete with us in the market. Live stock cannot cross the Atlantic and yield a profit. The only way, therefore, by which an increased supply of butcher's-meat can be obtained, is by turning arable land to grass, or by inducing the great landed proprietors in the North to



turn their deer forests once more into sheep farms. Deer put upon a given tract of land do not yield nearly so much flesh as sheep; they bear no wool; while the game laws allow them to feed off the adjoining cultivated grounds without the miserable tenants being able to recover any damages. It is high time that the laws of the nation should cease to help men turning the country into a desert, and should cease to prevent, by laws of entail, which are really artificial monopolies, the soil of our country from being subject to the natural laws of political economy. Few people have any idea of the rapid and extensive change of arable land for grazing parks, which has been going on in our own islands for a few years back. In many farms nearly all the crop is consumed by the live stock.

It is distressing to hear of farmers' wives who refuse to sell skim milk to poor people, in order to give it to the pigs; and, all things considered, Dr. E. Smith is right in censuring labourers, who prefer buying an ounce of tea in places where they might get twelve pints of skim milk for the same money. The wages of the working classes do not admit of such luxuries. Undoubtedly a change is taking place in our national dietary; and in many respects this change is not an improvement. Everywhere the older physicians declare that the tone of men's constitutions is not so vigorous as it once was, and younger men have no right to question such a well-sustained assertion. Human life may be lengthened by new sanitary precautions and improvements in the healing art, and yet the constitution be absolutely feebler. This change may undoubtedly be explained in a variety of ways; but at any rate, it is clear that our national dietary is capable of great improvement, and that the advance of science has rendered such an improvement capable of being worked out in a scientific manner; for we are now able, thanks to the chemists of the Liebig school, to calculate, with some degree of precision, the proportion which food ought to bear, both to the amount of work which is to be done, and the amount of animal heat which is to be evolved.*

* See the admirable paper, "On the Food of Man in Relation to his Useful Work." By Lyon Playfair, C.B., LL.D., F.R.S. Edinburgh, 1865.

This paper has been necessarily aggressive, striving, as it does, to keep a middle ground between a too generally received fallacy, and the extreme views of the vegetarians. It will perhaps save some confusion and misconception if the author states his own opinion.

He believes that the Creator of the universe has placed within reach of almost all the tribes inhabiting this globe, food sufficient to maintain them in full health. The hunter has to take an unusual amount of exercise to obtain a living, and his food is peculiarly suited, not only to support this exercise, but to render it agreeable. The food of the herdsman is also suitable to his wants and nature; and the dietary of civilized nations is equally fitted for the multifarious exigences of their complicated life. These may be met and supplied either upon a diet containing a measured proportion of flesh and vegetables, or upon a well-chosen vegetable diet. This is a conclusion which presents no difficulty to our acceptance, since both vegetable and animal food have been proved by chemists to contain the same nourishing principles. There is no necessity why people who can afford it should be deprived of the delicate juices, and sometimes useful stimulus of flesh meats; but, as already said, the comparative influence of a mixed diet over a vegetable one is not great enough to make it a predominant cause of superiority. We cannot, with the means at present in our power, prove the superiority of the one diet over the other; for men have done the same work equally well upon either.

There is thus no real cause why a poor man should give up any of the principal means of education and improvement in order to purchase the enjoyment of animal food. He ought not to give up society, books, newspapers, a well-aired house, and other circumstances which tend to better his condition, for what is certainly of inferior importance. There is little doubt that if, instead of exhausting their wages in obtaining butcher's meat, the working classes in towns would spend a portion of their means in procuring better lodgings, their health would be much improved, while they



would escape the destructive ravages of many epidemics. Indeed, there is every reason to believe that the dietary of English people shows less sagacity than that of many other nations to whom they have taught lessons in government and religion. Dr. E. Smith, in his Parliamentary Report, sums up: "Thus on the whole there was the most nutriment, the least sum spent upon food, the least variety of food, the greatest economy in the selection of food, the most breadstuffs and milk, the least sugar, fats, meats, cheese, and tea in Ireland. There was the least amount of nutriment, the greatest variety of foods, the most costly selection of foods, the least quantity of breadstuffs and milk, the greatest quantity of sugars, fats, and meats, in England;" and, as already observed, the dietary of the upper classes is often a hazardous defiance of the laws of health.

Before the failure of the potato crop the Irish peasantry was content to live principally upon one root, whose flesh-forming ingredients were very deficient, but which had the property of yielding a good crop with a small amount of care and cultivation. The disease which preyed upon the potato, and caused such a great destruction of food, bringing millions to absolute starvation, had at least this good effect, that it taught the Irish to grow other crops, and to improve their diet by the addition of other food. It is possible, in like manner, that the cattle plague may induce the English to consider the important question of diet, and to surmount some of the inveterate prejudices which surround it.

It would almost seem that it requires something like a forcible change of circumstances to cause a nation to make any modification in its diet. The difficulty of change is enormous; the dislike to it is frequently too great to allow even the best educated classes to practise any new rules. People like the food which they have been accustomed to from infancy. The Scotchman likes his porridge and peas-meal brose, which an Englishman would not eat; while the Scotchman, in his turn, would refuse Yorkshire pudding, and think the rye-bread, which the Germans eat, intolerably sour. The Irish, during the

famine, rejected the maize flour, which furnishes a cheap and nourishing food, enjoyed by millions in South and Central America. These antipathies are difficult to overcome, all the more so, perhaps, because they are often unreasonable. Nevertheless, an intelligent people, anxious to apply all its resources in a proper direction, should endeavour to follow the improvements of science, and not blindly insist on adopting one form of diet, which taxes too severely the resources of the country, as well as those of individuals. There is little fear of any sudden changes being adopted. People can go to work gradually, and diminish their consumption of flesh slowly, till the repugnance of habit is conquered.

Above all things, it is necessary to study what ought to be both the quantity and quality of the food they use; and it would be well if, instead of listening servilely to the advice of "the doctor" who, though learned in the powers of drugs, is sometimes marvellously ignorant of the properties of food, they would endeavour, to a certain extent at least, to work out their own lesson. In this task they must take as a groundwork the great division of food into flesh-formers and heat-givers. By means of the table appended, which is taken by permission from the papers by Dr. Lyon Playfair, already referred to, the relative proportions of flesh-forming and heat-giving material in different kinds of food may be estimated by any one acquainted with arithmetic, who is thus put into possession of the labours of some of our most distinguished chemists, reduced to an easy and definite form. The student ought to direct his attention to the first three columns. The amount of water contained in food as it is brought into the market, is generally not counted in estimating its nutritive qualities. When, therefore, one speaks of the amount of nourishment in so many ounces of flesh or bread, he excludes the amount of water, which in butcher's meat amounts to 65, and in bread to 37 per cent. In the fourth column, the relative value of fat and sugar are put upon one equivalent, and counted as starch; so that there may be no difficulty in estimating their relative heat-giving powers.

## TABLE OF COMPOSITION OF FOOD IN 100 PARTS.

BY DR. LYON PLAYFAIR, C.B.

1864.

| Name. | Water. | Flesh-Formers. | Heat-Givers. | Starch equivalent of Heat-Givers. | Ratio of Flesh-Formers to Starch eq. | Mineral Matter. | Carbon in Flesh-Formers. | Carbon in Heat-Givers. | Total Carbon. |
|---|---|---|---|---|---|---|---|---|---|
| Lean Butcher's Meat, free from bone | 67·0 | 23·0 | Fat ..... 8·0 | 19·2 | 1 : 0·83 | 2·0 | 12·87 | 6·16 | 18·53 |
| Fat ditto, ditto | 63·0 | 15·0 | Fat ..... 20·0 | 48·0 | 1 : 3·2 | 2·0 | 8·07 | 12·4 | 22·47 |
| Mean of Lean and Fat Butcher's Meat, free from bone | 65·0 | 19·0 | Fat ..... 14·0 | 33·6 | 1 : 1·77 | 2·0 | 10·22 | 10·78 | 21·00 |
| Fresh Fish, without bone | 81·3 | 12·5 | Fat ..... 3·2 | 12·5 | 1 : 1·0 | 1·0 | 6·5 | 3·8 | 10·3 |
| Salt Herring | 43·0 | 20·0 | Fat ..... 12·7 | 30·45 | 1 : 1·52 | 18·3 | 10·76 | 9·78 | 20·54 |
| Milk (new) | 87·2 | 4·9 | Fat ..... 3·5<br>Sugar ..... 4·6 | 12·5 | 1 : 2·12 | 0·76 | 2·132 | 4·555 | 6·687 |
| „ (skim) | 89·6 | 4·9 | Fat ..... 2·0<br>Sugar ..... 4·6 | 8·8 | 1 : 2·2 | 0·77 | 2·152 | 3·380 | 5·532 |
| „ (butter) | 89·1 | 4·9 | Fat ..... 1·5<br>Sugar ..... 4·6 | 7·6 | 1 : 1·87 | 0·73 | 2·152 | 2·995 | 5·147 |
| Cheese (cheap kinds) | 40·0 | 30·0 | Fat ..... 29 | 62·4 | 1 : 2·08 | 4·0 | 16·14 | 20·02 | 36·16 |
| Eggs (yolk and white) | 70·0 | 12·6 | Fat ..... 11 | 26·4 | 1 : 2·09 | 1·4 | 6·788 | 8·47 | 15·26 |
| Peas (green) | 59·0 | 7·0 | Starch, &c. ...35<br>Fat ..... 1 | 37·4 | 1 : 5·34 | 2·0 | 3·766 | 16·31 | 20·076 |
| „ (dry) | 15·0 | 22·0 | Starch, &c. ...58·5<br>Fat ..... 2·0 | 63·3 | 1 : 2·87 | 2·5 | 11·836 | 27·514 | 39·35 |
| Beans (dry) | 12·0 | 26·0 | Starch, &c. ...57·0<br>Fat ..... 2·0 | 61·8 | 1 : 2·37 | 3·0 | 13·988 | 26·85 | 40·84 |
| Lentils | 12·5 | 27·0 | Starch, &c. ...55·0<br>Fat ..... 2·5 | 61·0 | 1 : 2·26 | 2·0 | 14·326 | 26·34 | 40·66 |
| Flour | 13·3 | 14·0 | Starch, &c. ...70<br>Fat ..... 1·5 | 73·6 | 1 : 5·26 | 1·2 | 7·532 | 31·08 | 38·61 |
| Bread* | 37·0 | 9·4 | Starch ..... 50·8<br>Fat ..... 1·1 | 52·64 | 1 : 5·6 | 1·7 | 5·037 | 23·442 | 28·5 |
| Biscuit | 13·8 | 14·2 | Starch, &c. ...69·3<br>Fat ..... 1·0 | 71·7 | 1 : 5·05 | 1·7 | 7·64 | 31·539 | 39·179 |
| Barley (pearl) | 15·1 | 8·0 | Starch, &c. ...74<br>Fat ..... 2 | 78·8 | 1 : 9·85 | 0·9 | 4·304 | 34·296 | 38·69 |
| Oatmeal | 13·0 | 16·0 | Starch, &c. ...62<br>Fat ..... 6 | 70·4 | 1 : 4·77 | 2·0 | 8·608 | 32·55 | 40·95 |
| Maize | 12·0 | 11·0 | Starch, &c. ...68·5<br>Fat ..... 7·0 | 82·3 | 1 : 7·75 | 1·5 | 5·918 | 35·804 | 41·722 |
| Rice | 13·0 | 6·5 | Starch, &c. ...79·2<br>Fat ..... 0·8 | 81·1 | 1 : 12·48 | 0·5 | 2·497 | 35·781 | 38·278 |
| Potatoes | 72·0 | 1·4 | Starch, &c. ...22·5<br>Fat ..... 0·1 | 22·7 | 1 : 16·21 | 1·0 | 0·753 | 10·715 | 11·468 |
| Parsneps | 82·1 | 1·4 | Starch ..... 10·0<br>Sugar ..... 2·5 | 12·4 | 1 : 8·18 | 1·0 | 0·753 | 5·492 | 6·245 |
| Carrots | 86·5 | 1·3 | Starch, &c. ... 6·20<br>Fat ..... 0·15<br>Sugar ..... 2·00 | 11·3 | 1 : 8·70 | 0·8 | 0·7 | 5·417 | 6·117 |
| Turnips | 91·1 | 1·2 | Starch, &c. ... 3·2<br>Sugar ..... 3·0 | 6·1 | 1 : 5·08 | 1·5 | 0·645 | 2·684 | 3·329 |
| Succulent Vegetables | 85·8 | 1·3 | Starch, &c. ...12·2 | 12·2 | 1 : 9·4 | 0·7 | 0·7 | 5·417 | 6·117 |
| Arrowroot | 12·0 | 1·0 | Starch ..... 80·7 | 80·7 | 1 : 80·7 | 0·3 | 0·538 | 39·49 | 39·03 |
| Sago | 14·8 | 1·0 | „ ..... 83·5 | 83·5 | 1 : 83·5 | 0·2 | 0·807 | 37·074 | 37·881 |
| Tapioca | 13·0 | 2·0 | „ ..... 84·7 | 84·7 | 1 : 42·3 | 0·3 | 1·076 | 37·607 | 38·683 |
| Sugar | 2·0 | 0·0 | Sugar ..... 98 | 91·5 | 1 : 0 | 0·0 | 0·0 | 39·99 | 39·99 |
| Butter | 12·0 | 1·0 | Fat ..... 86 | 206 | 1 : 206 | 0·0 | 0·538 | 60·22 | 60·758 |
| Suet | 12·0 | 0·0 | „ ..... 87 | 208 | 1 : 0 | 0·0 | 0·000 | 60·99 | 60·99 |
| Lard | 8·0 | 2·0 | „ ..... 90 | 216 | 1 : 108 | 0·9 | 1·076 | 60·3 | 79·376 |

NOTE.—In this Table 10 parts Fat are considered equal to 24 parts of Starch. Under the heading "Starch, &c.," Cellulose and Gum are included. The amount of Carbon is taken as follows:—

| | | | |
|---|---|---|---|
| Flesh-Formers ..... 53·8 | per cent. Carbon. | Sugar of Milk ..... 40·0 | per cent. Carbon. |
| Starch ..... 44·44 | „ | Fat ..... 77·9 | „ |
| Sugar (Cane) ..... 42·1 | „ | | |

* This line has been altered to meet a change in Professor Playfair's estimate of the proportion of water in bread.

The view maintained by Dr. Lyon Playfair, in his treatise, "On the Food of Man in Relation to his Useful Work," is that the amount of power in the human organism is directly derived from the food introduced into the body. Man, therefore, to a considerable extent resembles a steam-engine, which generates power in the form of steam, by the combustion of the fuel it receives. Man not only generates heat enough to keep his body up to the temperature of 98°, but also by the oxidation of his tissues, generates muscular and nervous power, which renders him, in a mechanical point of view, a much more efficient agent. "It would take from 1000 to 1200 grammes of coal burned in a steam-engine to raise a man from the level of the sea to the top of Mont Blanc, but the same man could do this work in two days by the transformation of 198·4 grammes of dry muscle." A man's food ought to rise and fall with the amount of work which he has to do. Every man requires two ounces of flesh-formers, and six and a half ounces of carbon, in order to repair the necessary waste of the body,—in other words, to keep him from dying of starvation; but if he wants to do any work, he must increase this small amount of food. A man at full work requires 5·5 ounces of flesh-formers and 23·5 of starch, equivalent of heat-givers. Reapers use 8 ounces of flesh-formers, and boxers under training, nearly 10 ounces. Thus we see that men taking laborious and continued exercise can consume from four times to five times as much food as is necessary to produce the force required for the purely vital functions of the body, to propel the blood through the arteries, to sustain the play of the lungs, and to keep up the motion of the intestines. The proportion of heat-givers in the food ought to vary with the heat of the surrounding atmosphere and the warmth of the clothes worn. Hence, it is much more difficult to fix the exact proportion which they ought to bear to the flesh-formers in the food; but there is reason to believe that the proportion taken is often too large.

The great source of error in diet is by confounding and substituting the one kind of food for the other—the heat-givers for the



flesh-formers; and fatal results have been known to follow an error of this kind. In the diet of the Dundee prison, treacle, which is simply a heat-giver, was substituted for milk, and the result was, that 50 per cent. of the prisoners lost weight. Speaking of prisons, it is absurd to indulge criminals undergoing punishment with the luxury of flesh meat, which so many honest people cannot procure. We may refer the reader to an article on this question in the "Journal of the Statistical Society," for September, 1863, by Dr. W. A. Guy, Professor of Forensic Medicine, King's College, London, and Medical Superintendent of the prison at Millbank. He has unreservedly declared his opinion in favour of the sufficiency of a dietary from which the meat element is wholly excluded; and has as unequivocally declared that health and the capacity for labour may be preserved on a diet consisting of milk and vegetable food. Experiments made at the Devizes House of Correction, at Stafford, and at Glasgow, have already proved the correctness of such views, which are true even of men previously accustomed to animal food. But to return to the subject before us:—the danger of mistaking heat-giving for flesh-forming food. This is a mistake which is now and then made even by medical men, and many people have been induced by their unguarded language to regard such starchy substances as arrowroot, sago, and tapioca, as highly nutritious and strengthening, especially during recovery from illnesses. One instance which fell under my observation has left a very strong impression on my memory. At Delhi a tall and powerful soldier fell ill of dysentery. When the acute stage had passed away, his strength was very much reduced, but he was still kept on a low diet. From some unequivocal symptoms, the surgeon was induced to believe that there was a large ulcer somewhere in the great intestine; and, in spite of the man's feeble condition, he still kept him on a poor diet. Another medical man who saw the case, insisted that the patient could not live if he did not obtain more nutritious food. He pointed out that wine contained no flesh-forming material, and arrowroot only one per cent; yet this was all the man got, for the arrowroot was simply boiled with water,

as milk was difficult to be had at the siege of Delhi. Moreover, the thermometer standing at 100° Fahrenheit in the tents, there was little necessity for such an overplus of heat-giving material. This advice was rejected; the soldier got weaker and weaker, and at last died. The second medical man was allowed to open the body; the intestines were slit up and carefully scrutinised. The mucous membrane appeared perfectly healthy; it was difficult even to find the place where the ulcer had been. The disease was cured; but the man had died—he had fallen a victim to arrowroot. There is little doubt that even if rice and milk had been substituted for arrowroot, the man could have again taken his place in the ranks, instead of being sewed up in a sack, and sent away to the cemetery.

While it is to be hoped that the reader will study the table at page 45, and mark the different proportions of nourishing principles demanded by the body, there is no necessity for him to go weighing and serving out his food with arithmetical precision. Such rules are principally useful in victualling large bodies of men, such as soldiers, sailors, and prisoners. Nor must it be imagined that the value of one species of food over another is invariably to be ascertained by the relative proportion of flesh-formers and heat-givers found by the analytical chemist. We must take into consideration whether food is digestible; and the mere addition of bulk to food, as already remarked, seems often to render it more suitable for the human organism.

A few plain practical remarks may serve to keep the inquirer in the right way. Milk comes pretty near a model food: it alone supports the child during its first year of growth; and therefore must contain all the necessary principles of nutrition. The milk of the cow and goat do not differ materially from that of the human female. Milk is very digestible, and never ceases to be so at any period of life. Many pastoral tribes, at particular seasons of the year, live almost entirely upon it. The objection that milk cannot be well fitted to support adults, since they do not increase in weight like the child, is of little force. It is true a grown-up man does not add



to his tissues like an infant, but then an infant takes scarcely any exercise, and the waste of tissue going on in a man at full work is much greater than the additions which a child makes to its growth. Skim milk and even butter milk have lost little of their flesh-forming material, and are cheap and good food for country people. In the large towns in England milk is too often dear and bad. The white fluid frequently sold for milk in London is of little worth, and sometimes not very wholesome. The value of the proportions of heat-givers in milk is three times greater than that of the flesh-formers; that in bread is nearly six times greater. It is the opinion of our most distinguished physiologists that wheaten bread contains more nearly than any other substance the proportion of plastic and respiratory material necessary for the wants of the body in our climate. Hence it is able to sustain life, almost without the addition of any other substance, and is most aptly called "the staff of life." Bread, as well as flour, may be cooked in an endless variety of ways;* and it is to be noted that hot food is, as a rule, better fitted for children, and more digestible, than cold food. Brown bread is probably more nutritious than white bread, and tends to prevent constipation.

Oatmeal, in the form of porridge or gruel, is as valuable a food as wheat, and it is a pity that it is not more extensively used in the south. The other cereals, such as rye, barley, maize, and rice, are all available as staples for a good dietary.

Rice, which has the lowest proportion of flesh-forming principles, can be conveniently taken along with milk or Indian dhal. This excellent kind of food, a species of lentil rich in caseine, is now sold in England at the same price as rice, and deserves to be extensively used. It has this advantage over other leguminous products, such as peas and beans, that it is very palatable. It requires to be ground, and allowed to simmer, butter being added; it is then well peppered, and eaten mixed with boiled rice. This is what in India is

* See an extremely useful and suggestive work, entitled "Vegetable Cookery, &c." Second Edition. London: F. Pitman.

called "kichery," and no substance is more capable of supplying the want of flesh meats. I have heard a Hindu say, "Dhal is my flesh."

Enough has already been said of the nutritive value of the other products of the Leguminosæ. They are so rich in flesh-forming and mineral matters that they require to be taken with other substances, such as potatoes, oil, or butter, as is habitually done with beans or pea-soup. Perhaps no kind of food is better adapted to support one during hard work in hot weather.

Fish approaches nearly to flesh in its chemical composition, but it has less fat. The salmon and the eel are the only common fishes which contain much fatty matter, hence oil or butter is generally added in cooking this species of food. Potted or pickled fish are not nearly so digestible as fresh ones.

Many vegetables, such as potatoes, cabbage, cauliflower, onions, carrots, and turnips, contain a certain proportion of flesh-forming material, but they are generally richer in heat-giving or respiratory food. As already observed, a certain admixture of fresh vegetables or fruits is necessary for the preservation of a healthy state of body; but it would be a mistake to make these substances the basis of our diet. Nature, however, has wonderful powers of accommodation in this way. It is evident that the human economy can get rid of a superabundance of heat-giving material more easily than of a superabundance of flesh-forming food; and we occasionally see tribes and individuals who maintain a surprising amount of strength upon vegetables which do not appear very nutritious. It is difficult, for instance, to understand how the Irish peasantry managed to grow so strong upon potatoes, with so small an admixture of other articles.

Little need be said of the mineral components of the food. Salt is taken by an irresistible instinct, and it seems likely that a very small proportion of mineral matter which is always found in whatever we eat, is sufficient to maintain the nourishment of the bones and other hard parts. There are, doubtless, diseases where the bones become soft or brittle, but this is evidently owing to the incapacity of the system to take up the necessary salts, and not to their being absent from the food.



How clever Nature is! how simple are her rules, and how multifarious her results! She takes a few elements, nitrogen, carbon oxygen, hydrogen, and sulphur, combines them together under the influence of the sunlight, and produces a few compounds fit to be assimilated by animals. These substances approach one another very nearly in chemical composition, yet are often widely different in texture and appearance. She flavours them in an immense number of ways with a few aromas and essences. This diversity of taste is not only pleasing to the palate, but also useful to the health: it has been proved by the statistics of twenty hospitals that where one monotonous diet-roll is maintained, the food becomes insipid, and at last loathsome to the taste; and that the health of the inmates is always materially improved by a due change of dishes. No one or two kinds of food, therefore, can be held up as really better than the others. Man's constitution demands variety; and this variety Nature has bountifully afforded.

It would appear that, in England at least, we are slow of imitating Nature in this particular. Our national cookery is rather monotonous, and often very wasteful. The preparation and the nature of our food might be occasionally varied, without departing from our prudent simplicity. French cookery is too artificial and sophisticated; but we might learn from the French, while the French might learn from us. Englishmen whose knowledge of the French *cuisine* goes no farther than what is derived from dining for thirty *sous* in the *Quartier Latin*, or over-eating themselves on the delicacies at the *Palais Imperial*, may have a very incorrect idea of what is really eaten in private houses in France. The family dinners of the French are often very good, and, especially in the provinces, usually include an excellent assortment of wholesome and nutritious food. One thing which is always better understood in Catholic than in Protestant countries we might profitably learn from the French, namely,

to cook vegetables without meat. In a fine dinner, the French often serve up vegetables alone as one or two of the courses, and these are always prepared in a nice and delicate manner. We think ourselves wiser than our neighbours in all things; and no doubt we are wiser than they are in many things; but there are lessons still to be learned by the very wisest people; and it is surely worth the while of a great part of our population to know how they might live as well as if they took three flesh meals a day, and at the same time live one-fourth cheaper.

F. Pitman, Printer, 20, Paternoster Row, London, E.C.

THE

# LARYNGOSCOPE:

ILLUSTRATIONS

OF

ITS PRACTICAL APPLICATION, AND DESCRIPTION OF ITS MECHANISM.

BY

GEORGE DUNCAN GIBB, M.D., M.A.,

MEMBER ROYAL COLLEGE OF PHYSICIANS LONDON; PHYSICIAN TO THE WEST LONDON HOSPITAL; ASSISTANT-PHYSICIAN AND MEDICAL REGISTRAR TO THE WESTMINSTER HOSPITAL.

ILLUSTRATED WITH THIRTY-FIVE WOOD ENGRAVINGS.

LONDON:

JOHN CHURCHILL & SONS, NEW BURLINGTON STREET.

1863.

TO MY OLD AND VALUED FRIEND AND
FORMER COLLEAGUE,

GEORGE EDGEWORTH FENWICK, M.D.,

OF MONTREAL, CANADA,
THIS ESSAY IS INSCRIBED
WITH FEELINGS OF
THE WARMEST ATTACHMENT AND ESTEEM.

# PREFACE.

The present Essay formed the subject of a paper read before the *Medical Society of London*, in December, 1862, and is submitted to the Profession with the view of illustrating some of the applications of one of the most important inventions of modern times.

The cases which are set forth are simple in detail and brief; a number, including those of tumours or growths, I had the pleasure of showing to many of my professional brethren, to whom I take this opportunity of gratefully tendering my warmest acknowledgments in their sending me for inspection many obscure and difficult cases of laryngeal disease.

In the following pages some of the more important only of my cases (public and private) have been selected, as particularly illustrative of the practical value of the laryngoscope, and of the different structures and localities which it presents to our observation.

For a general description of all the diseases of the throat, larynx, and trachea, perseveringly and carefully worked out with the laryngoscope since its re-introduction into this country by my distinguished friend, Professor Czermak, the reader is referred to the forthcoming *second* edition of my work on the subject, shortly to be published by Messrs. John Churchill and Sons.

G. D. G.

19A, Portman Street, Portman Square,
1*st October*, 1863.

## ADVERTISEMENT.

*For an announcement of the Author's other works, with Notices of the Press, the reader is referred to the end of this Essay.*

# ILLUSTRATIONS

OF THE

# PRACTICAL APPLICATION OF THE LARYNGOSCOPE.

So much interest has been excited amongst the Profession in a desire not only to know more about the Laryngoscope, since it was brought prominently forward in 1860, but also to see examples wherein its practical value could be demonstrated, that I have been persuaded to submit the following instances, wherein the diagnosis was readily made out, after years of suffering, and the treatment in consequence rendered comparatively easy. It has fallen to my lot to see cases of laryngeal disease—great hoarseness, for example, with varying aphonia—that have existed for ten or twenty years, and submitted to every variety of treatment, without the slightest benefit, at the hands of some of the foremost amongst us, wherein the symptoms have depended upon a little growth attached to one or both vocal cords, which was recognised in as many seconds as the complaint had existed years. The nature of the malady thus being made out, the plan of treatment to be pursued became obvious.

There can be no doubt that the use of the laryngoscope would have remained dormant most probably for some years longer, had it not been for the perseverance and energy of Czermak; and although he was not the discoverer, yet, in common fairness, he is entitled to all the credit of having been the resuscitator or revivor of the instrument. For many useful applications in connection with it we are indebted to him; these will become apparent to any one who will read his work on the subject, which I had the agreeable task of translating for the New Sydenham Society. He had mirrors made of various forms, and sizes, and of different materials, and contrived hooks and other instruments for examining the nostrils, known as rhinoscopy. Professor Czermak, therefore, for what he has done, may be looked upon as the *Father of Laryngoscopy*, for we are not only indebted to him for its perfection, but for its having come into general use, as he succeeded, more than any other person, in obtaining for it a universal public recognition. (See my Paper in the *Lancet*, 17th of January, 1863, p. 65). It remains for his disciples and followers to see that it shall become one of the indispensable requisites in the hands of every practitioner, who has the welfare of his profession at heart.

Whilst thus giving the meed of praise to my distinguished friend, I must not neglect an act of justice to another observer, who was the first

to place upon record something positive regarding the use of the laryngoscope, and who *was the first* undoubtedly, to practise autolaryngoscopy. Professor Manuel Garcia is the gentleman alluded to, the well-known brother of the celebrated Madame Malibran. When Czermak published his first Essay in 1858, the title of it was, "Physiological Researches with the Laryngeal Mirror of Garcia," thus showing the importance he attached to the experiments and researches of the latter, in thus giving his name to the mirror. Indeed, I take this opportunity of declaring that these experiments are some of the most important that have ever been made, and reflect the highest credit upon the sagacity and genius of their originator; they are so beautiful and so interesting physiologically in relation to the voice, and help us so much to appreciate the pathology of vocalism, that we cannot be too grateful for them, as they appear in the Proceedings of our Royal Society, vol. vii., p. 399 (read May 24th, 1855), under the title of "Observations on the Human Voice." In my late lecture, delivered 11th of March, before one of the most critical bodies in the kingdom—the Musical Society of London—"On the Influence of Musical and other sounds upon the Larynx, as seen by the aid of the Laryngoscope," illustrated by a large number of coloured diagrams, I took the opportunity of acknowledging how much we owed to Garcia, and stated that his researches had formed the basis of experiment for all subsequent observers, and some, it was to be regretted, had actually pirated his views without acknowledgment.

I shall not here enter into the question of the priority of discovery of the laryngoscope,—that I did in another place; on a future occasion it may be more fully considered. My present purpose is to deal with pathology. At the latter part of this essay, the reader will find some observations relating to the use and construction of the instrument.

In examining the throat, the larynx, or the nose, the reader must remember all the various special parts and structures which are to be found in these situations, and he should make himself acquainted with their shape, position, colour, and movements in health, before he can venture to understand them when diseased. In regard to the movements of the vocal apparatus in the production of sounds, this is most essential. Having become familiar with all these, he will be prepared to inspect and to recognise diseased conditions. For convenience of illustration, the throat and its connections may be divided into different regions, which may be wholly or partially examined, according to the structure involved, or the seat of any particular lesion.

Thus we may take—

*1st.* Varying states of congestion of the mucous membrane of the pharynx, larynx, and trachea.—This may proceed to inflammation of an acute or chronic character, and involve some of the numerous follicles; or the follicles may become generally diseased, no part of the mucous membrane that is exposed to the influence of the air (including the pharyngo-nasal recess) remaining unaffected, and not unfrequently proceeding to ulceration. This constitutes the follicular disease of the throat, and is tolerably frequent.



*2nd.* Different affections of the tonsils, uvula, and soft palate, which materially, more or less, affect phonetic intonation. The soft structures modify the voice, although perfect phonation cannot be carried on without the integrity of the vocal cords.

*3rd.* Diseases of the epiglottis, such as congestion, inflammation, ulceration, relaxation, or contraction of its folds and ligaments, congenital and acquired, resulting in pendancy, attenuation, thickening, displacement, malformation, tumours, &c.

*4th.* Diseases of the arytenoid cartilages and aryteno-epiglottidean folds of mucous membrane, in themselves forming a distinct, numerous, and highly important class of affections. Invasion of the integrity of these little cartilages particularly, causes more misery, suffering, and wretchedness than from disease of any other part of the throat. The most horrible feelings of suffocation are produced when they are undergoing ulcerative exfoliation, and if the patient does not succumb from hectic and exhaustion, he is an object for life. The diseases and alterations in the cartilages of Wrisberg and Santorini must be included in the 4th series.

*5th.* Affections of the vocal apparatus, namely, the superior or false, and the inferior or true vocal cords or ligaments, and their immediately contiguous parts. They are Legion, and comprise ulceration, loss of substance, thinning, thickening from hypertrophy, or interstitial deposit, and loss of nervous power, varying to complete paralysis of one or both sides; vascularity, either streaked or punctiform, partial or general redness, and acute inflammation; warty, pedunculated, or follicular growths of varying character and consistence, from the fibro-plastic and fibro-cellular to epithelial; œdema, sub- and supra-glottic; and many other conditions besides the foregoing, variously influencing phonation, and producing partial or complete aphonia, whether functional or organic, dysphonia, hoarseness, &c.

*6th.* Affections of the trachea and bronchial tubes, as ulceration from tuberculosis or otherwise, exposing the rings; follicular enlargement; hypersecretion and dryness; tumours and growths of various kinds and consistence; puckering of the mucous folds, especially immediately below the origin of the true vocal cords; and flattening, straitening, or bulging inwards of the tube by the pressure of tumours externally, or other causes.

*7th.* Diseases of the nose in conjunction with the throat, more particularly at its posterior part, where the pharyngo-nasal cavity, and the recesses of the nostrils show various forms of lesion, chiefly ulceration and tumours. The membrane covering the posterior part of the turbinated bones and the floor of the nostrils is very often diseased.

*8th.* Diseases of the hyoid or tongue-bone, or its articulations with the cornua of the thyroid cartilage. These I have shown, in a special monograph, to be numerous, important, scarcely understood or at all recognised, and yet they explain many anomalous symptoms which have been erroneously referred to other parts.

*9th.* Necrosis, calcification, and other diseases of the true or larger

cartilages of the larynx, namely, the cricoid and thyroid, with their occasional expulsion. Or again, premature calcareous and atheromatous conversions, giving the voice a cranky, aged, feeble, or shaky-brassy sound, which can sometimes be made out beforehand by the *atheromatous*, or a mixture of the *atheromatous* and *calcareous expressions* of the countenance. It is in this class of cases, but especially where the *atheromatous expression* exists in its typical form, that we meet with what I have elsewhere described as the "saccharine throat."

10*th*. Foreign bodies in the larynx and trachea.

This general classification shows the extent and importance of the diseases which the laryngoscope helps us to understand and to treat. The list might be much extended, but sufficient is mentioned in the present Essay to show the student and practitioner the scope and range of vision which are submitted to the laryngeal mirror.

In the forthcoming second edition of my work on "Diseases of the Throat and Larynx, as seen with the Laryngoscope," the classification becomes more minute and distinct, and refers to special and particular affections, which are not mentioned here unless in a general manner.

These various diseases require a special study, and lengthened experience to become thoroughly familiar with. Each subdivision could alone occupy much of our time and space, but my object will be gained by submitting a few examples of each, wherein the diagnosis was made out or confirmed by laryngoscopic inspection. As the cases are given, such observations are made as seemed to be proper, in the course of their narration, but necessarily brief.

*Follicular disease of the throat; incomplete dislocation of the right thyro-hyoid articulation; thinning, flattening, marginal ulceration, and depression of the epiglottis backwards.*

Mrs. P., æt. 32, married nine years, one child, was sent to me by Dr. Tilbury Fox on the 29th of August, 1862. Subject to sore-throat ever since a child; but her present illness commenced about eleven months ago with a feeling of choking, and since then she has had a constant hemming as if there was something present at the back of the throat; this is worse in damp weather. Gets hoarse and very nervous at times. Has tenderness and occasional pricking at the right thyro-hyoid articulation often after eating, and grating can be felt there with the finger. General health bad. Mucous membrane of the pharynx is relaxed, secreting mucus, with some redness and streaks the result of follicular enlargement. The laryngoscope showed the epiglottis very thin and dry, ulcerated at its left and upper margin, flattened out laterally, and much depressed backwards, so that the interior of the larynx could hardly be seen by forcible inspiration or sudden expiration; it was much congested. She was subject to spasmodic fits of dyspnœa, and often felt as though she should be suffocated. This patient had been seen by many practitioners and hospital men; some pooh-poohed her complaint, and told her it was imaginary; yet on examination I diagnosed follicular disease



of the mucous membrane, with general congestion and irritation, incomplete dislocation of the right thyro-hyoid articulation; and more important still, depression, thinning and flattening of the epiglottis. Under treatment she was perfectly cured in two months, to my own surprise, and it has remained permanent, for the natural position of the epiglottis was restored.

*Congestion and depression of the epiglottis backwards, giving rise to fits of dyspnœa and threatened suffocation at night, with great suffering.*

Mrs. B., a lady without family, had been seriously ill two years when she consulted me, in June, 1862, for her throat. She had had a mild form of follicular disease six years before. She had been under the care of almost every body of note, and the throat, she told me, had been burnt with all sorts of things, swabbed innumerable times—in fact each one, she said, did something. Besides various other symptoms, she felt in swallowing as if a lump was present at the back of the throat, and she was in the habit of introducing her finger, and feeling it. This proved to be the epiglottis, which the laryngoscope showed to be much depressed, and presenting what I shall denominate a care-worn appearance, for it had undergone much suffering. The left side of the cartilage was in complete contact with its proper fold, and a small aperture existed on the right through which respiration was carried on; it was much congested. At night she had various distressing sensations of dyspnœa and threatened suffocation, and her life was most miserable and wretched. Under treatment her health improved, the condition of the throat was better, but the epiglottis could be only partially raised. She finally left London to pass the winter in a distant climate; although the lungs were quite sound. She was at all times very desponding, and this chiefly arose from the sense of suffocation she experienced for many hours, after swabbing had been done by others, and she would put the question to me, "Could such practice be really useful in the cure of throat diseases, when it caused her such agony?" Her sufferings were so extreme, that her friends always saluted her with the inquiry, "How is your poor throat?" which appeared to me to be peculiarly applicable to others at the time, for garotting was then rather prevalent.

The cause of the extreme amount of suffering in this lady is readily explained by the *position of the epiglottis*, for if this cartilage is depressed backwards, and not known to be so, any instrument employed for introduction into the larynx will naturally come in contact with the antero-superior surface of the epiglottis, and force it farther downwards, and for the moment close up the glottis. This is very rough treatment, for it has ended fatally shortly after in some instances, and therefore deserving of the severest reprehension, now that we have the laryngeal mirror to diagnose the condition of things in the beginning.

In some of the severest forms of throat disease which have come under my observation, this unhappy state has existed, and the patients were impressed with the idea that they must ultimately become suffocated.

The remedy for this is in the hands of the profession, and should be applied early: it consists in the examination of children with the laryngoscope from the age of four or six to ten years, to determine the position of the epiglottis, and if it is erect the parents need not be anxious whilst the child is going through the usual diseases; but if it be oblique and very much pendant, which it is in eleven per cent. of mankind, then it should be specially noted as a precautionary measure. In many persons this peculiarity is congenital, for I have discovered it in the mother and her child. In some I can almost predicate it beforehand, from the influence which it exerts on phonation. If there is disease of the larynx or trachea, of the bronchial tubes or proper tissue of the lungs, it forms a serious obstacle to treatment, independently of the impediment it offers to breathing, until the adoption of such means as shall wholly or partially draw up and restore the cartilage to a more suitable position.

As I have elsewhere gone more fully into the subject of the position of the epiglottis, I shall not enter farther into it here.* I may observe, however, that cases are remarkably frequent where this pendant position is associated with throat disease, numerous examples of which might be adduced, but I shall content myself in simply narrating two of my latest.

*Aphonia, severe irritation and burning in the throat, constant raking of mucus, associated with a pendant epiglottis.*

John D., æt. 53, came to me 15th of June, 1863, recommended by Dr. Greaves. For twelve months cold after cold settled in his throat, and he could neither rest day nor night; for the last three months his voice has been reduced to a whisper. Is constantly hemming and hawking to get up phlegm, the upper part of the throat is sore and tender, irritable beyond measure and burning, and dyspnœa is at times fearfully urgent. The sufferings of this patient were almost unbearable, but on examination they were found to depend chiefly upon the position of the epiglottis, which was almost quite flat upon the glottis, so that scarcely room was left for the air to be inspired. By sudden forcible expiratory efforts the valve was raised for an instant, and the interior of the larynx seen. On the right side several deep and large ulcers were visible, extending to the attached margin of the vocal cord. At the left side of the root of the epiglottis was a circular deep ulcer, and several were noticed on each side of the base of the tongue. Under treatment the more urgent symptoms speedily subsided, and he is going on as well as can be expected, picking up flesh and strength every day.

In a fourth case of

*Flattening and pendancy of the epiglottis from old laryngeal disease*

of five years' duration, the sufferings of the patient were not great when

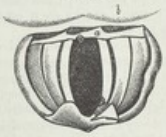
* See Trans. Brit. Assoc. for Advancement of Science, Cambridge Meeting, 1862, and Newcastle Meeting, 1863; also *Archives of Medicine* for 1863.



he came under my care in June last at the Westminster Hospital. The uvula and other parts of the throat were destroyed, there was ulceration leading up to the pharyngo-nasal arch, as shown by the rhinoscope; and the epiglottis completely covered up the larynx, so that it was utterly impossible with all the devices at my command to see the interior of the latter. This patient had been subject to fearful tertiary ravages, under the care of my colleagues Mr. Holt and Dr. Fincham, and was comparatively well, but liable at any moment to attacks of serious laryngeal disease, and pulmonary mischief from the position of the epiglottis.

It has fallen to my lot to encounter six instances of destruction of the free portion of the epiglottis; three of them occurred in 1862, and were brought before the Pathological Society; a fourth was lately sent to me by Mr. Brace, of Bath, and Dr. Guthrie of Brechin. A fifth I lately examined for Mr. Nunn, and Mr. J. W. Mason; and a sixth was recently under the care of my colleague, Mr. Holt, at the Westminster Hospital, wherein I diagnosed this condition. The symptoms in all were very distressing and painful to witness, in one there was ulceration of the left arytenoid cartilage, and the poor patient's sufferings were described as actually horrible. The annexed sketch affords a view of the parts laryngoscopically; the root of the epiglottis seems as if it had been cut off by three incisions; my belief is that it was detached by three separate lacerations. The particulars appear in the fourteenth volume of the "Pathological Transactions." Two of the other cases are as follows, the appearances they presented were such as to excite the deepest commiseration in my mind for the unfortunate sufferers. The first was truly a case of laryngeal phthisis, for the patient underwent all the suffering and symptoms as if he was in the third stage of the pulmonary disease. I showed the subject of it to the Fellows of the Medical Society of London, and pointed it out as an example of laryngeal consumption, in which the lungs remain comparatively sound, and yet the structures at the upper larynx were wholly chaotic, or to use a geological expression, had undergone a cataclysm, wherein they had been swept away without leaving scarcely a trace behind.

Fig. 1.



*a*, The base of the epiglottis. *b*, The back of the tongue. The black space in the centre is bounded on either side by the vocal cords, at the base of which are seen the arytenoid cartilages. The position of right and left, anterior and posterior, is reversed in the laryngeal mirror.

*Destruction of the epiglottis, aryteno-epiglottidean folds, arytenoid cartilages and vocal cords; incurable aphonia.*

A. Stoneham, æt. 24, called on me the 7th of November, 1862, with a

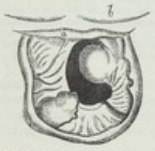
letter from Dr. Maxwell T. Masters, of Peckham, who kindly sent him to me. Always healthy until his return from Australia, three years ago; consumptive on his mother's, and asthmatic on his father's side; father alive, aged 70. All his brothers and sisters, six in number, are alive. Present illness commenced with a cold on board ship when he had on one occasion to bale out water, and got very wet. The throat became sore, two years ago, when he could scarcely swallow even milk, and he was a patient in the Consumptive Hospital, Brompton, for six months; he was told he was not consumptive. The throat gradually got worse; eight months ago a fit of coughing came on which was followed by hoarseness and gradual aphonia, which has continued to the present time.

He has no pain, but in swallowing it tickles him at the back and roof of his mouth, which, if not carefully managed, suddenly regurgitates through the nose, unless his food is pultaceous. Large lumps of bread sometimes actually pass through the nose; fluids he cannot swallow, not even his saliva. Five months ago he was nearly gone, and has passed through attacks of terrible misery and suffering with his throat. Is not so much emaciated the last two months.

He now breathes with a loud noise, somewhat of a snoring character, as if he was asleep; has occasional croupy cough, no dyspnœa, dysphagia nor pain; speaks in a loud whisper; pulse 116, weak; respiration 20 per minute.

*Laryngoscopy* showed the most fearful ravages. The uvula was almost gone, the velum was adherent posteriorly to the pharyngeal wall, and left a shallow passage towards the right side passing upwards to the nostrils behind. The epiglottis was wholly gone, and the arytenoepiglottidean folds were mostly destroyed, their remains being transformed into fleshy tubercles surrounding the crescentic glottis, as represented in the woodcut. The arytenoid cartilages were gone. There were no vocal cords, but a sort of glottis remained, formed by folds or edges of the cicatrices of the destroyed mucous membrane, and expanding to a small degree with some slight movement during forcible inspiration. Everywhere great ravages were visible, and for fearful destruction of the parts it was one of the most terrible cases that has come under my notice.

Fig. 2.




*a*, The root of the epiglottis. *b*, The tongue. The black, crescent-shaped glottis is surrounded by the remains of the arytenoepiglottic folds.

This patient had syphilis when a younger man, and although he denied it, I suspected a second attack from the occurrence of an eruption and other symptoms when on board ship.

Treatment was of course palliative, and he so improved that a more healthy state of the membrane of the larynx was brought about; heretofore it had been of a drab colour, it now changed to a pink. The breathing continued very noisy,



and he had to expectorate frequently. In December, 1862, I exhibited him, with others, before the Medical Society of London, and then lost sight of him. In February last, Dr. Masters wrote me to say that A. S. was carried off by an attack of bronchitis, such as he had, to his knowledge, frequently been subject to. No *post-mortem* examination was made. Thus ended the unfortunate case, which might have been attended with much more comfort to the patient had his constitution been better, and the laryngeal consumption less extensive than it was.

*Total loss of the epiglottis, with aphonia from ulceration of the larynx and pharynx.*

In October, 1862, a lady consulted me from one of the Western counties, accompanied by her son and daughter. She was æt. 56, the mother of ten children, and of delicate health. She was very well from June to November, 1861, when she had a relaxed sore-throat. A solution of caustic was applied in April, 1862, and afterwards the solid substance. Her illness when I saw her had been of twelve months' duration, with loss of voice since April, over six months. She has had ulceration of the fauces, for which the solid caustic has been rubbed round and round in the form of a complete circle, *i. e.*, the diameter of the faucial space. Was never without ulcers, she said, until she commenced to take bismuth and henbane, a month ago. Stomach is often out of order; she is very nervous and easily agitated, and has spat up latterly sometimes a quart of mucus in the twenty-four hours.

She is very pale, and speaks in a low but distinct whisper, and gave me the particulars of her case herself. Has no cough nor chest symptoms; can swallow fluid but not solid food; throat at times painful, with pricking of the fauces in the right side. Tongue is constantly covered with a thick, white, creamy fur along the back and sides, the tip is clean and pink.

*Laryngoscopy and inspection.*—So irritable was the throat that my examination the first day was unsatisfactory, but both on it and the second day (17th and 18th) I contrived thoroughly to see all the parts. The mucous membrane of the fauces was bathed in a profuse secretion, especially the first day, the membrane was sensitive and extremely congested. A large, deep, and irregular ulcer occupied the middle of the back of the pharynx, and could be seen only by depressing the tongue with a depressor. Another was present in the right side of the pharynx, laterally, seen with the laryngeal mirror— this one gave rise to the pricking pain. Several other smaller ulcers were scattered here and there.

Fig. 3.


*a*, The remains of the epiglottis. *b*, The back of the tongue. The dark space represents the glottis.

The epiglottis was wholly destroyed down to its root, leaving the

merest trace of its presence. The first day there was a granulation on its left border which disappeared by the second on the use of a proper gargle. The membrane of the interior of the larynx was red, œdematous, swollen and irregularly prominent, as seen in the drawing. The white colour and shape of the cords were gone. The trachea could be seen with streaks of white lymph-like secretion. The parts moved freely, the aryteno-epiglottidean folds were partly ulcerated, but otherwise sound, as also were the two little cartilages, permitting of complete closure of the larynx during deglutition. There was no feeling of suffocation at any time—a noteworthy fact.

The effect of an astringent and soothing gargle the first day was a diminution of the secretion, and subsidence of the irritability, producing a more healthy pink colour of the membrane generally; but this was partly due to a solution of the iodide of silver, freely applied the first day. On the second day I carefully applied a solution of nitrate of silver to the interior of the larynx, and to all the ulcers, especially that in the middle of the pharynx, by means of a soft brush. Suitable constitutional and local measures were prescribed, the diet regulated, and a hopeful prognosis was given. In two months she had greatly improved, her throat was comfortable, and it seemed cured. One month after she saw me she wrote (on the 16th of December), "The expectoration was much lessened, the general health greatly improved, appetite doubled, meat acceptable, which she had not touched for months. Voice returning; she does not whisper, yet the sound is croaky. Ulcers all healed up." The vocal cords were subsequently seen by her son; and her recovery has been complete, with full power of swallowing, although the epiglottis is irrecoverably gone, and I heard her speak in a good, clear voice, at her own residence, on 8th August last.

*Aphonia and dysphonia from tuberculous ulceration of the follicles of the epiglottis, larynx and trachea, in the first stage of phthisis pulmonalis.*

A. M., a young gentleman, æt. 17, was sent to me by Dr. John Hall Davis in the middle of December, 1862. He had been ill sixteen months, commencing with pain in the chest. Twelve months back, could not talk without coughing. The cough now originates in a sort of itching of the throat, with a squeaking attending it. His breath is short, and he can scarcely ascend a flight of stairs. Coughs and expectorates a large quantity of phlegm, especially at night. Is a delicate, strumous, tall lad, fair and pale complexion; always healthy before present illness. Has grown much last twelve months, and his appetite has failed, so that he has become a shadow. All his brothers and sisters are healthy, and father and mother are living. Deglutition is very painful, the first mouthful is quite agonizing. Voice is a laryngeal whisper, it gets better and worse; has not had his proper voice for sixteen months. He is in the first stage of phthisis.

*Laryngoscopy.*—Redness and congestion of the mucous membrane, with very fine tuberculous ulcers on the true and false vocal cords, and



also in the trachea and on the epiglottis. (Fig. 4). There is much secretion of mucus in the upper trachea. Applied a solution of nitrate of silver on two occasions to the trachea with my laryngeal fluid pulverizer, and to the other parts with a brush, and these were sufficient to heal up all the ulcers, and improve the voice.

Fig. 4.

The dark space shows ulceration of the trachea, with the true and false cords on either side, all capped by the epiglottis.

*Tuberculous ulceration of the larynx, especially involving the right vocal cord in a phthisical patient.*

In the following case the ulceration of the affected vocal cord was completely arrested, and the other little ulcers healed up by topical applications. Constitutional measures alone cannot be relied upon in such cases; something must be done locally as well.

C. L., æt. 38, married, and the mother of four children, came under me, July, 1862. She had been subject to chest disease for eighteen months, but had had cough for four years. She was now in the third stage of phthisis, with cavities in the upper and anterior part of the left lung, and extensive tuberculosis of the right, running into the second stage. General health bad, is much emaciated, has night sweats and hectic fever. Has had hoarseness and partial aphonia for the last seven months, with occasional attacks of pain; the throat feels raucous and sore after much coughing and expectoration.

*Laryngoscopy*, 28th of July.—Throat raw and very irritable, but she bore the laryngeal mirror three times. General redness of the entire laryngeal mucous membrane was noticed, with extensive ulceration of the inner or free margin of the right vocal cord, which had penetrated somewhat extensively, as shown in the sketch. The left vocal cord was quite healthy. In several other places small points of ulceration were visible. The large ulcer was touched with the aid of the laryngoscope, with a solution of nitrate of silver, by means of a suitably curved, large-bellied camel's-hair brush, causing comparatively slight spasm.

Fig. 5.

In a few days the voice improved, the irritation subsided, and the ulcers were found to have healed.

In October, deglutition produced pain on the right side of the neck, mainly due to inflammation and probable dislocation of the right thyro-hyoid articulation; this part was painful, and caused a rough aphonic voice at times, from impeded motion of the parts. The laryngoscope showed the ulcer on the right vocal cord cicatrised, and with capa-

bility of action. The left vocal cord vibrated like a relaxed string.

Pain and soreness were prominent symptoms for some weeks, necessitating a second swallow to get down food. The thyro-hyoid ligament had become shortened, so that the cartilage and bone were nearly in contact. Under the use of glycerin twice a-day, and expectorant mixture with half-drachm doses of tincture of sanguinaria, she experienced great relief, and got better, and remained so for some weeks, but the pain was so severe in the right side of the neck, that my strongest fears were excited lest rupture of the ligament should ensue. The phthisical affection was so far advanced, that her existence terminated in a few months.

*Aphonia following phthisis and pneumonia, tuberculous ulceration of the larynx and disease of the vocal cords.*

Mrs. C., a handsome, but pale, young married lady, accompanied by her husband and Mr. F. B. Pearse, of the Maldon Road, her medical attendant, consulted me in the latter part of January, 1863.

She was pregnant four months with her first child. Two years ago she had an attack of pneumonia at Bristol, and remained delicate after it. In December, 1861, her voice began to fail and went gradually away, so that for the last twelve months she has spoken only in a whisper. Has a severe cough and expectoration of purulent mucus, with pain in the larynx, throat, and ears. She was in the second stage of phthisis.

*Laryngoscopy* was difficult, from her nervousness and irritability of the fauces; I held out the tongue myself. The epiglottis was intensely red, the mucous membrane of the fauces much relaxed, the velum was drab, the uvula long, and the tongue of a drab colour. The interior of the larynx down to the cords was congested, and the membrane ulcerated, even upon the cords themselves, to their very edge, but there was no loss of substance. These ulcers were tuberculous (*see* Fig. 6). Beyond the glottis I could not see, but so delicate was the patient that she fainted away during the examination. The aphonia was due to the ulceration of the larynx, and thickening of the vocal cords.

Fig. 6.


*b*, Vocal cords ulcerated. *c*, The tongue. *d*, The epiglottis.

I prescribed a course of treatment which Mr. Pearse approved of, including topical measures, with the view of healing the ulcers and restoring the voice, at the same time not overlooking the general health.



*Deformity of the larynx, and alteration of speech, from small-pox.*

The subject of this was a female, æt. 43, sent me by Dr. Wright, of Somerset Street, 15th of December, 1862, to examine on account of deficient phonation.

When four years of age she had small-pox; a fit occurred, and after it the upper part of the neck became much swollen; she remained speechless for six months. She was very weak and nervous up to the age of fifteen. She married and had three children. Her speech remained indistinct until she grew up, when it became a little clearer, although still imperfect. All her other faculties are good; she was operated upon for strabismus by Mr. Ure, at 21. Never could sing. The laryngoscope showed the right vocal cord to be destroyed, no doubt by the small-pox; the left was normal. Her language is that of a child in pronunciation, *e. g.*, calling

| | | | |
|---|---|---|---|
| good | — dood | silly | — chilly |
| clever | — chever | thin | — chin |
| stout | — tout | stopped | — topped. |

and so on.

The woodcut shows the view obtained, but in phonation the left cord moved freely across to the right side.

Fig. 7.


*b*, The left and only vocal cord. *c*, The back of the tongue. *d*, The epiglottis.

*Polypoid growths removed from within the larynx, by means of the laryngeal écraseur.*

The patient was a gentleman, æt. 37, who had been the subject of hoarseness and varying aphonia for twelve years, which supervened upon an attack of yellow fever in the West Indies. In recovering from this, he was profusely salivated, and permanent hoarseness set in. In the open air, he spoke only in a whisper; in-doors the voice was stronger, and possessed a rough laryngeal sound. He had been under every variety of treatment for many years without any benefit, as the true nature of his malady was never made out until examined by myself with the laryngoscope for the first time in November, 1862. Two distinct, fleshy, pedunculated, polypi were seen attached to the vocal cords; they were nearly as large as peas. One was situated between the two cords anteriorly, whilst the other was attached to the anterior free border

Fig. 8.


*a*, The epiglottis. One tumour is seen to arise between the two vocal cords anteriorly, the other from the left vocal cord.

of the left vocal cord, as shown in the woodcut. (Fig. 8.) This patient was shown to many gentlemen, amongst others, to Mr. Henry Smith of Caroline Street, on the 5th. On the 6th, I succeeded in removing, with the laryngeal écraseur of my own contrivance (manufactured for me by Weiss and Son), by the aid of the laryngeal mirror, the left tumour; and on the 8th, the other, situated in the median line, with the able assistance of Mr. George Lawson and Mr. T. Carr Jackson.

The voice and hoarseness were immediately improved, he could readily fill his chest with air, and felt much more ease in breathing. There was no bleeding. Anæsthesia of the fauces had been produced by the internal use of the bromide of ammonium.

Under the microscope, the growths were found to consist of delicate fibres without nuclei, in a transparent basement membrane, with multitudes of epithelial cells, many of which were free.

A little congestion of the larynx followed, but the recovery was most satisfactory, and the voice became strong.

*Fibrocellular polypus of the larynx, the size of a pea, successfully removed.*

The patient was a gentleman, æt. 42, the subject of hoarseness and dysphonia for ten years. He had rubeola at twenty-four years of age, pertussis at thirty, and variola at forty. The voice possessed a sort of hoarse whisper, and was constrained as if the trachea was tied. He had undergone every variety of treatment, but the nature of his complaint had never been suspected. The laryngoscope showed the long existing symptoms to depend upon the presence of a polypus the size of a pea, situated immediately below the origin of the two vocal cords, and no doubt originating in the anterior part of the subglottic space. In speaking, the tumour would glide upwards between the cords, and so prevent their approximation. The left arytenoepiglottidean mucous fold was swollen from œdema, and impaired in its action. The drawing accurately represents the condition of the larynx as sketched at the time (Fig. 9).

Fig. 9.


*a*, The epiglottis. *b b*, The vocal cords, between which is seen the polypus. *c*, Back of the tongue.

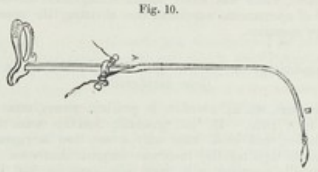
The polypoid growth was alternately prominent or retiring according to the state of relaxation of the throat.

Anæsthesia of the fauces was produced by the internal use of the bromide of ammonium; yet on attempting to introduce the laryngeal écraseur* (of which the annexed woodcut (Fig. 10) is a representation), the reflex action, through contact with the epiglottis, frustrated attempts at removal, notwithstanding the celerity of my movements. On the 10th December,

* It is described in the Lancet of May 20th, 1862, p. 520.



Fig. 10.



1862, aided by Mr. Alex. Ure, Dr. Richardson (who admirably gave chloroform), Dr. Logan, and Dr. Fisher, I very readily succeeded in catching the pedicle in the wire noose of the écraseur, and the tumour was detached. The merest trace of blood was visible.

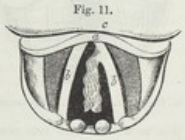
The result of the operation was marvellous. The voice instantaneously became altered and sonorous, the chest filled with air, and the patient felt as if suddenly possessed of increased bodily power and energy. Nothing untoward followed, and a good recovery ensued.

In composition the growth was similar to that removed in the previous instance, consisting almost wholly of epithelial cells, with a very few fibres.

*Spontaneous expulsion of an elongated polypus from the left vocal cord.*

The subject of this was a young lady, whose voice had been affected for ten years, but not lost, after singing the higher notes. In March, 1861, the glottis was pear-shaped, from imperfect action of the anterior part of the vocal cords. This condition, due probably to paralysis, disappeared, and the glottis became oval. In May, 1862, she was seen, with me, by Professor Czermak, when a number of little tubercular bodies were observed on the edge of both cords like a row of small beads; these disappeared under treatment, and in June the glottis opened widely, and the voice was stronger. In August three small spiculæ were noticed, two on the right and one on the left vocal cord, producing no inconvenience. In the beginning of February, 1863, the appearance was presented, as seen in the drawing, of an elongated growth, originating from the anterior part of the left vocal cord, and about two-thirds of its length running parallel to both cords from before backwards. It did not hang downwards into

Fig. 11.




*a*, The epiglottis. *b b*, The vocal cords; the left gives origin to an elongated polypus. *c*, The tongue.

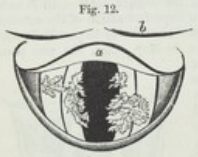
the trachea, and when the glottis was closed it lay over the fissure. It had formed in five months. In the first week of March the pedicle of attachment, which was small, became strangulated one evening, and permitted of spontaneous expulsion, thus obviating the necessity of its removal by operation.

*Organic aphonia from foliated epithelial growths on the true and false vocal cords.*

A young man, æt. 24, a worker in precious stones, came under my care in July, 1860. He had gradually lost his voice twenty-two months before, and could utter only a very low laryngeal whisper. Sometimes for days together there was complete dumbness. Whispering was usually associated with great pain, straining and tightness of the neck, referrible particularly to the thyroid cartilage; general health bad. He had contracted syphilis three years ago, with secondary eruption and sore-throat. A little mirror was used to look at the deeper parts of the throat, and I was enabled to see the laryngeal surface of the epiglottis. It is figured in the first edition of my work on the throat at page 34, in the chapter on lesions of that cartilage.

It was not, however, until October, 1860, that I examined him in the regular way with the laryngoscope, and made out the nature of his complaint. Warty growths of a foliaceous form were discovered above the true and false vocal cords. One, large and broad, nearly covered the posterior third of the left true and false vocal cords, overlapping the free border of the true, whilst a smaller was situated more anteriorly on the free border of the true cord. The free border and part of the surface of the right true vocal cord was in connection with a long growth, and a smaller one occupied the anterior part of the right false vocal cord. These are shown in the figure. (Fig. 12.)

Fig. 12.




*a*, Epiglottis. *b*, Back of the tongue.

The glottis could not close, and therefore voice was extinguished. The treatment consisted in the topical application of solutions of nitrate of silver and argento-nitrate of mercury on many occasions. Small doses of bichloride of mercury and iodide of ammonium were given internally. The growths gradually shrivelled up and were wholly absorbed, and the mucous membrane assumed its natural condition, as well as both true vocal cords. The whisper in the meantime became gradually louder and louder, until the voice returned in about five months, and in two months later he was perfectly cured.

The growths, I believe, were solely confined to, or originated upon, the mucous membrane, and were specific in their nature, although not necessarily so.



*Organic aphonia for five years, from a tumour on the right vocal cord.*

A young lady, æt. 29, came to me, accompanied by her aunt, in August, 1860. Her general health was good in every respect, excepting that she had a violent attack of cold with sore-throat, followed by hoarseness, six years ago, and after the lapse of a few months the voice became gradually extinguished, so that a whisper was reduced to absolute dumbness. Yet on two or three occasions the whisper returned, but again to disappear. She had consulted many men of eminence, who looked upon her complaint as hysterical, and she was treated accordingly, without any or the slightest benefit. At times dyspnœa was distressing and her health suffered, but the aphonia had existed for five whole years. Local and general treatment produced some slight benefit only. On the 24th October, 1860, she was submitted to laryngoscopy, when the cause of the aphonia was at once revealed: for a large, nodulated, and somewhat oval tumour occupied nearly the whole of the right vocal cord, encroaching upon the false cord, and protruding across the glottis (*see* Woodcut). It was red and fleshy, and quite immoveable, whilst the left vocal cord was white and slightly moveable, and bent outwards. Nothing else was noticed beyond general congestion of the throat and trachea. Of the nature of the tumour it was then impossible to say, but as it had existed for some years, in a comparatively young person, it was not malignant.

Fig. 13.


*a*, The epiglottis. *b*, The tongue. The tumour is seen on the right vocal cord.

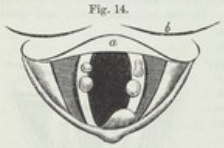
The treatment varied, being chiefly iodide of ammonium and tincture of iodine, occasionally associated with sanguinaria and nux vomica. Topical applications were persevered in with regularity and frequency, by the aid of the laryngeal mirror, of nitrate of silver, nitrate of mercury and silver, sulphate of copper, tannin, etc. The second appeared to do the most good, for in a little time the growth began to get smaller, and by degrees absorption went on, until there was little or none of it remaining. Coincidently with its decrease the whisper became stronger, the voice increased in tone and intensity, until it became natural. The cord now acted well and met its fellow, and the remains of disease quickly disappeared as the voice strengthened. The mucous membrane of the cord remained red for some time and then disappeared, and, beyond some slight irregularity of the surface, it was of proper width and colour. My impression now is, that the growth was originally follicular, and confined to the mucous membrane, possibly

an agglomeration of several enlarged follicles, for the reason that the natural condition of the cord was preserved.

*Organic aphonia for three years, from tumours on both vocal cords.*

H. B., æt. 22, resided in Essex, came to London, and was treated for consumption at one of the Hospitals. She had lost her voice for three years, and was given cod-liver oil, steel, and the neck and chest were blistered numberless times. She had a slight cough, but she said her throat caused it. She spoke in a low whisper, and its laryngeal softness and tone at times gave the belief that she was suffering from ulceration of the follicles of the larynx, especially as there was some follicular disease of the pharynx. The catamenia were regular. General health middling, but she did not look phthisical. The most careful examination failed to detect any pulmonary disease. The laryngoscope was used on the 27th October, 1860, and several tumours were found on the surfaces of both vocal cords, two on the anterior half of the right, both slightly overlapping the edge of the cord; and four on the left, the largest situated at its posterior part close to the arytenoid cartilage; another smaller was on the middle of the cord; these two, especially the former, overlapped the edge of the cord; whilst two very much smaller lay on the surface, on the anterior third of the cord. All these are seen in the drawing. (Fig. 14.)

Fig. 14.




*a*, The epiglottis. *b*, The tongue. The tumours are seen on both vocal cords.

These growths were regularly touched with various applications, and one by one gradually disappeared; in the interim the voice was slowly returning, but it was not until nine months after laryngoscopy was first practised that the remains of the last and largest growth had completely disappeared, when the voice assumed its full and natural compass and power.

*Varying aphonia from two small congested growths on the surface of the left vocal cord.*

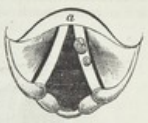
The subject of this was a young lady æt. 20, supposed to be phthisical, who came to me on the 2nd of November, 1860. Her voice was weak, at times reduced to a whisper, for the period of eighteen months. General health good.

Laryngoscopy showed two swellings or tumours of a deep crimson colour upon the surface of the left vocal cord; one was situated near its anterior third and projected over the free edge of the cord. Although these did not interfere with its action, they nevertheless impaired phonation. The drawing (Fig. 15) gives an accurate view of them.



She was treated for three months by the local application of various solutions, and the internal use of the iodide of ammonium, when the growths disappeared, the voice being restored to its usual power and strength without any further attacks of weakness or aphonia. I have no doubt that these took their origin in two of the follicles of the mucous membrane.

Fig. 15.



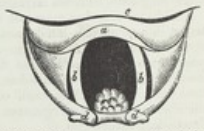

*a*, The epiglottis. The two tumours are seen on the left vocal cord.

The four cases of aphonia just detailed were some of the very first in which I used the laryngeal mirror, and they well illustrate its value both for diagnosis and treatment.

*Constrained hoarseness for eighteen months, depending upon a warty growth, removed with the laryngeal écraseur.*

Mr. Henry D., æt. 51, had had hoarseness for eighteen months, of a peculiar laryngeal character, indicating obstruction, which I suspected beforehand to be due to a warty growth. This was verified by the laryngoscope, which revealed a tumour as large as a pea springing from the posterior part of the larynx, between the vocal cords and arytenoid cartilages, as shown in the woodcut. (Fig. 16.) He had been under various persons, without any relief, and was still a great sufferer. By local treatment the growth shrank a little, but it was mostly removed with the laryngeal écraseur, on the 22nd of February, 1863, at which operation I was ably assisted by Mr. W. F. Teevan. His voice and general health greatly improved, but the tendency towards a laryngeal tone in the former for some time remained.

Fig. 16.




*a*, The epiglottis. *b b*, The vocal cords, between which is seen the growth. *c*, Back of the tongue. *d d*, The arytenoid cartilages.

*Loss of voice, with an occasional hoarse whisper for fifteen months, from a warty growth at the back of the larynx, which was successfully removed.*

This patient was a young lady, æt. 25, placed under my care by Dr. Routh. She had lost her voice from a cold in December, 1861, and never regularly recovered it, and the whisper was at times rough and hoarse. Health very good. The laryngoscope revealed a fissured wart (Fig. 17) at the posterior part of the larynx, in the same situation as in the foregoing instance. On Sunday, 29th March, 1863, she was given a few whiffs of chloroform, by Dr. Routh, with an inhaler of his own con-

trivance, and sensation was removed from the larynx. I then proceeded to remove the growth with the laryngeal écraseur, which was accomplished with the greatest ease and with no bleeding. The voice immediately improved and became strong, but she subsequently lost it two or three times, from attacks of cold, to which she was exceedingly liable. She had a strong tendency to pulmonary tuberculosis, and her vital capacity was weak.

Fig. 17.

*a*, The epiglottis. *b b*, The vocal cords, between which is seen the growth. *c*, Back of the tongue. *d d*, The arytenoid cartilages.

I have been successful in removing little growths in several other cases, which limited space prevents me giving here, but it may be observed that in one a flattish tumour sprang from the right ventricle of the larynx, and was easily torn from its bed of attachment with marvellous results.

In a girl of 16, Lydia C., occasional aphonia and a constant unconscious catch of the breath were cured on 31st March, 1863, by the removal of a cluster of small growths situated at the posterior part of the subglottis, with the laryngeal écraseur.

I failed in removing a growth situated at the posterior part of the larynx, in a gentleman kindly sent to me by Mr. Gay, in consequence of the extremely pendant position of the epiglottis; this latter condition caused more inconvenience than the presence of the tumour. On the other hand, in a young man whom I examined for Mr. Walter Coulson, there was a growth like a small comb also at the back of the larynx, which produced no other symptom than a catch of the breath and occasional slight hoarseness.

*Portions of necrosed cricoid cartilage expelled in coughing from a peculiarly-shaped tumour of the right false vocal cord; aphonia and dyspnœa.*

S. P., æt. 47, was sent to me on the 10th of January, 1863, by Mr. Corner of Poplar, for admission, under my care, at the West London Hospital.

He went to India and China in the last war, and caught a severe cold in the latter country, which he never perfectly got rid of. When he got back to Calcutta, he suffered from cold sweats and fever, and afterwards, general rheumatism, and became a hospital patient. Being in government service, he was invalided and sent to England; he left Calcutta on the 9th of August, 1862, and arrived here two months after. He complained of sore-throat before leaving India, and it was very sore when he arrived. Always healthy as a young man; twenty years ago, he had aphonia for a short time from cold. Has been hoarse for four months, and three weeks ago he lost his voice.

He now feels choked up, and "cannot get clear of the phlegm."



Has no pain, but cannot swallow fluids without choking, some passes through the nose, and some is swallowed, about one half returns. No dysphagia with solids, but they seem to stop in his throat. He feels as though he could eat and drink well, but cannot do it, and is very thirsty at times. He whispers, but cannot talk, his breathing is noisy and stridulous, very much like Stoneham's case.* Cough of a brassy, laryngeal sound, as if there is obstruction. Expectorates about two pints of a yellowish catarrhal sputum in the twenty-four hours. Has no night-sweats, but little sleep, being "choked up with the phlegm." Is thin, pale, and wan, pulse feeble and small. The lungs are sound, but the dyspnœa is considerable, and respiration laboured. In forty-eight hours tracheotomy would have been necessary. Laryngoscopy was difficult at first, from the irritation and general secretion. The fauces and pharynx were much relaxed and quite white; the uvula elongated. Epiglottis was sound, but much inflamed, and not covering the glottis completely in deglutition. The glottis was difficult to make out at first, but, after a while, it was seen to be nearly closed by a tumour in form like a miniature volcano, arising from a broad base on the right false vocal cord, projecting inwards towards the left side, its apex or summit being hollowed out by ulceration, and resembling a miniature volcanic crater. (*see* Fig. 18). The left false vocal cord was swollen and extended across to the right side to meet this, thus leaving a very narrow fissure to constitute the temporary glottis. The true vocal cords were completely concealed.

Fig. 18.

*a*, The epiglottis, below which is seen the tumour of the right false vocal cord, shaped like a volcano with a crater.

The treatment varied according to the special indication, and consisted of different topical applications of nitrate and iodide of silver, nitrate of silver and mercury, tannic acid, &c. Preparations of iodine and bromine internally, gargles and good diet. In nine days the wheezing was gone, the expectoration was less, and the health improved; he was able too to eat more. The swelling of the larynx was diminished, and the glottis wider. On the 9th of February, the voice was a little stronger, his general health wonderfully better, ate hearty, was stouter, and took walks in the grounds of the Hospital. On the 11th, he coughed up without pain or effort, a portion of the ring of the cricoid cartilage in a necrosed state. He left the Hospital for Poplar on the 12th, altogether quite a different individual, but with a weak voice.

He came to see me several times at my residence, and was examined with the laryngeal mirror; the crater was gone, but on one occasion the right false cord was œdematous, and seriously obstructed breathing; I therefore scarified it with an instrument I had constructed, and let out

* Already detailed.

some serous fluid, but as the relief was not sufficiently decided, I introduced a large bougie into the glottis three times, and freely dilated it, with marvellous relief to the breathing. On the 16th of March, he expectorated another portion of the cricoid cartilage the size of a sixpence, in coughing. He eats, drinks, and sleeps well, and has some colour. A third piece of cartilage was coughed up subsequently, and, I believe, still another piece has to come. His voice is now loud but hoarse, not painful; the larynx is clearer, but still with some swelling in the old situation, the natural appearance of the true vocal cords has not been quite restored, but will be in a few more weeks.

This case was an illustration of the efforts of nature to expel a dead cartilage, and the means she took to accomplish this were exposed by the aid of the laryngoscope; in all probability, it might have had an untoward result had not the treatment been greatly aided by one's vision, which permitted of the daily use of topical means, admirably seconded by Mr. C. A. Atkins, house-surgeon to the Hospital. It is the first instance on record where the condition of necrosis of the cartilages was seen with a mirror, and also the first where the scarification of œdema was practised aided by vision, as well as the introduction of tracheal sounds, which were *seen* to enter the proper channel. I have used the scarificator with success in some cases of acute œdema of the glottis since the occurrence of the foregoing.

*The remains of subglottic œdema, originating in acute laryngitis; disease of the nose.*

In January, 1863, I examined a little girl, æt. 14 (Temperance F——), in University College Hospital (for Mr. Erichsen), who had been admitted, with a severe attack of acute laryngitis, three days before. The symptoms were very urgent, but under general treatment the dyspnœa became less, and she escaped tracheotomy. In my examination with the laryngoscope, the interior of the larynx was seen to be much inflamed, the inflammation extending to the vocal cords, the free margins only of which were of a greyish-white colour, thus giving them a narrow outline. They were widely separated, but approximated during the examination—the left cord, however, not very freely. In the subglottic region, below the posterior two-thirds of the left vocal cord, was a red, fleshy swelling, pressing inwards, much encroaching upon the aperture of the glottis, and extending to the posterior part of the subglottic space, thus explaining the peculiar noise in breathing. The mucous membrane around was somewhat tumid, and of a vivid redness, which latter pervaded the trachea as far as could be seen. The case was clearly one of acute laryngitis, with considerable œdematous swelling of the subglottic region, now no doubt somewhat diminished from the treatment pursued. The uvula and central part of the soft palate were destroyed by ulceration, and rhinoscopy was very easy, showing extension of this process to the left nostril. This general examination was made with great ease in the presence of Dr. Ringer, Mr. Rickards (the house



surgeon), and several of the Hospital pupils. The sketch shows the position of the œdematous swelling.

Fig. 19.

The swelling is seen, below the left vocal cord, encroaching upon the glottic aperture.

Subsequent inspection showed the gradual subsidence of the swelling, and a good recovery was made. The foregoing is one of several instances of the subglottic form of œdema of the glottis which have come under my notice; in several, tracheotomy had to be performed, but I may just refer to one case that I watched for some time, sent to me by Mr. T. W. Nunn.

The patient was a butler, æt. 39, upon whom tracheotomy was performed in August, 1862, and a tube was worn for three months. His illness, however, had existed on and off for eighteen months before the operation, characterized chiefly by attacks of dyspnœa. When he came to me in June, 1863, his voice was tremulous, rough, and a little hoarse, it was not strong enough to permit him to earn his living. In the left subglottic region was a little swelling, which I believed to be the remains of former subglottic œdema, and treated him accordingly, with the result of its absorption and perfect cure. My last inspection of this patient was on 7th of September, on my return from Newcastle-upon-Tyne, he was then able to halloo and shout out loud, without any break or inconvenience to the voice.

The further consideration of supraglottic œdema and subglottic œdema is reserved for another place.

*Disease of the turbinated bones and floor of the right nostril, with exudation of fibrine; and disease of the throat.*

A married lady, æt. 35, without family, from the county of Worcester, consulted me by letter, in April, 1862. She had had disease of the throat for twelve years, commencing with mumps. The tonsils and uvula became diseased, and the former were removed. It is in the right side of her throat where she suffers great pain, and an ulcer there, she says, "leads up into her head." The pain in the head and throat is at times more than she can bear; it used to be very severe over the frontal sinuses; she has likewise a great discharge from the back of the throat, copper-coloured from the head, and almost black from the lower part of the throat, and it appears to her to gather in the nose and head. The right side of the throat feels raw, there is dryness of the fauces and soreness of the chest. When the frontal pain is present she is a great sufferer. Had been under some eminent men without relief, nearly all of whom had evidently treated her for neuralgia, from the nature of their prescriptions.

In the latter part of June she came up to London, and I carefully examined her. She seemed in good condition of body, pale, and suffering from neuralgic pain in various parts of the face and head, on either

side of the nose, but especially on the right side, which was tender on pressure. Pain was present behind the lower jaw on each side, in the right side of the chest, between the shoulders, and elsewhere. Breathes clear through the left side of the nose, but not the right, although she feels no obstruction; has always a tightness running up into the head; little bloody discharge from the nostrils, and two pieces of thick discharge come daily, working down from the back of the throat; this has been so for three years, and she gave me a vial full of lumps as big as a pea and upwards, which, on examination proved to be masses of fibrine. A recent specimen was expectorated in my presence. Her breathing is free, but when she is just falling off to sleep at night it is suffocating.

*Inspection.*—Pharynx covered with a dryish and grey secretion at its back part. Membrane on right side, running up and down, is very red, raw, and ulcerated. Back of tongue is fissured, nodulated, and deeply ulcerated. Base in front of epiglottis not diseased. Epiglottis hangs over the glottis and lies nearly flat, preventing a view into the larynx with the mirror, unless during a sudden inspiration. It is very thin, with small serrated margins, colour altered. The position of this cartilage explained the sense of suffocation at night from extreme relaxation of its proper ligament.

*Rhinoscopy.*—General bright redness of the membrane at the back of the right nostril was seen, the result of inflammation, with a large ulcerated projecting mass on the floor, and a smaller one to the right of it, covered with secretion of a yellowish and pink colour. The turbinated bone was partially destroyed, and covered with inflamed membrane. The ulceration of the floor of the nostril extended to the velum and right side of the pharyngonasal cavity. The left nostril, although congested, was otherwise normal. The extent of disease can be understood on

Fig. 20.

*a*, The posterior nasal septum. *b*, The superior turbinated bone of left side. *c*, The remains of the same bone of the right side. *d*, Ulcers and granulations on the floor of the nostril.

comparing the two nostrils in the annexed drawing. The right nostril



is the left in the picture. A red projecting swelling was seen in the right nostril from the front, probably continuous with that behind.

The physical signs pointed to commencing disease of the chest; there were fine mucous râles heard posteriorly between the shoulders, puerile breathing in the left chest, and indistinct in right.

I carefully applied a solution of the argento-nitrate of mercury to the back of the throat and the nose, with most marked benefit, for immediately the pain in the latter was relieved.

The treatment consisted of remedies internally besides local applications, and her improvement was slow and gradual, and for some time she wonderfully improved, but was very liable to accessions of cold and cough.

Although I have not heard from her now for some weeks, I have every reason to believe that the ulceration of the nose has healed, and the inflammation subsided, and that she is free from the pains to which they gave rise. The case was most satisfactory, in that the diagnosis was clearly made out by the rhinoscope, after a long period of uncertainty as to the nature of the complaint.

*Ulceration of the membrane covering the turbinated bones the cause of epistaxis for thirteen years, as seen by the rhinoscope.*

J. G., æt. 17, a girl of strumous habit, pale and delicate-looking, admitted under my care at the West London Hospital, on the 8th of November, 1862, for epistaxis. She had had pertussis, rubeola, and scarlatina, when four years old; after the last, she became subject to epistaxis, which remained persistent, occurring daily from both nostrils, but more so from the left than the right. The catamenia had commenced seven months ago. Rhinoscopy was difficult on account of

Fig. 21.

The left turbinated bone is seen to the right of the figure, and the right to the left of the figure, the parts being reversed in the mirror.

the contraction of the velum palati from the scarlatinal angina (no doubt

attended with ulceration, as cicatrices were seen here and there), yet it was performed, and showed very red and vascular ulcers on the posterior surfaces of both inferior turbinated bones, which gave rise to the bleeding which had blanched the patient. These ulcers are shown in the engraving. (Fig. 21.)

With the laryngoscope were seen two deep round hollows, not ulcerated, on either side of the ligament of the epiglottis at the back of the tongue; the cartilage itself was thin and worn, not such as is usually seen in the young. The larynx was normal, and the movements of the vocal cords free; a tubercle the size of a small pea was present on the surface of the right aryteno-epiglottidean fold near its outer border. On looking through the nostrils in front, the mucous membrane covering the turbinated bones appeared very red and swollen.

Topical treatment here, and attention to the general health were the chief means relied upon to bring about a cure.

I might have added several other cases of interest, in which obscure and hidden diseases of the nostrils were revealed by the rhinoscope, but the foregoing will sufficiently answer the purpose of illustrating its value. Cases of perversion of the sense of smell, discharges of various kinds, and uneasy sensations in the nose, are all more or less explained by careful rhinoscopic examination, and their treatment much simplified.

*Bronchocele bulging the trachea inwards near to the bifurcation, neuralgic pains of the neck and elsewhere.*

Many patients apply for medical relief under the impression that the larynx is chiefly involved in disease, when their maladies exist in other parts of the body, although perhaps secondarily influencing the larynx. A careful examination with the laryngoscope generally clears up any doubt, as in the two instances which now follow, wherein a view was obtained of the entrance of one or both bronchial tubes.

Elizabeth T., æt. 43, married, no children, was admitted under my care at the West London Hospital, on the 15th of September, 1862. She has had a swelling of the neck ever since she was a girl; and bronchitis for the last three months; is subject to pains about the knees, arms, and shoulders. Two years ago had an attack of sciatica. During the last winter she suffered much from pains in each side of the neck and upper part of both sides of the chest, which she attributed to the bronchocele. At times she has pains between the shoulders, also over the heart, and she feels this latter more if she uses her arms much, when her fingers become numb. She is a very tall, stout, plethoric person, with the atheromatous expression well marked. A tumour of the size of a turkey's-egg is present on the right side of the base of the neck, resting upon the upper part of the chest, but not entering it; it is divided into two parts, moveable above but not below, where it is apparently in connection with the trachea. She has no dysphagia; but when she swallows, the tumour is wholly drawn up, and she feels as if something was sticking in her neck. She has slight dyspnœa when she takes cold, and pain on either



side of, but not in, the tumour. She has follicular disease of the fauces with injection of the membrane, but no ulceration. The laryngoscope showed the epiglottis a little red, the larynx capacious, vocal cords healthy, the passage downwards unobstructed until near the bifurcation of the trachea on the right side, where there was a bulging inwards produced by the adhesion and pressure of the bronchocele since youth. In other respects the bifurcation was well seen, as shown in the Woodcut,

Fig. 22.


*a*, The epiglottis. *c c*, The vocal cords, between which are seen the rings of the trachea and the bronchial tubes, *b* being on the left. The parts are reversed, as seen in the mirror.

for the trachea was large and wide—indeed it seemed larger than usual. The bulging inwards partially obstructed the view of the right bronchus. The heart was moderately large and flabby, with feeble but regular sounds, and no distinct bruit. Its action was, however, heard all over the chest. She was nervous and low-spirited, and very uneasy about the "weakness in the throat," and pains in the neck and chest, which made her very miserable from their steady persistence.

Under the use of general tonics, such as quinine and other remedies, and the use of an embrocation, she improved in health, and the pains diminished. The tumour appeared to become smaller, and she thought she breathed better. In November the cough was rather troublesome; this subsequently got better. When lately seen she was thinner, and could use her arms and hands in needlework, which she could not do when first admitted. The old pains in the limbs had wholly disappeared.

*Dyspnœa and aphonia, probably due to an aneurism; the right bronchus only seen.*

Mrs. E. S., æt. 45, was admitted into the West London Hospital in November, 1862, under my colleague, Dr. Goddard Rogers. The mother of eleven children, six of whom are living. Always healthy up to four weeks ago, when she experienced sudden dyspnœa and pain at the root of the neck in front. The voice then began to fail, dyspnœa came on, and subsequently aphonia. At Dr. Rogers' request I exa-

mined her with the laryngoscope on the 3rd of December, and found the larynx normal. I could see as far as the tenth tracheal ring. The voice was sometimes natural, and at other times reduced to a whisper, with an occasional croupy sound and a cough. There was pain in the right side of the base of the neck and across the upper part of the sternum, with occasional severe dyspnœa at night. Thirsty, mouth very dry, pulse same at both wrists. Is stout, with ruddy complexion and atheromatous expression. Deep strong pulsation is felt on the right side of the neck, but no distinct bruit; sometimes there is pain between the shoulders. There were no special symptoms of cardiac or lung disease, and yet I suspected there might be an aortic aneurism.

On the 1st of January, 1863, I again examined her. There was now pain and soreness continually on the right side of the neck, extending to the right side of the head, face, and eye. The veins were prominent on the right forehead; she felt giddy, and disposed to fall on stooping; cough spasmodic, and distressingly persistent; pain not so uneasy about sternum; voice has returned; is thinner and weaker; orthopnœa at night. Has had a lump in the left breast five years.

Laryngoscopy showed the mucous membrane of the vocal cords relaxed, and a good view was obtained of the right bronchus. This was well seen three times, but all my efforts, by change of position, reversing the mirror, and other artifices, failed to obtain a view of the left. The aneurismal symptoms seemed to be clearer.

Fig. 23.


*a*, The epiglottis. *b*, The opening of the right bronchus. *c c*, Vocal cords, between which are seen the rings of the right half of the trachea.

Although she has remained under observation, with improvement in the more distressing of her symptoms, no fresh feature has appeared to call for special note beyond the fact that the evidence afforded by the laryngoscope proved that the symptoms did not depend upon any laryngeal disease. I am inclined to believe that the inability to see the *left* bronchus is due to spasm, in some way influencing the trachea, which is more contracted on the left than the right side.

*Paralysis of the larynx after diphtheria, permitting of a view of the bifurcation of the trachea.*

The paralysed condition following diphtheria readily permitted of a correct appreciation of the extent of the loss of nervous power, as seen in the present instance, probably for the first time, with the aid of the laryngoscope. The larynx and trachea seemed to form one continuous and expanded tube, which when straightened by position, permitted of a remarkably distinct view of the commencement of the right and left bronchial tubes.



J. W., æt. 33, employed in a fat-melting factory, at Kensington, contracted diphtheria from his three children, one of whom, a girl of five years old, died. One of the girls who recovered had paralysis of the throat, with the usual symptoms. The attack in the father, three weeks after that of his first child, commenced with shivering; the fauces were lined with a thick, yellowish-white, leathery membrane, a piece of which became detached one morning and nearly produced suffocation, until it was removed by the surgeon who attended him. A week before he came under my care at the West London Hospital, his voice became affected, and fluid passed through the nostrils. The voice has a peculiar nasal twang, like a person with cleft palate; his eyesight is likewise affected, he can only read large print held at a distance, and in writing the paper must be placed far from him. The gums are sore and tender, but not from mercury. Has little or no sensation in the fauces. The mucous membrane looks red and raw, with patches of ulceration at the back of the pharynx; the velum is prominent, with a considerable space behind it, and the tonsils are enlarged and ulcerated. He is exceedingly weak and tottering, and the slightest exertion throws him into profuse perspiration.

From the insensible state of the throat and the limited mobility of the parts, laryngoscopy was very easy, and a remarkably clear view of the larynx and trachea was at once obtained on the first introduction of the laryngeal mirror. The larynx seemed to be much expanded; the vocal cords lay close against its walls; they were apparently thin, of a greyish-white colour, and possessed no action whatever. The rings of the trachea were readily observed all the way down to the bifurcation, which was remarkably distinct, the patient's neck becoming straight from the head being well thrown backwards. The outer part of the trachea, immediately above the origin of the left bronchus, bulged slightly inwards, resembling a sort of tumour, but in reality not one. This was readily seen several times, and is depicted in the drawing taken at the time (*see* Fig. 24), although it is not represented sufficiently prominent.*

Fig. 24.

He was treated by the internal use of the citrate of strychnine and iron in infusion of calumba, with the topical use of a solution on one occasion only of the argento-nitrate of mercury, which healed up the ulcers. In two months he was convalescent, the voice was restored, and the paralytic symptoms had mainly disappeared. The bifurcation could be seen only the first few days, so long indeed as the vocal cords remained paralysed.

Although I have now seen the bronchial tubes in many cases of disease, the most favourable to permit of a good view are cases of severe diphtheritic paralysis, when there is not only an almost total absence of sensation in the fauces, but the parts are freely expanded.

* A full report of this case appears in the Lancet, Vol. 2, 1862, p. 564.

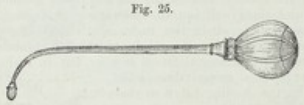
*Follicular disease of the throat and chronic tracheitis, inability to sing, speedy cure.*

As an example of a form of affection by no means uncommon, I shall cite the following :—

Mr. J. W. L., residing in the county of W., came to me, on the 31st of December, 1862, æt 69. Sore-throat some years on and off, with a cough at night, sometimes most persistent, which seemed to him to come from the throat, and he had to sit up in bed a long time before it ceased. If he begins to sing at church he is sure to cough. Is worse lying down than sitting up. Very hoarse sometimes in talking; no dyspnœa nor dysphagia; health good in other respects, takes five or six glasses of port wine daily for dinner.

*Laryngoscopy.*—Mucous membrane of fauces relaxed and follicles enlarged, larynx congested, trachea of a dark red colour from chronic inflammation, vocal cords relaxed, but otherwise normal. No obstruction in trachea nor any growths. Approximation of cords in the utterance of sounds pretty fair. He was submitted to general treatment as well as local with the following beautiful instrument, which I have called a *laryngeal fluid pulveriser*, made for me by Weiss and Son, of the Strand. It consists of a curved tube of silver, with an India-rubber receptacle at one end, and a platinum capsule at the other, so finely perforated that the holes are invisible to the naked eye, yet permitting of the injection of a fine spray into the trachea throughout its

Fig. 25.



entire length. Four applications with this instrument effected a complete cure. The cough and other symptoms disappeared, and the patient was enabled to sing in a fine and deep bass voice in church without any discomfort. I possess this invaluable instrument in gold as well as silver, for the use of solutions that are too corrosive on the latter. Its use in my hands does not produce any cough, and indeed most rarely even a spasm.

The foregoing case leads me to say a passing word or two on the subject of singing. I have had many patients under my care, indeed a large number, who had lost the power of control over some of the notes of the diatonic scale, either of the lower, middle or upper, but chiefly of the middle. This loss of power occurs occasionally to some of the most accomplished vocalists of the day, and depends upon causes which impair the equality in the power of tension possessed by both vocal cords. I cannot enter into these here, but will simply observe



that, aided by the kind cooperation of the fair patients themselves, I have been successful in restoring to their full power and compass, without the slightest break or irregularity in the notes, the singing voices of some of the first vocalists of Europe—some of them, too, who were brought expressly over to London to be placed under my care, after being ineffectually treated by Continental physicians of the highest repute.

*Deformity of the larynx with a double voice, the result of a wound of the left vocal cord.*

The subject of this was a young man, æt. 21, a ship's officer, who, about three years ago, when at Hong Kong, and recovering from an attack of fever and ague, fell off some spars on the deck of his ship with an open penknife in his hand. The blade of the knife penetrated the left side of his neck and wounded the larynx; about an inch-and-a-half of the blade entered, for that much of it was stained with blood. This was followed by dysphagia and aphonia; on recovering from which his voice was double, being a mixture of tenor and bass, at one moment the former and the next the latter. This he found very inconvenient in his calling. A small cicatrix was visible in the neck.

Laryngoscopy was easy, and showed a fine capacious larynx and trachea. The true and false cords took an oblique direction from before backwards towards the left side. The right vocal cord was natural, but the left was narrowed and contracted near its attachment to the arytenoid cartilage, and did not meet its fellow at this situation during phonation. A very distinct oblique cicatrix could be seen, showing where the cord had been at one time divided. These peculiarities are exemplified in the drawing. (Fig. 26.)

His sentences were short, only three or four words at a time, commencing in a tenor, and ending sometimes in a low bass. It was an unfavourable case to treat, yet some slight improvement in speech resulted from remedies local and constitutional, which permitted of greater freedom of movement of the affected vocal cord.

Fig. 26.


*a*, The epiglottis. *b*, The two vocal cords; on the left is seen the cicatrix of the wound. *c*, The tongue.

*Impaction of a piece of walnut-shell below the glottis, seen by the aid of the laryngoscope.*

Up to the time of my examination of the little patient who was the subject of the following case, there was no record of any instance of the lodgment of a foreign body in the larynx being verified by the laryngoscope, and therefore proved by actual visual evidence. It is fair to

assume, therefore, that it is the first instance wherein this new appliance was made use of for the diagnosis of an impacted substance.

Through the kindness of Mr. J. W. Turner, of Lower Phillimore Place, Kensington, I was requested to examine with the laryngoscope, a lad of 13, the son of Captain C., on the 19th of November, 1862. Some months before, when at dinner with the family, a piece of walnut-shell became lodged in his larynx, and after six weeks of occasional paroxysms of cough, he had a severe attack of laryngitis, which necessitated the operation of tracheotomy, which was skilfully performed by Mr. Paget. This at once relieved the urgency of the symptoms, yet did not effect the removal of the offending cause, which Mr. Turner believed must be still lodged in the sacculus of the larynx. I employed the laryngoscope with the patient sitting up in a chair near the fire, and had a good view of the parts, the mirror being very well borne against the uvula. At first there was spasm and resistance, but this wore off, and the larynx was found to be clear of obstruction above the vocal cords, which were mostly approximated. A curved canula passed through the tracheal wound from below upwards readily felt a foreign body, manifest both to Mr. Turner and myself. Its position was shifted, and another view was taken of the larynx, and this time one end of the walnut-shell could be distinctly seen below the vocal cords, projecting in the middle, across the rima from left to right, as represented in the engraving drawn at the time.

Fig. 27.

*a*, The epiglottis. *b*, The vocal cords, with the piece of nutshell between, projecting across the glottis from left to right. *c*, The tongue.

Several efforts were made to dislodge it from below without success, but its position must have again become changed, for it could not now be seen from above, chiefly owing, however, to closure of the glottis. It was apparently jammed in the subglottic space, and could not be detached, even although the patient was under the influence of chloroform. We thought it prudent not to interfere further. The ashy-grey appearance of the foreign body, bathed in secretion, was very striking.

On a subsequent occasion Mr. Paget enlarged the wound upwards, and passed his finger through the glottis from below and also from above, and felt no body then remaining. In conversing with him about the case in the middle of January, he coincided with me in the opinion that it had been coughed up before the second operation, and probably swallowed.

I subsequently learnt that the wound had perfectly healed, and the young gentleman was never in better health in his whole life.

*Congenital deformity and arrest of development of the larynx, in an adult deaf-mute.*

man, æt. 54, born deaf and dumb; married three years—no

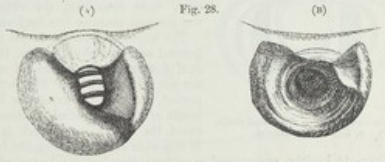


children. Is very intelligent, and can read and write and converse by means of a slate. Examined with the laryngoscope in October, 1862. The epiglottis was seen low down, about one-half of its usual length, and was concealed or exposed, according to the action of the right aryteno-epiglottidean fold of mucous membrane, which projected across the glottis, encroaching upon the left side; the left aryteno-epiglottidean fold, and no doubt the arytenoid cartilage of the same side, were wanting, but the mucous membrane dipped into the larynx, where it met the right fold, and thus formed the glottis.

The vocal cords were wholly absent, and the movements of the larynx were chiefly, indeed for the most part entirely, confined to the right fold of membrane described, which appeared alone to perform opening and closure, as shown in the woodcuts. The epiglottis was useless for all practical purposes, and constantly maintained the erect position in the situation which it occupied, being uninfluenced by the act of deglutition, with or without food.

The right aryteno-epiglottidean fold, in some views of it, formed an apparent cushion, as seen in Fig. 28 (B).

(A) Fig. 28. (B)



The parts are reversed in the drawings, as seen with the mirror, for the right side is situated on the left in each.

In Woodcut A the epiglottis is shown at the back of the tongue, with the right epiglottidean fold extending across to the left side, with the malformed glottis open, through which are noticed the rings of the trachea.

In Woodcut B the action of the fold is shown in closing the glottis, but the apex of the epiglottis is left to indicate its position when the glottis is completely closed. The prominent cushion formed by the middle of the fold is noticed in this figure.

The rings of the trachea could be seen on deep inspiration, and they presented nothing unusual. The tongue was large and thick. The throat looked like a confused jumble of the parts, as if the result of disease about the larynx, but it was clear that the deformity was congenital. Externally, the prominence of the pomum Adami was visible rather sharp, but the thyroid cartilage was considerably flattened and spread out laterally; its base, *i.e.* the junction with the cricoid, was as large as its upper part. The interval in front, between the hyoid bone and the thyroid cartilage, was much greater than is natural.

This patient's wife, æt. 47, equally educated and intelligent, examined at the same time, was found to possess no vocal cords at all, the opening

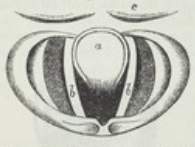
and closing of the larynx being performed by the aryteno-epiglottidean folds. This showed a large and wide air-tube, commencing at the upper larynx, thus permitting of an expansive view of the trachea. The husband articulated sounds more distinctly than the wife.

*Congenital deformity of the larynx in a deaf and dumb boy.*

A boy, æt. 14½ years, was examined by myself in November, 1862, at the Deaf and Dumb Asylum, Old Kent Road, with a large number of others, through the kindness of the Rev. James H. Watson, the Principal.

In this boy, the epiglottis originated low down, as in the previous case, close to the vocal cords, being about one-half of its usual length, and therefore practically useless in deglutition. The glottis was covered by the two usual folds of mucous membrane, originating from the back of the tongue. The vocal cords and other parts were normal. He could utter the vowel sounds.

Fig. 29.




*a*, The epiglottis. *b*, The vocal cords. *c*, Back of the tongue.

In about thirteen per cent. of the cases here examined, the epiglottis was pendant more or less backwards.

The impression seems to be pretty general amongst physiologists, that in deaf dumbness, the organs of speech are not only present, but complete and perfect, and that the dumbness is the result of the congenital deafness, because the hearing of speech is lost. If this view be correct, then the larynx ought to be healthy, and natural in conformation in those born deaf. It is computed that the number of deaf and dumb persons in Europe is about 250,000. Can it be possible that their ears alone are at fault, and their vocal apparatus not so? I think not, and believe that in a certain number coincident malformation or deformity of the larynx will be found, together with a like condition of the ears. The laryngoscope will add much to our knowledge on this point, if advantage is taken of any opportunities that may present themselves for inspection. I have been the first to draw the attention of the English reader to this subject in the *Medical Times* of the 12th November, 1862.

---

## DESCRIPTION OF THE LARYNGOSCOPE.

The laryngoscope consists of a little mirror attached to a flexible metallic stem, which is fixed into a handle of wood, ebony, or ivory.



The mirror varies in size from three or four lines to an inch in diameter, and possesses a circular, oval, elliptical, or quadrangular form.

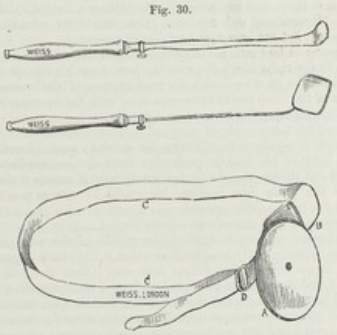
It is made of polished steel or of glass, and is attached to the stem at an oblique angle.

I have recently had slightly concave metallic mirrors made of a circular form, plated with gold and silver, which offer beautiful and brilliant reflecting surfaces, but for all ordinary purposes the glass mirror is unrivalled.

Before introducing the laryngeal mirror into the mouth it should be gently warmed over a lamp, and the temperature estimated by applying the back of it to the cheek or temple, in preference to the hand. The metallic mirrors (but not those of glass) may be immersed in warm water previous to use; heating them over a lamp, however, will be found the simplest method.

Before employing the laryngeal mirror, the throat must be illuminated by means of a light thrown into it from a reflecting surface, and this is accomplished by wearing a large ophthalmoscopic mirror either before the right eye, between the two eyes, or upon the forehead. Each plan has its advocates, but that upon the forehead will perhaps be found the most convenient, and is now pretty generally adopted. The drawing shows the reflecting mirror sold by Weiss and Son, and it is so arranged with an elastic band and buckle, that it can be worn in any position desired, being perforated if the choice should be before the eye. All mirrors ought to be perforated for this latter reason.

Fig. 30.




I am in the habit of using the mirror before the eye, attached to a

large spectacle-frame, the handles of which go well round towards the back of the head. A small spectacle-frame should be avoided, for it cannot support the weight of the mirror, and is constantly shifting its position.

The attachment of the mirror to the large spectacle-frame, the forehead band, or the mouth-piece of Czermak, as made by Weiss and Son, permit of movement in any possible direction, which I state from much personal experience in the use of each. I have recently had constructed a pocket mirror, with a mouth-piece, in which the diameter of the former does not exceed two inches.

In the use of the perforated mirror before the eye, the aperture should be in front of the pupil, so that both eyes may be employed in vision. This accuracy of position, however, is not always essential, for a good view is obtainable with the left eye, aided by the cooperation of the right eye. Both eyes should always be kept open.

The light to be employed for reflection may be natural or artificial; the former comprises day and sunlight, and the latter a good moderator lamp or an argand gas lamp; both should possess a plated or other mirror at the back of a cylindrical glass chimney. The electrical light has been used.

There are many other lamps in use for obtaining a strong and powerful stream of light, such as Voltolini's, Bouthillier's, Tobold's, Battaille's, Peltier's, Bonacina's, and my own; they constitute valuable aids to laryngoscopy, but are here merely noticed by name.

The person to be examined should be seated on a chair in an erect position, to the right of a table with the lamp near his left elbow. His mouth should be on a level with the nose or eyes of the operator, and the flame of the lamp ought to be on a level with the operator's eyes, or even a little higher.

The position being rendered easy and comfortable, and the mind calm and assured, the patient should take his cambric pocket-handkerchief, and lay hold of his tongue protruded from the mouth, between his forefinger and thumb, and gently but firmly hold it outwards and downwards, at the same time opening his mouth as wide as possible, and reclining the head a little upwards.

The operator now introduces the laryngeal mirror with his right hand, and gently applies it against the middle of the soft palate and uvula, the patient quietly breathing as usual. The back of the tongue with its large follicles first comes into view; then the hollow space between it and the anterior or glossal surface of the epiglottis; next the apex and laryngeal surface of the epiglottis; and then the interior of the larynx, in which we see an extremely moveable antero-posterior fissure, bounded by two brilliant pearly borders, which palpitate with surprising rapidity. This last is the *glottis*, and is formed by the inferior thyro-arytenoid ligaments, or as they are now generally called, the *true vocal cords*, in contradistinction to the false, which are formed by the superior thyro-arytenoid ligaments or muscles, which are above the glottis.



Or to simplify the description: on looking into the throat with the mirror, we see

1. The back of the tongue.
2. The epiglottis.
3. Posterior part of the cricoid cartilage, with its mucous membrane.
4. Pharynx.
5. The arytenoid cartilages.
6. The aryteno-epiglottic folds, or ligaments.
7. Vestibule of the glottis.
8. Superior thyro-arytenoid ligaments, or false vocal cords.
9. Ventricles of Morgagni.
10. The true vocal cords, or glottis.

Beyond the glottis the trachea comes into view, the rings of which are distinctly visible during deep inspiration. In some persons the bifurcation is readily seen: the reflection of this was first seen by Czermak, in his own person; he has shown it to me a few times, and he has seen mine; I have also seen my own, and have shown it to large parties of persons on several occasions. Frequent opportunities have occurred to me of seeing the tracheal bifurcation in both healthy and diseased persons, and on one occasion two patients—a male and female—presented themselves to me, in whom it was most distinctly and clearly seen, one after the other—an unusual and rare circumstance.

The glottis is seen to assume in various persons a lanceolate, lozenge or barrel, elliptic or triangular shape, and may possess great activity in motion, or very little. When the mirror, therefore, is introduced into the mouth, the patient should ejaculate, *Ah!* which permits of closure, and if successively repeated a few times, opening for inspiration and shutting during utterance of sound. This latter is the test of integrity, and permits of the appreciation of the amount of approximation which the vocal cords undergo.

If anything catches the breath, such as particles of dust, or of food, or if cough is produced, or expectoration, the glottis is suddenly closed, and covered up, very much as occurs during deglutition. This I have verified with the mirror over and over again. The process will be understood by describing what occurs in deglutition, as may be seen at any time:—

1st. The arytenoid cartilages approach one another the whole length of their internal surfaces, and shut the glottis with great energy.

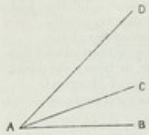
2nd. Almost simultaneously the superior or false vocal cords approach one another, enter into contact, and completely cover over the glottis, whilst,

3rd. The epiglottis is drawn backwards (by contraction of the aryteno-epiglottic muscular fibres), and applies its base or cushion, and then its posterior and inferior surface upon the closed vocal cords. At this instant the base of the tongue covers all up, and nothing further is to be seen.

In my lectures, the attachments of the true and false vocal cords, and epiglottic folds of membrane to the arytenoid cartilages, have been compared to three pairs of reins in tandem-driving, which helps to simplify and explain their successive action. Thus, let A B C D represent a longi-

tudinal section of the larynx, of which A is the arytenoid cartilage; A B is the equivalent of the inferior thyro-arytenoid ligaments, or true vocal cords; A C, of the superior thyro-arytenoid ligaments (muscles), or false vocal cords; and A D, of the aryteno-epiglottic folds of mucous membrane, in which are contained the muscular fibres running from the arytenoid cartilages to the epiglottis. The action of A D and of A C cannot occur without the action of A B; therefore, the action of A B must precede the action of A C and A D. The consequence is, that A B is first excited to action and closes the true glottis, forming the first pair of reins; this is instantly followed by the action of A C, the second pair of reins, approximating the false vocal cords; and, thirdly, by that of A D, in drawing down the epiglottis to cover all over, with the third pair of reins.

Fig. 31.




This proposition is further proved and confirmed by the exertion of voluntary power over the muscles of the larynx (in autolaryngoscopy), when the breathing is suspended for a few seconds; for when the glottis is kept firmly closed, the false cords approximate, and the epiglottis is gradually drawn downwards, as in deglutition. This subject was submitted by me to the physiological section of the *British Association for the Advancement of Science*, at Newcastle-upon-Tyne, on the 31st of August last, and my views were accepted, the facts and arguments brought forward as correlative evidence fully establishing their correctness.

After tracheotomy is performed, the glottis may be sometimes examined from below with a very small mirror introduced into the tracheal opening. I have submitted several persons to inspection in this manner, and the results obtained were extremely interesting and curious in some.

For the practice of *Autolaryngoscopy*, or the examination and exhibition of one's own larynx, a different process must be adopted from that just described, and other appliances are necessary.

The method adopted by Garcia, was to turn his back towards the sun, and by means of a second mirror held before the face, to receive the solar rays, and direct them on the laryngeal mirror placed against the uvula.

Another method is to place the flame of a lamp as close as possible to the mouth, widely open, and to hold a small hand-mirror between the eyes and flame, which will receive the reflection of the image in the laryngeal mirror illuminated by the rays from the lamp.

A third plan is to sit opposite a small looking-glass, at the side of which is a good lamp, which throws its rays of light into the laryngeal mirror at the back of the throat; the image there depicted is readily seen by the experimenter and a number of persons, in the looking-glass placed opposite to the former.



A fourth, and the most convenient method, is by the use of a special apparatus for autolaryngoscopy and demonstration, as contrived by Czermak, and much improved and modified by Weiss and Son. It consists of a mahogany-box, at the bottom of which is a sliding panel, to which is screwed a brass tube, which permits of the attachment of a large illuminating, concave, perforated reflector, at any height the most suitable. Opposite to this is a receptacle for another tube, which latter receives the stem of an oblong square mirror, attached by means of a hinge. The light is placed to one side of the experimenter, and throws its rays into the large mirror, which reflects them in the laryngeal mirror held against the uvula with the right hand. The observer looks through the perforation, or around the margin of the large mirror; whilst the experimenter looks into the square mirror; both see the laryngoscopic image in the laryngeal mirror, although not precisely alike to each, as their visual axes do not form the same angles with the reflecting surface of the mirror.

This apparatus has this advantage, that a large party of persons can see the laryngoscopic image by clustering around the reflecting mirror, and at the same time others, by looking into the square mirror, will see nearly the same object. With it I have given demonstrations at single sittings to parties of from a dozen to ninety or more persons, and all have had a good view of the interior of the larynx and trachea. For general convenience, handiness of arrangement, elegance, and simplicity, this apparatus is to be recommended as preferable to any other, at a cost which places it within the reach of all.

The experimenter must take the precaution of having the illuminating mirror elevated at a higher angle than the mouth, to throw the rays of light a little downwards; a fair guide will be to have the upper margin of the mirror in a line with the eye. A great deal, however, will depend upon the management of the person himself, who will soon acquire the minutiæ essential to successful experiment.

The laryngeal mirrors for autolaryngoscopy vary in size from three-quarters to an inch and three-quarters in diameter. A medium size will be convenient.

*Rhinoscopy* is the art of examining the posterior recesses of the nostrils, and of the pharyngo-nasal recess; it is a more difficult proceeding than laryngoscopy, and requires patience and perseverance to accomplish in some persons.

It is practised as follows:—the throat is illuminated in the usual way, with the aid of a large reflector; the tongue kept flat by a depressor held by the patient himself; a blunt and flat hook (Fig. 30), introduced with the left hand, is made to catch the soft palate about its middle, and to elevate and draw it forwards; a small mirror is now passed to the back of the pharynx and turned upwards, when a view is afforded of the septum, the posterior orifices of the nasal fossæ, the turbinated bones, and orifices of the Eustachian tubes. Sometimes the floor of the nostrils can be seen, but usually the posterior arched surface of the velum covers the inferior part of the nasal cavity.

If a catheter is introduced into the Eustachian tube through the nose in front, its extremity can be seen sometimes readily in rhinoscopy.

In cases of fissure of the soft or hard palate, or loss of the former by ulceration, a good view of the parts can be obtained without much difficulty; and in many persons rhinoscopy is easy enough when the examination is made with delicacy and gentleness, even although there may be sometimes very troublesome obstacles to overcome.

Small mirrors are occasionally introduced into the front of the nose, when the nostrils are dilated widely, and a good view is obtained of the nasal cavity and inferior turbinated bone; in some persons with capacious nostrils the nasal orifice of the lachrymal canal can be seen, but more especially in the dead when a hog's bristle has been introduced.

In examining the larynx or nose, the mirrors should be wiped with a wet sponge immediately on withdrawal, so that they may be kept clean. This is most essential with those made of steel; for if not quickly cleaned, the mucus leaves a permanent stain which renders them useless until reburnished. This does not occur with glass or plated mirrors.

*Application of remedies.*—For this purpose whalebone stems bent at an oblique angle, with sponges and brushes attached, are necessary, to apply solutions of various substances. It is seldom that solid caustic is required unless to destroy growths that cannot be otherwise removed; for this purpose an ingenious instrument, manufactured by Mr. Mathews, Portugal-street, Lincoln's Inn, can be recommended. It consists of a curved silver cannula, containing the nitrate within the end of the curve, which can be protruded on pressing the end of the piston-rod, and after touching the diseased part, is allowed to be withdrawn again into its sheath; it is depicted in the woodcut.

Fig. 32.

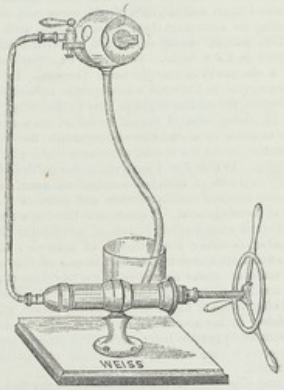
Brushes of various kinds; small syringes of ivory and silver; scarificators for œdema of the glottis, such as I have contrived and used with success, and made by Weiss and Son; curved forceps and laryngeal écraseurs for the removal of polypi and growths; and curved bougies for dilating the larynx, are some of the appliances necessary in the treatment of the various affections of the throat, larynx, and nose.

Mackenzie's Faridiser will be found useful in many cases.

And, lastly, the *hydrostatic treatment* must be mentioned. It consists of an instrument for administering fluids to the larynx, trachea, and bronchial tubes in the form of a vapour or spray. Many will recollect that of Dr. Sales-Girons in the Great Exhibition of last year. The most valuable and convenient for general use is that made by Weiss and Son, of which the annexed woodcut is a representation.



Fig. 33.




"The apparatus consists of a syringe fixed to a stand, and furnished with a screw piston-rod, worked by a handle in the form of a wheel; to fill the syringe the elastic tube is fitted at the end, and placed in a glass of water, and the piston drawn back by reversing the action of the screw; the elastic tube is then taken off, and the metal tube fitted on, and by screwing the piston forward, a fine stream of water is sent out with great force through the mount at the end, striking upon the diaphragm in the barrel-shaped tube, from whence it issues in the form of spray; the condensed fluid is carried off by an elastic tube."

I have used this instrument in a number of painful and severe cases both of chest and laryngeal disease, and can honestly recommend it. The relief afforded by this mode of treatment is very decided and speedy.

*A few useful hints.*—In studying laryngoscopy or rhinoscopy, a good anatomical and physiological knowledge should be obtained of all the parts about the throat, larynx, and nose; this is a matter of some im-

portance to enable the investigator to form a correct diagnosis of pathological conditions. There is no difficulty in following this out upon the living, but if any obstacles are encountered, it can be attempted on the dead without the least resistance. It would be inconvenient to import a dead subject into one's dwelling, and equally so for a medical man in active practice to resort to a school to work upon the dead; both are obviated by procuring a human tongue and larynx with the upper part of the œsophagus, and placing or arranging them below a skull, with the lower jaw attached. This can be readily done upon a common table, the skull being supported on a few books. Or, if this be objectionable, the head and neck of a sheep will answer the same purpose. In following out the instructions given in Czermak's monograph, published by the New Sydenham Society, the student ought to have no difficulty. But I would recommend his doing what I myself found of such essential service, namely, the creation of a curiosity amongst his non-medical friends (male and female), to see the special structures which play so important a part in singing. In this way I have examined parties of persons from three to thirty or more of both sexes and of all ages, and have thus seen some seven hundred healthy throats and pairs of vocal cords, independently of those diseased. I have seen the larynx of very young children at the one examination, and it is astonishing how well they comport themselves under the influence of example; it may truly be said that the vocal apparatus in the child is one of the most beautiful objects that can come under the notice of the physiologist.

In these healthy recreations, shall I call them? some very curious peculiarities often come to light, and a shrewd person will be able to form an opinion in his own mind, as to the capacity for singing or speaking possessed by certain individuals. The student may feel assured that if his interest is once excited, perseverance and patience will overcome all obstacles.

In concluding this essay on the laryngoscope—the first that has appeared from an English author—it is hoped that allowances will be made for many imperfections and omissions, which were unavoidable in consequence of the limited space at my disposal; but the main object held in view was to give the practitioner and student a fair general idea of how to use the instruments, and to recognize the diseases when submitted to his notice, in the simplest and easiest manner; how far I have been successful in carrying this out, I leave to the kind consideration of the Profession.

BY THE SAME AUTHOR.

ON THE LARYNGOSCOPE,
AND ITS
EMPLOYMENT IN PHYSIOLOGY AND MEDICINE.
By Dr. J. N. CZERMAK, of Prague.
*Translated for the New Sydenham Society*, 1862.

---

8vo., Cloth, price 5s., out of Print,

ON MORBID STATES OF THE URINE,
WITH THEIR
CHEMICAL AND OTHER MEANS OF DIAGNOSIS.

---

LONDON: METCALFE.

[*Reprinted from the* MEDICAL CIRCULAR, *June and July*, 1862.]

INTRODUCTION

TO THE

# ART OF LARYNGOSCOPY:

A New Method

OF

DIAGNOSING DISEASES OF THE THROAT AND LARYNX.

BY

JAMES YEARSLEY, L.R.C.P. EDIN., M.R.C.S. ENG.,

SURGEON TO THE METROPOLITAN EAR INFIRMARY AND ORTHOPHONIC INSTITUTION, SACKVILLE STREET; AUTHOR OF DEAFNESS, PRACTICALLY ILLUSTRATED; AND INVENTOR OF THE ARTIFICIAL TYMPANUM, ETC. ETC. ETC.

---

LONDON:
JOHN CHURCHILL, NEW BURLINGTON STREET.

MDCCCLXII.

# THE LARYNGOSCOPE.

SEVERAL of my Medical friends who remember the perseverance, industry, and great ingenuity of my relative, the late Mr. Avery, surgeon to the Charing-cross Hospital, are of opinion that it is due to his memory to substantiate his claims to priority in the invention of the instrument now termed the Laryngoscope. On me it is thought should devolve this duty, for no one is better acquainted than myself with his untiring efforts to achieve some good practical results in a department of the Profession, to which, comparatively, little attention had been previously devoted,—namely, the exploration of the inner passages of the body. Allied in blood, we were also allied in professional pursuits, for we entered on them together, under the guidance of the two surgeons of a large County hospital, but it was soon perceived that he had a turn for mechanical experiments and inventions, which I had not, and to that extent, we were not companionable, though living together, and otherwise constant associates. At the lathe he was most expert, some of his productions in turning could not have been excelled by the most skilful mechanic. I remember a chess table, the elaborate workmanship of which, aided by his talent in drawing, displayed on the squares by admirable etchings, would have been an object of attraction even at the International Exhibition of 1862. From his boyhood he exhibited a predilection for making philosophical experiments, and this early tendency ended when he became engaged in a useful profession in an uncontrollable desire for inventing or improving instruments for the better elucidation of disease, or of the operations of nature. From his outset in London as a Surgeon, he became such a patron of the surgical instrument makers, that by the kindness of the most distinguished of them, Mr. Weiss, he had the run of the workshops, and the command of the services of any one of the men, who were gratified to see among them so ingenious and so zealous an amateur, and were always pleased to aid him in his experiments. The extent of his work, and the enormous outlay he must have incurred, are best evidenced by the instruments and mass of materials used in their construction, which on his deathbed he desired might be handed over to me, and which are all now

in my possession. I could relate many anecdotes in relation to his experiments, and sometimes he would show great sensitiveness on the point of their being properly appreciated.

One day he was speaking in the presence of mutual friends, of his ability to explore the external meatus by the aid of his lamp, and by what he considered an improvement in the little silver conical speculum now generally used by aural surgeons, better than myself; he could see the vessels ramifying on the surface of the membrana tympani; he could see this, and he could see that. Now this appeared to me to be encroaching on my domain, and a reflection that I did not avail myself of the best means of investigation which art could place at my disposal, and as I knew that I had, by means of my own lamp, frequently seen all the minutiæ which he had enumerated, I challenged him to a competition of the powers of our respective explorative apparatus. "What, do you mean to say you can, as I can, with my lamp read the smallest print through this ten-inch tube?" (It was the tube through which he hoped one day to see a stone in the bladder.) It was a bold assertion, but I replied in the affirmative. All present felt that if it could be done, the lamp as an unique explorative agent, had fallen 50 per cent. in value. It was arranged that he should call on me the next day, which he did, bringing with him his tube and his lamp. To the extremity of one of these we affixed the very smallest type we could find. By his lamp he read out exultingly the two or three words on the little disc of paper, and then handed the tube to me. Fully expecting discomforture, I nevertheless put a bold face on the matter, and having adjusted my lamp, and brought the rays of light to the proper focus, I also read out the words at the bottom of the tube. He satisfied himself of the fact, and his dejection was greater than my triumph, for I plainly saw and grieved to think it was a discouragement which his sensitive mind would not soon get over.

Whether it was at this time he cooled upon his urethral experiments, or became less sanguine, I do not remember, but it was soon after I was made aware of his attention being directed to the exploration of the larynx by the aid of his lamp and illuminating mirrors. The extent to which he carried his experiments in this direction can be imagined from the instruments now in my possession, but it is certain that he never sufficiently matured them to give any practical demonstration of the results before his medical brethren. There was always a great reluctance in John Avery to put himself forward or force himself into notoriety. Even at his death, it was a very narrow circle of friends and acquaintances who knew him to be the sound practical surgeon, and the indefatigable experimentalist, which he undoubtedly was.

He had a great contempt for the purloiner of other men's ideas. It was from him I heard of the coolness with which a practical fact of my own (which he had often seen me demonstrate) had been appropriated by an aural surgeon, at the meeting of the British Medical Association at (I think) Manchester. This matter, personal to myself, was often adverted to between us with a sort of presentiment, possibly that the same unfairness would some day be exhibited towards himself.



To return to the laryngoscope:—Since the death of Avery in 1854, the subject of exploratory instrumentation of the throat may be said to have been in abeyance, at least in this country; but at Vienna, in the person of Dr. Turck, chief physician to the General Hospital at Vienna, who, about the year 1850, honoured me with a visit, and, as far as I remember, inspected all my instruments, and witnessed my manipulations on the ear and throat: and, secondly, in Dr. Czermak, Professor of Physiology in the University of Pesth, we have had two zealous workers in the domain of laryngeal exploration. The first-named gentleman, like myself, does not appear to have been very successful in his experiments, for we find him admitting, in one of his communications to the journals, that "he is very far from having any exaggerated hopes about the employment of the laryngeal mirror in practical medicine," and a little later we find that for a time he had abandoned the subject altogether. Dr. Czermak, on the contrary, with a perseverance which does him infinite credit, was enabled to produce physiological and diagnostic results, which show that the instrument, in his hands, at least, is not to be heedlessly laid aside. His demonstrations, indeed, are so conclusive, that he has rekindled a desire in Dr. Turck, in Vienna, and myself, in London, to resume our experiments; but whatever practical results may arise from coadjutors in the cause, it is to Dr. Czermak the world will be ever indebted, "for the merit is not due to him who first conceives and partially carries out a new idea, and then lays it aside without even a presentiment of its importance; but to him, on the contrary, who first discovers the practical application of the idea (even when it has originated elsewhere), and helps towards its present recognition." (a) Such is Dr. Czermak's position in relation to Laryngoscopy. I, no where in his works, find any pretensions put forward to instrumental invention—he has adopted those which had been previously suggested as appropriate for his manipulations, and his experience has induced him to make some modifications, which render them more generally applicable. The exhibition of his own throat is something wondrous, and in a scientific point of view, is highly interesting, but the practitioner, who like myself, is much engaged in the treatment of throat affections, regretfully thinks of the rarity of finding throats among his patients so tractable and submissive as the well-tutored throat of Dr. Czermak.

The woodcuts which will be introduced in my next paper, will show the similarity of Avery's Throat-Speculum even to the angle at which the mirror is set. The light thrown upon the mirror from the reflector of his lamp completes the identity of the explorative proceeding invented by him, and now practised by all laryngoscopists.

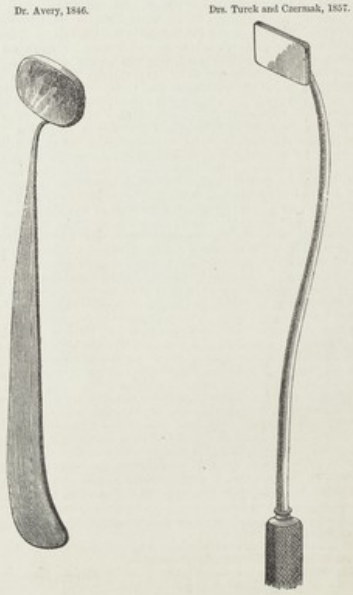
---

(a) Dr. Locker on the 'Diagnosis of Diseases of the Lungs, by means of Percussion and Auscultation.' Zurich.

## II.

In the woodcuts subjoined we have representations of the throat-speculum, now called the laryngoscope, first devised by Avery in 1846, and afterwards modified by Turck or Czermak, or both, in 1857.

Dr. Avery, 1846. Drs. Turck and Czermak, 1857.





From the mechanic who assisted Avery in the workshops of Weiss, I have heard the exact history of that surgeon's experiments. It appears he commenced with the ear-speculum, hoping to improve upon the means then at our disposal, in the exploration of the outer passage of the ear; then he went to the speculum-tubes for the urethra; with these last, he had no difficulty in looking down upon a stricture many inches deep in the urethra. Finally, he went to the throat instrument and its application, and from this point I cannot do better than trace it as recorded by Professor Czermak in his monograph on the subject published in 1860. (*a*)

Here we find the Professor in entire ignorance of Avery or his experiments, giving all the credit of the first application of the instrument to Liston and Garcia. (*b*) To the former, on account of the following suggestion, which appears in his 'Practical Surgery,' published in 1840, page 417, "Ulcerated Glottis.—A view of the parts may sometimes be obtained by means of a speculum; such a glass is used by dentists on a long stalk, previously dipped in hot water, introduced with its reflecting surface downwards, and carried well into the fauces." Now, although I cannot accord to Liston any merit for a suggestion which must have occurred to the mind, and acted upon ages ago by many a practical surgeon, still as far as my reading goes, it is the first intimation in print of such an explorative proceeding.

To Garcia praise is given because he actually explains the method of proceeding, differing only from that which is at present practised in his dependence on sun light instead of artificial illumination. His words are: "The method which I have adopted is very simple; it consists in placing a little mirror, fixed on a long handle suitably bent, in the throat of the person experimented upon, against the soft palate and uvula. The party ought to turn himself towards the sun, so that the luminous rays falling on the little mirror may be reflected on the larynx. If the observer experiments upon himself, he ought, by means of a second mirror, to receive the rays of the sun and direct them on the mirror which is placed against the uvula." (*c*)

But it is quite certain that, so far as the invention of the agents for exploration goes, Avery had already supplied them, and the passage cited would have been just what he would have written to describe that which he had a thousand times done pending his experiments, substituting only artificial light, by means of his lamp, to that gained from the sun, as proposed by Garcia. Doubtless, from time immemorial, it had occurred to the mind of many a physician and surgeon to use some means of getting a view, if pos-

(*a*) 'Du Laryngoscope, et de son Emploi en Physiologie et en Medecine,' Paris, June, 1860.

(*b*) An eminent teacher of singing, long established in London, and a man of considerable scientific attainments.

(*c*) 'Observations on the Human Voice' ('Philos. Magazine and Journal of Science,' vol. x., page 218, and 'Gazette Hebdomedaire,' Nov. 16, 1855, No. 46).

sible, of the larynx or pharynx in any intricate or obscure disease of those parts, and some such instrument as a dentist's mirror would be the very thing to afford the desired information, and, no doubt, had been frequently made use of long before Liston's suggestion.

In respect to priority in the construction of appropriate instruments, therefore, Avery undoubtedly was the first who set to work to fashion a special apparatus for the exploration of the larynx. Thus stands the case as far as I can unravel it.

In 1840, Liston makes a suggestion often and often acted upon before.

In 1846, Avery invents an instrument specially devoted to the exploration of the larynx, and uses a lamp (also his invention) specially intended to light up the laryngeal mirror when in use.

In 1855, Garcia relates that he has adopted a similar apparatus for the same objects.

In 1857 (in the summer of), Dr Turck was occupied in the wards of the Hospital of Vienna in making researches in laryngoscopy, using a laryngeal mirror, but being dissatisfied with the results of his experiments, did not pursue the subject, and *lent* his mirrors to Dr. Czermak.

In 1857 and 1858 (in the course of the winter of), Dr. Czermak commenced his laryngoscopic studies, at first with the intention of obtaining a clear idea of the mode of production of certain Arabic sounds, called *true gutturals*, and then to complete the physiological experiments of Garcia. To this he adds, "but I very soon recognised, by inventing a new proceeding (viz., in using artificial light and the large ophthalmoscope as a reflector), all the practical value of the instrument which I had begun to handle."

Upon this latter observation, I have to remark that artificial light was no new proceeding, for it was the very essence of Avery's method.

By the death of Avery, it has been left to Dr. Czermak to apply these means of exploration, and to achieve good practical results, sufficient to induce further investigation by collaborateurs in the cause.

The term laryngoscope, in lieu of throat-speculum, came into vogue after the invention of the opthhalmoscope. In like manner, when Avery's catheter comes into use for viewing a stone in the bladder, I presume it will be called a vesicoscope.

As I consider that Professor Czermak is entitled to our best thanks for his great perseverance in following up the subject of laryngeal exploration, it is gratifying to find that he nowhere puts forward any pretensions which cannot be fairly justified. With respect to his "new proceeding" by artificial illumination, it must be remembered that he was not then aware of what had been done by Avery, nor, he assures me, had he ever heard of that gentleman until his recent visit to this country. He candidly admits that his researches had been anticipated by Dr. Turck by some months, and with some reason he complains that when, by his perseverance he succeeded in proving unexpected physiological and diagnostic results, in which Dr. Turck had signally failed, nevertheless, that gentleman, whose experiments had been first abandoned and then re-

*Fig.* 1.

APPARATUS FOR LARYNGOSCOPY.

DESCRIPTION OF FIG. 1.

The Woodcut, Fig. 1, in the opposite page, represents CZERMAK'S LARYNGOSCOPE in its application, with a section of the throat and neck of the person examined.

1 to 7—the bodies of the Seven Cervical vertebræ.
*p*—the Soft Palate.
*u*—the Uvula.
*pn*—the Superior or Nasal Portion of the Pharynx.
*m*—the Palate Process of the Superior Maxillary Bone.
*t*—the Tongue.
*h*—a Section of the Hyoid Bone.
*j*—the Inferior Maxillary Bone.
*e L*—the Epiglottis and the Larynx, with a Section of the Cartilages.
*tr*—the Trachea.
*T*—the Thyroid Body.
*k*—the Laryngeal Mirror.
*R*—the Large Reflector, perforated by a Round Hole in the centre.
*r*—the Axis on which the Reflector moves.

The mouth-piece of the large Reflector *R* is held by the observer between the molar teeth.

The Reflector may also be held by means of a forehead frame, which adjusts itself like a pair of spectacles.

The rays of the sun or a good moderate lamp are concentrated by means of the Reflector on the Laryngeal Mirror, which is placed against the soft palate and uvula, *p u*.

The Laryngeal Mirror, *k*, introduced with the right hand, which supports itself on two fingers resting on the jaw, as represented in the engraving, is maintained at such an inclination, that it throws the light downwards, and illuminates the parts to be examined, and, at the same time, reflects the images of these parts into the eye of the observer. If, for instance, everything is disposed as the wood-cut shows, the observer can look through the Larynx into the Trachea.

In order not to complicate the drawing, the observer's left hand is omitted; it may either be used to support the head in its position, or to depress the tongue with a Spatula, &c.

---

*N.B.—The various Instruments used in these new methods of exploration of the Larynx and adjacent parts are manufactured and sold by* MESSRS. WEISS & Co., 62 *Strand.*

suscitated by Czermak's success, came forward and set up a claim of priority of the application of the laryngeal mirror to diagnosis.

There are always two sides to a question, but as it stands in the *brochure* of Dr. Czermak, there would appear to be a great want of generosity towards this gentleman by Dr. Turck, who, from his elevated position as chief physician to the General Hospital of Vienna, might well have afforded to confess the greater success of a rival manipulator. It is admitted that he was the first to work at the subject in his own country. Did he first get the idea on his visit to London in 1850? Did he at my house, or at Dr. Avery's, or at Weiss's, see the throat-speculum, now called the laryngoscope? It was at that particular time Avery's lamp was most talked about, and Dr. Turck could hardly fail to have seen it when in London, though it does not appear that he availed himself of it, preferring the light of the sun to illuminate the laryngeal mirror. However it may be, it is gratifying to find that he has been stimulated by Dr. Czermak to resume his investigations. If his success has been as great as my own in the short time I have myself profited by Dr. Czermak's hints and manipulations, he will have no reason to regret the time he may have devoted to the subject.

"As soon as a certain degree of expertness is possessed in the management of the instrument, we attain our aim in *many cases rapidly*, and with a surprising *facility*, because the laryngoscope, if well introduced, is borne in the greater number of adults, much more easily than has been supposed, and this is proved by experiments repeated a hundred times."

From my connection with a public institution, where any number of patients are at my command for the purposes of examination, I am enabled to confirm the opinion thus expressed by Dr. Czermak by my own experience.

The necessary dexterity and tact being acquired, it is only left to teach the patient how to comport himself to enable the operator to make a most satisfactory exploration.

## III.

Just as Professor Czermak has traced in the woodcut (Fig. I.) his means by which an observer can explore the larynx at the present day, did Avery perform the experiment with his own apparatus in 1846. This point being established, we have now to consider what have been the results hitherto obtained, and how far such means are available in the ordinary practice of a surgeon or physician. I am afraid I must answer the latter question at once negatively, not only as the result of my own experience, but from observations here and there to be found in the works of Czermak, and others.

Notwithstanding the very commendable efforts of Dr. Czermak to stimulate others to practise the art in which he is himself so great an adept, we find him candidly saying that "the introduction of the mirror with facility and confidence, and, consequently, without any unusual excitement of the back part of the mouth; its

prompt application to the most favourable and least sensitive spot; the habit of detecting and recognising the reflected image, particularly of those regions but little known and when the parts are moveable; the directions to be given to the individual undergoing examination to perform certain movements and to assume the attitude necessary to the most favourable arrangements of the various parts of the mouth and pharynx; in fine, the regulation of the light and of the visual direction—all these circumstances require a degree of practice and dexterity which can be attained only by *great perseverance*, conjoined with some preliminary knowledge, and some amount of natural skill.

"These circumstances will always be very grave obstacles for the beginner, and will cause physicians to hesitate in the employment of the laryngoscope, who do not intend to make a *specialty* of laryngoscopy."

But there is another element in the question which would militate more than all in limiting the practice of the art to a few—namely, the amount of time required for the successful exploration of any one individual case. It is not that there may be many Czermaks, many practised manipulators, but the misfortune is that every new patient requires a certain amount of training before you can apply your means of exploration satisfactorily—each throat must be coaxed into quiet submission; that watchful sentinel, the epiglottis, must be conciliated before he will permit you to peep over his shoulder into the depths of the passage it is his province to protect. Notwithstanding all these difficulties—these impediments to a general adoption of the method—it must be admitted that the value of the proceeding is not lessened by the exclusiveness of application.

There is already too much recorded in its favour to leave a doubt in the mind of anyone that in every large city one practitioner, at least, should be expert in the use of the laryngoscope.

By any determined student the difficulties enumerated may be surmounted; and when he has obtained confidence in himself, which experience and practice will give him, he will also know that by patience and *education* the most irritable throat in the most awkward of patients will be brought to submit readily to his manipulations.

In the few weeks I have myself applied the instrument, *secundum artem*, I have, on more than one occasion, been greatly aided by it in my diagnosis and treatment. My own personal experience of its use will be given in detail at no very distant period. My present purpose is limited to a mere historical account of these new means of exploration, and a reference to cases in which its utility has been plainly demonstrated. Thus do I hope to second the efforts of Professor Czermak in inducing others to test its capabilities.

In the course of a long practice, I have never yet met with a throat, however irritable at first, in which I could not by tact, by coaxing, or by educating it, and biding my time, accomplish all I may have desired in the way of operations. So with laryngoscopy by patience, perseverance, tact, and the necessary practice, the most intractable of throats may be made subservient to the required manipulations.



The following directions are given by Dr. Czermak for the examination of a patient's larynx by means of the laryngoscope:—

"The person examined places his hands upon his knees, the upper part of the body is advanced forwards, the neck bent onward, the nape slightly inclined backward, the mouth widely opened, the tongue flattened and held a little without.

"The observer is seated in front of the person to be examined; he places in his mouth the handle which supports the illuminating mirror, and looks through the central opening. The laryngeal mirror, introduced into the back part of the mouth with the right hand, is illuminated by the light which is projected from the illuminating mirror; the left hand can be placed upon the shoulder of the person examined, and steadies the chin and the nape, or in holding a tongue depressor, which we can often trust to the patient himself.

"In the first place, the illumination of the back part of the mouth and the mutual position are regulated; then the laryngoscope is heated, and its temperature regulated by the touch. After these preliminaries are gone through, we request the patient to open the mouth wide, and alternately to inspire deeply and to pronounce the sound *ah*; during this we endeavour to place the back of the laryngoscope against the uvula and the velum palati, to sustain these parts a little, and to give to the mirror a convenient inclination; at times it is impossible to avoid touching the posterior wall of the pharynx; the examination is directed by the image we thus obtain."

Since the publication of the foregoing directions, Dr. Czermak at the suggestion of Dr. Stoerk, of Vienna, is in the habit of holding the tip of the tongue in many cases, instead of using the tongue depressor.

## IV.

Although I have no desire to say aught to discourage the attempts of any would-be laryngoscopist to achieve success in this new art of exploring the larynx, it is but right to prepare him for the difficulties which will at first beset him, in order that he may bring to the task the necessary amount of patience and perseverance by which alone he will surmount them. He must make up his mind that his first examinations will be unsatisfactory—he will obtain no positive results—his own awkwardness and want of tact and gentleness in adjusting the laryngeal mirror on the one hand, and the rebellious throat of his patient on the other, the opening of the mouth, the position of the tongue, the projection of the focal light on the proper spot, are so many obstacles to a first success. But be assured the attempt having been made is a step gained. Preparatory to a second examination, you instruct your patient to accustom his throat to the presence of foreign bodies, by which its sensitiveness will be greatly reduced.

Those only who, like myself, are engaged in treating throat affections, know what care, and preparation, and teaching, are some-

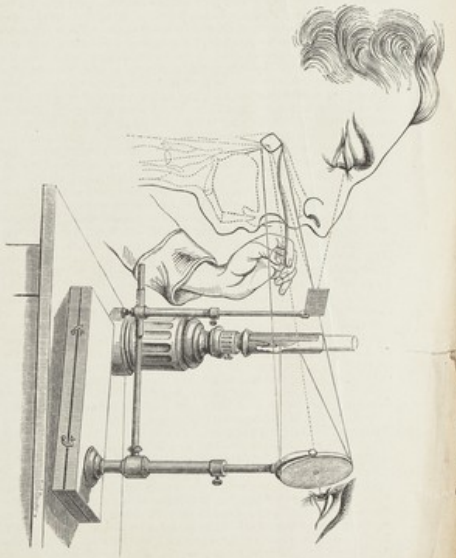
times necessary before we can venture on any local application to the highly sensitive mucous membrane in and about the larynx, the mere touch of which will sometimes produce an alarming spasm.

Nothing can be more frightfully exciting than one of these *contretemps* from sponging the larynx. You withdraw your instrument, and whilst you are wiping it, your patient rises from the chair; you turn round and you see her casting upon you a most anxious and imploring look for help, wringing her hands, and running here and there instinctively towards the window for more air, under the appalling sense of impending suffocation, and this would be her inevitable fate, if, in one minute, more or less, the spasm of the glottis did not subside. Coolness and freedom from any apparent apprehension on your part will accelerate this desideratum. By a confident manner and an encouraging word you contribute much to remove the alarm which your patient experiences, and this you do whilst meditating and preparing for a plunge of your trocar into the trachea, to save her from instant death. I have spoken of the patient as of the feminine gender, for in nine cases out of ten, such an accident occurs to women from the infinitely greater sensitive organisation of the larynx in them than in men. I am not aware that this fact has been noticed before, but such is undoubtedly the case. You may spend minutes in preaching and teaching a woman how to comport herself whilst you are in the act of sponging or brushing her throat, how she is for the moment to resist the act of breathing, and how well and successfully she can do so by forcing up and fixing the diaphragm; she will assure you she quite understands it, and is prepared; she opens her mouth, and the instant your brush or sponge touches the pharynx, up go the uvula and soft palate, and down goes the epiglottis; but this does not prevent you from completing your operation. The next moment may occur the scene I have attempted to pourtray. Not only is the larynx in women more sensitive than in man, but I believe also she has not the same power over the action of the diaphragm; at all events, it is difficult to teach her the mode of fixing that muscle pending the act of sponging the throat.

Dr. Turck recommends young beginners to commence their experiments upon the dead body; but dead bodies are not so easily met with, and therefore Stoerk proposes to study the larynx of dogs, pigs, or sheep. Dr. Czermak's experience is greatly in favour of auto-laryngoscopy; and, by the surprising experiments he makes upon himself, he has amply demonstrated the feasibility of the practice.

For this purpose he has devised a special apparatus, consisting of a concave mirror perforated in the centre, for the advantage of an observer. The strong light of a moderator lamp is thrown upon the mirror, and the concentrated rays are made to impinge upon the back part of the mouth of the person who is examining himself. By the aid of a quadrangular piece of glass between himself and the illuminating mirror, he can see all that the observer can see who is looking through the central opening of the latter; the annexed wood-cut will make the operation more clear to the reader.

*Fig.* 2.



APPARATUS FOR AUTOSCOPY.

## V.

### BIBLIOGRAPHY.

The subject of Laryngoscopy being new, the literature bearing upon it is, of course, very limited, and, therefore, easily traced. Avery contributed nothing towards it; and it is only so recently as March 27, 1858, that we find the first special article "On the Laryngeal Mirror" in the 'Gazette Hebdomedaire de Vienne,' from the pen of Dr. Czermak. The subject was followed up by the same author on April 17th in the same journal. In the same year, May 28th, his friend and pupil, Dr. Semeleder communicated a paper at the sitting of Physicians at Vienna, "On the Employment of the Laryngeal Mirror in the Diagnosis and Treatment of Diseases of the Tongue."

On June 28th, Dr. Turck published his first article in the 'Zeitschrift der Gesellschaft der Aerzte zu Wien.' On December 20th, Dr. Stoerk sent to the same journal an account of two pathological cases in illustration of the value of the laryngo-pharyngeal mirror. About the same time Dr. Neudoerfer described a new canula for laryngotomy, to explore the larynx and trachea by the aid of a speculum introduced through the wound. These are all the communications which appeared in 1858.

In 1859, Czermak opened the year with a communication in the 'Gazette Hebdomedaire de Vienne,' January 8th, "relative to the surprising discovery of a small polypus situated upon the right vocal cord in an individual affected with hoarseness, said to be 'nervous.'"

In February, we find him publishing, in the Hungarian language, 'Researches on Laryngoscopy, with engravings on wood, and illustrated by seven Pathological Cases.' In the same month, Dr. Turck sent an article to the 'Zeitschrift der Gesellschaft der Aertze zu Wien,' "Upon an art in the examination of the Larynx," and in March he also communicated to the Society of Physicians of Vienna, a series of pathological observations, seven in number, and made with the aid of the laryngoscope. In April also was commenced in the 'Allgemeine Wienar Medizinische Zeitung,' a series of papers "On the Laryngo-pharyngeal Mirror, and its Employment in Diseases of the Larynx and neighbouring parts." In the 'Weiner Med. Wochenschrift' of April 16, and following numbers, will be found Dr. Czermak's second article, entitled "Researches in Laryngoscopy." In the same year also appeared communications by Dr. Gerhardt, of Tubingen, by Drs. Semeleder, and Stoerk, all bearing testimony to the value of laryngoscopy, but the race for fame, as has been seen in this new art, has been mainly between Drs. Czermak and Turck, both being most zealous and indefatigable in the cause.

Dr. Czermak's memoir, entitled "On the Laryngoscope and its Employment in Physiology and Medicine," originally published in German, has been translated into French, and from the French into English for the Sydenham Society, by Dr. George D. Gibb, to which translation I am indebted for much of the information to be found in these papers. The occasional notices which have appeared in the

French and English journals, have been but mere items of news, or scraps of translations supplied by German correspondents, but by the recent visit of Dr. Czermak to this country a stimulus has been given to the subject, and now whatever there be of value in this new method of investigation will be eliminated in the inquiry set on foot by that gentleman, or, on the other hand, of exaggeration, will be as surely softened down into sober truth.

The accompanying sketch is a representation of the apparatus devised by Dr. Czermak for demonstration upon himself—auto-laryngoscopy. It tells its own tale, requiring but little verbal description. Owing to the different visual axes of the two observers, the eye of the one looking through the concave illuminating mirror does not see all that the operator who is examining himself sees. The observer of himself will always see more of the parts situated behind—the spectator, those situated before; but much will be seen by both simultaneously. But the demonstration need not be limited to two persons. Others can place themselves either behind the operator, and with him look into the quadrangular mirror, or arrange themselves at the side of the observer who is looking through the central hole of the illuminating mirror.

The diseased conditions of the throat, for the elucidation of which the laryngoscope is required, are mostly of a chronic kind. Practically speaking, therefore, it is not of such great moment that your first, second, or third attempt at examination should fail. It is satisfactory to know that by patience and perseverance you are ultimately sure to succeed. My own experience already enables me to speak with confidence on this point.

Having thus recorded my opinions of the advantages we may be expected to derive from laryngoscopy in practice, after having traced its history, which was the principal object I had in view in writing upon the subject, it only remains for me to pass in review some of the results which have accrued in the practice of others, reserving for a future period a detail of my own experience, observing only here, that already it enables me to confirm the possibility of effecting all that has been claimed for the method by Czermak, Turck, and their followers.

Czermak and Turck—the reader of these papers must have observed how frequently these names are associated. It has been in some measure with me, as it was with Czermak, in coupling the names of Liston and Garcia, to whom he ascribes the merit of making known the *principle* of the treatment, not knowing to which to give the palm. So, with himself and Turck—the latter was the first manipulator, but failed, or, if not failed, lost confidence in the method, and handed it over to Czermak, who undoubtedly succeeded—not only succeeded, but was the first to put pen to paper in favour of the method, and give proofs of its value by the relation of seven cases. These seven cases, he says, "form the *first series* of observations which have well established the practical advantages of the methods of Liston and Garcia." Let me enumerate the morbid conditions found to exist in these and many more cases subsequently examined.

*Case* 1.—Complete obstruction of the larynx by two tumours springing from the mucous membrane beneath the free border of



the vocal cords, the result of scrofulous infiltration, and necessitating laryngotomy, in a young girl eighteen years of age, of lymphatic temperament, middling size, and robust constitution. Up to seven years of age she enjoyed perfect health, she was then seized with bronchitis, which persisted during a whole year. In the spring of 1858, the sub-maxillary glands became considerably enlarged and soon were developed into a series of scrofulous sores. The larynx began to swell in the month of April, though there was but little tenderness on pressure. There was neither redness nor swelling of the pharynx, no fever, the voice, habitually weak, was reduced to a whisper. Eventually, the swelling of the larynx subsided, and assumed its natural position and size. Nevertheless, the hoarseness continued, and by degrees she entirely lost her voice.

In the month of September, the patient began to suffer from difficulty of breathing; both inspiration and expiration became sonorous, and at night her loud snoring interfered with the sleep of her friends.

From the 24th of September, the dyspnœa had so increased as to render the state of the patient critical. The larynx was now painful on pressure; sleep was impossible in consequence of the sense of oppression. On the 4th of October, a suffocative attack, which lasted several hours, confirmed Dr. Porges in the opinion he had for some time entertained of the absolute necessity of laryngotomy. This operation was performed on the 5th of October, by Professor Balassa, whilst the patient was so near death that artificial respiration was necessary to keep her alive. Since that time she has gone on tolerably well, but the larynx is completely closed, this was readily shown by stopping up the external aperture of the canula, through which she breathed.

The value of laryngoscopy was doubly shewn in this case, for by its aid an examination of the condition of the glottis was made, from above and from below, by which the nature of the disorganisation was fully made out. The case is graphically narrated by Dr. Czermak, in his work 'Du Laryngoscope et de son emploi en Physiologie, et en Medicine,' 1860.

*Case* 2.—Polypus attached to the right vocal cord, giving rise to constant hoarseness, supposed to be nervous.

*Case* 3.—Ulcers of hard and soft palate, with considerable loss of substance, involving nearly all the uvula. Hoarseness; great swelling of the epiglottis, which is injected and ulcerated, with a mucous patch on its right side, giving it a trilobed form. Constriction of the larynx, dyspnœa, laryngotomy. Recovery, with restoration of the voice.

*Case* 4.—Cicatrices and loss of substance of the larynx, causing incurable aphonia; destruction of the epiglottis, and part of the velum palati, from old syphilitic disease.

*Case* 5.—Retraction of the right inferior vocal cord, with swelling of the superior vocal cord of the same side, producing loss of voice, from syphilis.

*Case* 6.—Partial destruction of the epiglottis, with considerable swelling of the false vocal cords; hoarseness degenerating into aphonia; congenital fissure of the velum. Inspection of the entire trachea, down to the bifurcation.

*Case* 7.—Aphonia for eight months ; constriction and insufficiency of the glottis ; swelling and infiltration of the mucous membrane of the arytenoid cartilages ; obliteration of the ventricles of Morgagni ; direct cauterization of the affected parts by the aid of the laryngoscope ; formation of white eschars.

*Case* 8.—Hoarseness bordering on aphonia, associated with severe pain in the windpipe ; application of glycerine within the larynx.

*Case* 9.—Syphilitic ulcer of the lower lip ; pain in the larynx, with redness and a small ulcer ; cauterization with the solid nitrate of silver ; an attack of hæmoptysis.

*Case* 10.—Redness and swelling of the superior vocal cords ; with a circumscribed inflammation at the point of insertion of the four vocal cords.

*Case* 11.—Tubercles on the right vocal cord, and in the mucous membrane between the arytenoid cartilages ; cushion of the epiglottis very prominent.

*Case* 12.—Constant difficulty of breathing, supposed to depend upon some obstacle in the larynx ; negative results afforded by the laryngoscope.

*Case* 13.—Transformation of the left superior vocal cord into a hard, rough, and ulcerated tumour, producing constriction of the glottis and dyspnœa.

*Case* 14.—Cauliflower excrescences upon the posterior walls of the pharynx, covering and obstructing the larynx.

*Case* 15.—Minute condylomata upon the edges of the glottis, producing hoarseness and aphonia.

*Case* 16.—Conical excrescence upon the inferior vocal cord, with thickening, producing hoarseness ; believed to be syphilitic.

*Case* 17.—Accidental growth beneath the angle of insertion of the vocal cords, and above the right superior vocal cord.

*Case* 18.—Polypus on the left inferior vocal cord, causing very slight hoarseness.

*Case* 19.—Large epithelial muriform polypus, developed within and above the glottis.

*Case* 20.—Œdema of the glottis.

Details of all these cases are given in the work already referred to, and are well worth the reader's attention. Several additional cases have been of late notified in the English journals as coming under the examination of Dr. Czermak during his recent visit to this country. In my own practice we have conjointly investigated the condition of several patients with more or less success ; two of these I am now treating with advantages which I owe entirely to laryngoscopy.

I may, therefore, conscientiously conclude my notice of laryngoscopy by endorsing the opinion of Czermak—that precision and accuracy of diagnosis will permit in many cases of the employment of rational means of local treatment, and that the pathology and treatment of laryngeal affections, where laryngoscopy can be applied, are on the point of making unexpected progress.

PRINTED BY M'GOWAN AND DANKS, GREAT WINDMILL STREET, HAYMARKET.

# THE ENDOSCOPE,

&c., &c.

Vol XXXIX P 329.

Case of M.W.

Fig I.

Case of J.N.

Fig II.

Fig III.

Fig IV.

Fig V.

Case of E.B.

Fig VI.

Fig VII.

Fig VIII.

# THE ENDOSCOPE

## AS AN AID

IN THE

# DIAGNOSIS AND TREATMENT

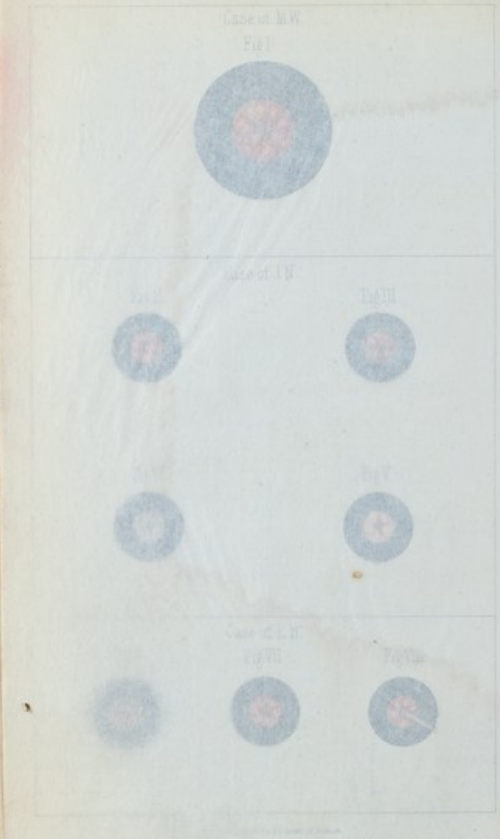
## OF DISEASE.

BY

FRANCIS RICHARD CRUISE,

Reprinted, with additions, from the Dublin Quarterly Journal of Medical Science for May 1st, 1862.

DUBLIN:
FANNIN AND COMPANY, GRAFTON-STREET.
LONDON: LONGMAN & CO.
EDINBURGH: MACLACHLAN & STEWART.



# THE ENDOSCOPE

## AS AN AID

IN THE

# DIAGNOSIS AND TREATMENT

## OF DISEASE.


BY

FRANCIS RICHARD CRUISE,

BACHELOR OF ARTS AND DOCTOR OF MEDICINE IN THE UNIVERSITY OF DUBLIN;
FELLOW OF THE KING AND QUEEN'S COLLEGE OF PHYSICIANS;
MEMBER OF THE ROYAL COLLEGE OF SURGEONS,
ETC., ETC;
ONE OF THE MEDICAL OFFICERS OF THE MATER MISERICORDIÆ HOSPITAL;
LECTURER ON THE PRACTICE OF PHYSIC IN THE CARMICHAEL
SCHOOL OF MEDICINE, DUBLIN; MEMBER OF THE
MEDICAL SOCIETY OF COLLEGE OF PHYSICIANS, OF THE PATHOLOGICAL, SURGICAL, AND
OBSTETRICAL SOCIETIES, ETC., ETC., ETC.



Republished, with additions, from the Dublin Quarterly Journal of Medical Science, for May 1st, 1865.

DUBLIN:
FANNIN AND COMPANY, GRAFTON-STREET.
LONDON: LONGMAN & CO.
EDINBURGH: MACLACHLAN & STEWART.

# THE ENDOSCOPE,

&c., &c.

---

I BELIEVE it will scarcely be denied that one of the most important characteristics and improvements of modern medicine consists in the *direct exploration of organs* for the elucidation of their physiology and pathology.

This tendency to rest our knowledge upon physical rather than rational signs is by no means of recent date, although latterly, especially within the last half century, it has become more obvious and better appreciated.

Glancing back over the history of the profession during that period, we notice how percussion, methodized by Avenbrugger, and popularized by Corvisart, seems but to have paved the way for Laennec's discovery of the immeasurable practical value of auscultation in diseases of the chest. Subsequently other portions of the body, lending themselves to exploration even more freely than the thoracic organs, have come in due course to be objects of interest and research with special observers, who from time to time have devised means and implements for their more satisfactory examination and study.

Without delaying upon this point, I may quote, in illustration, the revival by Recamier of the long-forgotten speculum uteri; also the speculum auris, originated, I believe, by Newburg; the ophthalmoscope of Helmholtz; the laryngoscope of Czermack; and, though last certainly not least, the endoscope of Desormeaux.

Upon a recent occasion (March 15th) I had the honour of exhibiting to the Medical Society of the King and Queen's College of Physicians a modification of the endoscope which I have used for some time past, and of reading a short paper, explaining its construction and use in the study and treatment of disease.

Being the first in Ireland, so far as I can discover, to use or exhibit such an instrument, I felt much diffidence as to the views which others might primarily entertain respecting it, although I had fully satisfied myself of its real utility and probable general adoption when understood. However, the very flattering reception which the instrument as well as the communication met with, the notice it received in the London medical journals,[a] and the interest which it appeared to excite, have induced me to embody in the present brief sketch my experiences of it.

Agreeably to the old adage that "Naught is new under the sun," as each addition to our means of diagnosis has been brought under the notice of the profession, claimants have sprung up to dispute the honour and credit of invention. Doubtless it would be very unprofitable at the present time to discuss at length the precise merits of the competitors in each case; therefore I shall pass by that question, merely observing, in order to justify the quotation of the above-mentioned names, that I have endeavoured to associate with each method and instrument the name of that individual who has done most to demonstrate and extend its practical utility.

With respect to the endoscope in particular, I may observe that M. Desormeaux, in the introductory chapter of his recent valuable memoir, candidly acknowledges that the idea of an instrument capable of throwing light into deep cavities, such as the bladder and urinary passages, was not original with him. He accords to M. Segalas the merit of originating the thought, and alludes to his unsuccessful attempt, as well as to the fruitless labours in the same direction of the late Mr. Avery of London, and Dr. Hacken of Riga.

Considering the ability and industry with which M. Desormeaux has prosecuted the subject, it is a matter of surprise to me that important labours of others have escaped his cognizance. At any rate it is quite certain that M. Segalas was not the originator of endoscopy. Barrini of Frankfort invented his "light conductor" about the year 1806; and in 1824 (two years before Segalas'

[a] See Lancet, Medical Times and Gazette, and British Medical Journal for March, 25th, '65.



proposal) the celebrated Dr. J. D. Fisher of Boston devised and actually used an instrument identical in principle and similar in construction with that at present recommended by Desormeaux. An ingenious variscope, which has been in use for many years past, resembles it also. Bombalgini, too, subsequent to Segalas, paid great attention to endoscopy. I would refer those interested in this matter to an article in the fourteenth volume of Chapman's *Philadelphia Journal of Medical and Physical Science*, for 1827, which was pointed out to me by my friend, Dr. E. S. O'Grady, Lecturer on Surgical Anatomy in the Carmichael School of Medicine, Dublin.

Despite the occasional attention paid to the subject during the last half century, for the most part no practical result appears to have followed, and the fate of the endoscope has heretofore been general neglect and oblivion. So far as I can discover, M. Desormeaux alone has been a marked exception. He has most indefatigably worked at endoscopy; and to him, undoubtedly, is due the credit of patiently toiling for more than thirteen years, until at last he has accumulated a mass of facts so important and interesting that it is impossible for the profession any longer to ignore his labours and the value of this method of investigating and treating disease. It would be difficult for me adequately to laud his recent beautiful memoir,[a] which may be taken as the model of a scientific essay—full of learning, research, and modesty, and bearing on every page the impress of genuine truthfulness.

*Apropos* to the slight shown towards the endoscope, a long and amusing history might be written of the opposition which has greeted every improvement in the science and art of medicine from its earliest date;—such a history would, I conceive, be out of place here. Frivolous objections avail nothing at the time they are advanced, and only afford material for merriment and ridicule in the future. The practical commentary upon all such opposition lies in the contrast between medicine as we now see it, and medicine as our fathers knew it little better than half-a-century ago.

I shall not dwell on the history of my own efforts at endoscopy;—suffice it to say that it has been a dream with me since I became a student of medicine, and a pursuit after which I have continually hankered. Years ago I tried to work with an apparatus similar to

[a] De l'Endoscope et de ses Applications au Diagnostic et au Traitement des Affections de l'Urèthre et de la Vessie. Par A. J. Desormeaux. Paris: J. B. Baillière et Fils.

M. Desormeaux's, but, finding the light insufficient, I gave it up in despair, and only of late resumed the study. Comparatively recently a modification of the illuminating portion of the instrument occurred to me; I forthwith carried it out, and thereby obtained as much light as I required for all practical purposes. Since then I have used the endoscope constantly, and have neglected no opportunity of extending my knowledge of it. Rendered distrustful of success by repeated failures, for months I worked in silence and in private, until I became familiar with its use and manipulation. Then, for the first time, I exhibited it to others. Early in March I showed it to Dr. Fleming, of the Richmond Hospital, and demonstrated to him and Professor R. W. Smith an organic stricture of the urethra. Subsequently, by the kind invitation of medical friends, I examined a variety of cases at many of the Dublin hospitals, and also in private. It is my pleasing duty to acknowledge gratefully the kindness and liberality with which my *confrères* have placed their cases at my disposal, and have thus multiplied the field of my experiences in endoscopy. For myself I must say I am quite satisfied that it is an unquestionable success, and I feel justified in stating that I believe the field of its practical utility is almost illimitable. I venture even to hope that in the course of time it may work as complete a revolution in our knowledge of many obscure diseases as the stethoscope has wrought in the diagnosis of affections of the lungs and heart.

The endoscope, at its birth, met with but little favour, and for many years was absolutely slighted and passed by. Barrini's instrument was condemned by the medical faculty of Vienna, early in the present century, most especially upon the ground of its deficient illuminating power. Fisher, Segalas, and others who attempted to follow up the study, found no better encouragement awaiting their labours. In fine, M. Desormeaux tells us how one of his teachers, unable to deny the reality of the instrument, merely asked him the question—"What use is it?" Yet, the answer to that query conveys its whole worth, namely—"It enables us to see parts which, without its aid, are wholly beyond the reach of vision."

Were it needful to illustrate the usefulness of our senses in the diagnosis of disease, I might aptly quote here the apologue of a witty physician of the olden time, alluded to by D'Alembert. He describes Nature and Disease engaged in mortal combat; a blind man armed with a club—the Physician—comes in to settle the difference. At first he tries to make peace; failing in this he lays



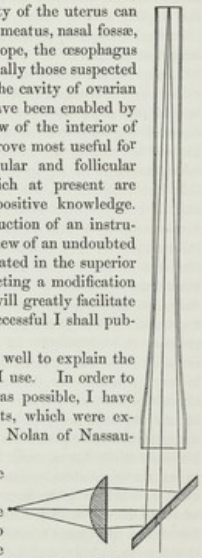
about him at random. If he hits Disease he slays it; if he hits Nature he kills the patient. Now, I would ask whether the Genius of modern medicine, which in so many instances has stricken the scales from off the eyes of the physician, and bestowed upon him the mighty gift of vision, has not wrought the miracle of making the blind to see, by enabling him to strike to the point, and no longer at random?

Let us for a moment contrast the predicament of the physician called upon to treat a malady which it is possible for him to see, and one hidden from his view. For example, let us take a case of diseased eye, and one of diseased urethra. He will not content himself by calling the former an *ophthalmia* without ascertaining what structure is engaged, and wherefore. He will examine the lids, the conjunctiva, the cornea, sclerotic, anterior chamber, lens, and, if need be, will take his ophthalmoscope and investigate the vitreous humour and retina. It is needless to say how much information he may obtain from this simple inspection, both as to the seat of the disease and as to its nature—whether traumatic, catarrhal, arthritic, syphilitic, scrofulous, or other. His correct diagnosis lays the foundation for a truthful prognosis and rational treatment. What, in contrast, is his position with respect to an ordinary case of gleet? In many, perhaps in most, instances, he can only guess out by uncertain symptoms and unreliable antecedent history, whether the discharge arises from simple catarrh, from chronic inflammation, from relaxed mucous membrane, from syphilitic ulceration, from herpetic excoriations, from a granular condition of a segment of the canal, from disease of the prostate, and so on. In his uncertainty his treatment must of necessity be empirical and his prognosis unreliable, because he can neither tell the nature of the disease, whether it be communicable or not, nor can he foresee whether it will be harmless in its results or likely to lay the foundation of organic constriction. The endoscope, however, alters the case materially, and for the better. By its aid the urethra can be seen and minutely examined from its orifice to the neck of the bladder, each single spec of disease ocularly demonstrated, and, if need be, subjected to precise local treatment.

The utility of the endoscope is not, however, confined to the diagnosis and treatment of diseases of the urethra—far otherwise. There is no portion of the human body into which a straight tube can be introduced in which it will not be found of service. With it the interior of the bladder may be thoroughly investigated;

tumours, ulcerations, and sacculi recognized; calculi examined, and information gained as to their size, figure, number, position, whether encysted or loose, and so on. The rectum, beyond the reach of the finger and speculum, can be searched for ulcerations, constrictions, tumours, &c. The cavity of the uterus can be demonstrated; so also the auditory meatus, nasal fossæ, pharynx, larynx, and, I should even hope, the œsophagus and stomach. Likewise wounds, especially those suspected to contain foreign bodies, abscesses, the cavity of ovarian cysts after tapping, and so on. I have been enabled by the endoscope to obtain so clear a view of the interior of the uterus that I am satisfied it will prove most useful for the diagnosis of small polypi, granular and follicular ulcerations, and other affections, which at present are subjects of conjecture rather than positive knowledge. Just now I am engaged in the construction of an instrument, with which I hope to obtain a view of an undoubted case of disease of the œsophagus, situated in the superior third of that tube, and also in perfecting a modification of my endoscope, which, I anticipate, will greatly facilitate laryngoscopy. If my efforts prove successful I shall publish an account of these contrivances.

Fig. 1.



Before proceeding further it may be well to explain the construction of the instrument which I use. In order to render the description as intelligible as possible, I have introduced some explanatory wood-cuts, which were executed for me by Messrs. Browne and Nolan of Nassau-street.

Fig. 1 will assist in rendering the theory of my endoscope intelligible.

In the first place, there is a tube or speculum, which is introduced into the cavity to be examined; and at one extremity of this a mirror of polished silver, perforated in the centre, is placed at an angle of 45°. The function of the mirror is to reflect the light, which is placed laterally, into the tube, so as to illuminate it to the end. As the calibre of the tube is very small, a most brilliant light is required, and, in order to obtain the best effects, it should be made to converge slightly upon the mirror. This convergence is attained by interposing between the light and mirror a plano-convex lens of suitable focal length.



The light being sufficient, the lens properly adjusted, the mirror bright and correctly placed with respect to the tube, it becomes a matter of facility for the eye of the observer, looking through the perforation in the mirror, to see clearly to the bottom of the speculum.

Such is the endoscope I have adopted, in principle identical with that used in 1824 by Fisher of Boston, and of late years by M. Desormeaux of Paris.

To obtain a suitable light is *the grand difficulty* in the construction of the instrument, and it has cost me no inconsiderable labour to overcome this obstacle. Even at the end of my prolonged experiments I am compelled to acknowledge that the discovery of the illuminating power I have selected was to a great extent fortuitous.

Experiments which I need not recall here, but which are familiar to those who have made investigations with polarized light, led me to the knowledge that one of the brightest illuminations which can be obtained by any means is that given off by the *thin edge of the flat flame* of an ordinary petroleum lamp. Moreover, the steadiness and intensity of the light are manifestly increased by using an extra tall chimney; by enclosing the lamp in a lantern so constructed that atmospheric air *enters* from below only, thus causing an even draught; and by dissolving camphor in the petroleum, in the proportion of ten grains or more, to each fluid ounce. The camphor increases the quantity of carbon in the petroleum, while the arrangements directed to procure a good draught secure its complete combustion. I may further observe, that this light possesses the advantages of cheapness, freedom from danger, and total independence of such care in operation as to demand the aid of an assistant specially devoted to it. Similar attractions do not exist for the magnesium wire, oxycalcium or Drummond lights, or for that produced by electricity, which latter was proposed forty years ago for Fisher's apparatus by Professor Patterson.

Such then is the light I use and recommend, and I believe it will be found applicable to many other instruments. It is open, undoubtedly, to two objections. First, that it produces considerable heat; and secondly, the pencil of rays being extremely narrow, a very perfect adjusting apparatus is required to facilitate the movements of the lens and inclined mirror, so as to take advantage of it under all circumstances. I shall presently explain the means by which these disadvantages are obviated, and perfect facility attained in the use of my endoscope.

Fig. 2.

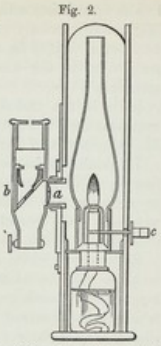



Fig. 2 shows it in sectional view. It consists of a lantern, in the interior of which the lamp is suspended by means of a diaphragm, which slides in grooves and holds it perfectly steady. The lamp is so placed when in the lantern that the *edge* of the flame is opposite the aperture of the tube, *a* This tube rotates freely in the socket which receives it, and carries the condensing lens. It is attached at right angles to another tube, *b*, which, in the woodcut, for clearness sake is represented in the vertical position. This latter tube holds the perforated mirror, and terminates at one end in a socket, which, by means of a thumb-screw, can be fitted to the various exploring specula, while at the other extremity is placed an eye-piece through which the observer looks. Although represented in Fig. 2 in the vertical position in order to show a section of its interior, in use it is kept as nearly as possible horizontal, as delineated in Fig. 3. In order to protect the observer's eye from glare, as much as possible, a conical diaphragm with a very minute aperture is placed directly behind the perforated mirror, and the interior of the apparatus and specula is carefully blackened. To suit myopic and presbyopic eyes, adjusting glasses are provided, and, when required, take the place of the eye-piece.

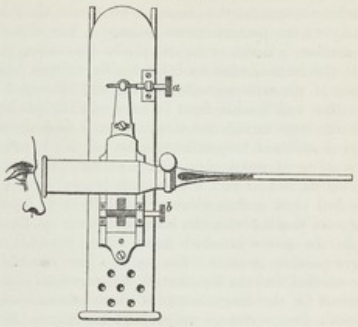
To prevent inconvenience from the great heat evolved by this powerful light, the lantern is made of mahogany, and consequently never becomes so warm as to inconvenience the hand; were it of metal it would soon be impossible even to touch it. This end is further carried out by having the top open, and air-holes perforated in the lower part of its sides (*vide* Fig. 3) and in the diaphragm. These arrangements produce a constant draught of cool air through the apparatus which has the additional good effect of steadying and intensifying the flame.

The mode of adjustment of the condensing lens and mirror to the pencil of light given off by the edge of the flame is the next point to be explained. The tube, *a*, (Fig. 2), is received into a socket, wherein it freely rotates; this socket is mounted on a doubly shifting stage, the mechanism of which will be best understood by reference to



Fig. 3. It admits, as may easily be seen, of two motions, right and

Fig. 3.




left, governed by the tangent screw, *a;* up and down, regulated by the rack and pinion, *b*. By this contrivance the lens can be easily shifted about as required. The height of the flame itself is regulated by the button, *c*, (Fig. 2), and requires special attention. It must be so arranged that no smoking takes place, as the least imperfection in combustion at once causes deterioration in the quality of the light. As I mentioned before the light evolved in the way described is amazingly intense, so much so that if the observer looks *directly* at it, even for a few seconds, his eye will be dazzled and rendered unfit for making an endoscopic examination for some time after. Hence it is advisable to acquire the habit of adjusting the instrument for use with a test object, or with the interposition of smoked glasses. Habit has rendered it easy for me to adjust with a test object. I ordinarily use for the purpose a plate such as the accompanying chromo-lithograph; I pin this against the wall, and, having lighted the lamp and duly regulated the flame, I hold the endoscope with the left hand in the position represented in Fig. 3, and place the end of the speculum over one of the coloured figures. Then, looking through the aperture of the eye-piece, with the right hand I move the lower milled head, *b*, until I get the brightest light, and then rotate the upper screw, *a*, until the definition becomes perfect. By slight changes effected in this manner I can regulate

the light so as to obtain the clearest possible view of whatever I am examining. All this, moreover, can be done in fewer seconds than it takes to describe the process. To obtain the best effect from the light a few precautions are requisite. The room in which the examination is made, so far as may be convenient, should be darkened; the lantern must be held steadily vertical, whatsoever the position of the exploring tube may be, and the whole interior of the lantern and specula must be kept carefully blackened. I find that the best varnish for this purpose is made by adding a few drops of spirits of turpentine to some lampblack, procured by holding a piece of metal plate over a candle. Thus made, the varnish may be laid on with a camel hair brush; it dries rapidly, leaving a dull black surface which reflects little or no light.

All who are familiar with the endoscope used by Desormeaux will notice the points in which mine differs from his, and the advantages peculiar to mine. For my own part, after full trial, I am quite satisfied that the illumination in Desormeaux's instrument is insufficient for the discrimination of those minute variations of colour which denote various pathological conditions. Mr. Dick, in his valuable Essay on Gleet,[a] speaks in terms which lead me to believe that he also has not obtained more satisfaction with it than I have myself. Undoubtedly, M. Desormeaux's vast experience may compensate for deficiency in his apparatus; but, I believe, I may venture to assert that, with my endoscope, any one, however unpractised, can *at once* see whatever lies at the bottom of the exploring specula with as much clearness as though it were on the surface of the body. Desormeaux's light is that of a small round gazogene flame, without even a draught chimney. The illumination it produces is lurid, unsteady, and, despite the reflecting condenser, quite deficient. I think it no more comparable to that which I have described than twilight to daylight.

I have not been able to discover any published allusion to the greater brilliancy of the *thin edge* over other portions of a flat flame, although I am aware that M. Arago has noticed that the light proceeding therefrom is the best polarized. On showing my endoscope to the Rev. Mr. Jellet, Professor of Natural Philosophy in the University of Dublin, whose prëeminent authority upon the subject is universally acknowledged, I learned that he too had discovered the fact some time since; he attributes it to the circumstance that the illumination given off from the thin edge of a flat

[a] Dick on Gleet. London, 1857. Page 7.



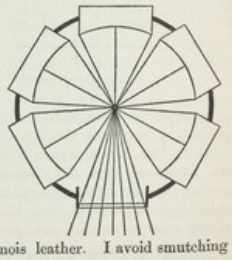
flame, partakes of the luminosity of the *whole depth* of the flame, inasmuch as light permits the passage of light through itself without loss. It may be possible, too, that the more perfect combustion of the edge, due to freer contact with the air, augments its brilliancy.

In my instrument I usually dispense with the reflector, because it is rarely, if ever, required. For such cases as may need it I have had a special reflecting chimney constructed, which is represented, in section, by Fig. 4. It consists of a copper tube, shaped like an ordinary draught chimney, having, at one side, at the level of the flame, a small window of parallel plate glass (represented on the right hand in the woodcut), and on the side opposite thereto, a flat silver reflector so arranged that when the flame is lighting it can be pushed close up to it. While in use, the chimney is so placed that the window destined to transmit the light is opposite to one edge of the flame, while the reflector lies close up to the other. Two good effects are obtained by this apparatus. In the first place the light is reduplicated by the mirror; and, moreover, the rays do not suffer in passing through the plate glass window the dispersion which is inevitable with the common round glass chimney.

Fig. 4.

The precise amount of increase of light depends on circumstances; at best, it does not exceed one half with a single mirror, as fully that quantity is lost by absorption in reflection. Were it needful, the illumination might be increased almost indefinitely by surrounding the flame with a series of concave reflectors, as represented in Fig. 5, having their foci in a point in the flame; however, in my endoscope, as at present used, I think there is ample light, and it is very desirable to avoid complexity as much as possible. One serious objection to reflectors is the difficulty of keeping them clean enough to be effective. The best material of which to make them is silver, somewhat hardened by alloy; it is easily polished, bears heat well, and when tarnished may be readily brightened with a bit of soft chamois leather. I avoid smutching

Fig. 5.

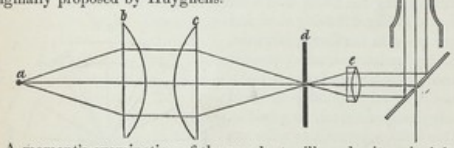


of the reflector in the chimney represented in Fig. 4 by not pushing it up near to the flame until the latter is adjusted to the proper size, and has become steady. The best shape for the flame is the triangular, the apex being above and the base inferiorly. This form is easily obtained by cutting the top of the wick to the form of a semicircle, and by keeping it, while lighting, well below the diaphragm of the lamp. If these precautions be neglected the flame is apt to become bifid and to spread out, and the light will be seriously depreciated.

It will be noticed that with the instrument which I use (*vide* Fig. 1) the light is disposed in converging rays. These suit best provided the specula are of moderate and definite length, and the luminous rays so arranged as to converge at their extremities, where invariably are situated the objects we seek to examine. However, if in the prosecution of endoscopic studies it should become desirable to use specula of considerable length, it will then be necessary to obtain rays of light at least sensibly parallel.

Fig. 6.

Practically speaking this is a difficult matter in the construction of optical instruments; nevertheless it may be attained approximately, if not absolutely, by the excellent combination used by the Rev. Professor Jellet, in his saccharometer, and delineated in Fig. 6. This combination is fundamentally identical with that originally proposed by Huyghens.




A moment's examination of the woodcut will render its principle obvious: *a* represents the light whose diverging rays are received upon the lens *b*, and thence transmitted parallel to *c*. By *c* they are condensed upon the diaphragm *d*, and, passing through the aperture thereof, again diverge and are received upon an achromatic object glass *e*, placed at its focal distance from *d*. Having traversed *e*, they emerge *parallel*, and may be deflected at right angles into the speculum by means of a diagonal light-piece, as in Fig. 1. By



such an arrangement a very long speculum might be well illuminated to its extremity. To simplify matters we might use a single double convex condenser, placing the light and diaphragm in its conjugate foci; however, by adopting the two plano convex lenses, as represented in Fig. 6, we avoid the amount of spherical aberration inevitable with a single glass.

It is scarcely needful to observe that such a combination is troublesome to manipulate, and keep in good working order, and therefore undesirable for the endoscope; nevertheless, under circumstances requiring the illumination of a very long speculum, it might be adopted with advantage. Just at present I am engaged in a series of experiments to ascertain its powers and adaptability.

It is unnecessary to observe that all artificial light is vastly inferior to a solar ray, but the practical difficulty of obtaining the latter is an insurmountable obstacle to its general adoption. Occasionally, however, it may be used; latterly I have succeeded, by means of a very simple device, in obtaining solar light for the endoscope whenever the day is unclouded.

I have a small concave mirror, mounted with a universal joint, which I can place in any window receiving direct sunlight, and easily adjust so as to throw a reflected ray into the room in any direction that may be convenient. If it were requisite to keep the room dark, the ray of sunlight might be received through a hole in the shutter, which should then be kept closed. Having placed the patient in a suitable position, and introduced the requisite speculum (in the manner which we shall later describe in detail), I attach thereto the tube *b*, Fig. 2, having first withdrawn the condensing lens, and proceed to manipulate the solar mirror until I get a converging pencil of light to fall upon the inclined reflector.

The illumination thus obtained is manifestly superior to any other, and serves well as a standard wherewith to correct and estimate appearances noticed with artificial light. In all cases of difficulty, which might admit of delay, I should prefer to use solar light. For prolonged examinations it might be desirable to have a mirror constructed to move by clock work, so as to keep pace with the sun's course. Practically speaking, I have not found this requisite, although I admit there is no small difficulty in the manipulation of the solar mirror. Practice will, doubtless, remedy this; and later I hope to succeed in greatly improving the appliances for endoscopy with sunlight.

Besides a good illuminating power we require for the endoscope

a variety of specula, adapted to the exploration of different regions of the body.

For general use the urethral tube, represented in Fig. 7, can hardly be excelled. It consists of a narrow portion, the size of a large catheter, which is just six inches in length; the remainder gradually dilates to form the part which fits into the receiving socket, wherein it is secured by means of a thumb-screw.

Fig. 7.

A wire stilette surmounted by a plug is provided, which can be inserted into the tube in order to facilitate its introduction into narrow canals such as the urethra. At one side there is an opening, wide above and narrow below, intended to admit probes, carrying either cotton wadding or sponge to wipe the parts under examination, or caustic or other applications for the purposes of treatment. I think the shape designated in the tube represented in the woodcut the most convenient. Desormeaux prefers an orifice such as is represented alongside of it at *a*; but, in practice finding the angular shoulder inconvenient, I have had it rounded off in mine. It is useful, moreover, to have the tube graduated in inches, in order to show at once the exact depth to which it has penetrated.

Three or four sizes of these urethral tubes are required. They answer remarkably well for other situations, such as the uterine cavity, nasal fossæ, &c. By the aid of one I was lately enabled to ascertain, in a patient of my own, the precise attachment of a huge nasal polypus. In another case of obstructed nostrils, which Dr. Stokes requested me to examine, I was able with such a tube to exhibit a quantity of small gelatinous polypi situated high up and far back out of sight, which produced all the annoyance.

For the exploration of the rectum a tube eight or nine inches long and more than half-an-inch in diameter may be provided. With such an instrument Mr. Connolly was able to make a drawing (case of M. W., Fig. I. chromo-lithograph) of a stricture of the rectum in a patient now under my care. For the examination of the external meatus of the ear and membrana tympani, and for the



performance of operations thereon, I have had an auriscope made, which is represented by Fig. 8. Already I have found it most useful. Although not comparable to a direct ray of sunlight, yet, in its absence it makes a reasonably good substitute, and the oblong lateral aperture allows of the introduction of suitable implements, which can be manipulated under the eye of the examiner. I am disposed to think that it would be still more convenient if made upon a skeleton pattern, as thus greater facility in the management of instruments would be obtained. During the early part of the past winter I was baffled from day to day by the darkness of the weather in my efforts to obtain a view of the membrana tympani in a lady whom I attended for a sudden attack of deafness. At last I used a rude ear speculum, fashioned at the time to suit my endoscope, and at once obtained an excellent view of the parts. Since then I have frequently used my auriscope with the most satisfactory results.

Fig. 8.

So far as my experience goes to carry out that of Desormeaux, the most useful field for the operation of the endoscope is the urethra. By its aid diseases of this part, otherwise merely subjects of conjecture and empiricism, are rendered as clear as to diagnosis and as satisfactory respecting treatment, as affections of the eye, or of any other external portion of the body patent to view. Before entering upon the study of the diseases of the urethra, I may premise a few words upon the operation of examining it endoscopically.

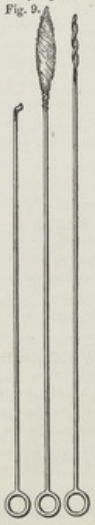
If the urethra is free from constriction, which can easily be ascertained with a bougie, the best course is to examine it from the neck of the bladder to the glans penis. To do so we should place the patient in a suitable position. In default of a proper couch, such as Heurteloup's, specially made for the purpose, I place him reclining in an easy arm-chair, with the buttocks near the edge of the seat, and with the thighs well separated. Kneeling between the latter I introduce the tube with plug well oiled, until, by its direction, I know that it has passed the triangular ligament of the perineum. I then introduce the index finger of the left hand (previously well greased) into the rectum, and guide the passage of the tube through the membranous portion of the urethra into the prostatic region. So soon as it has traversed the latter, I withdraw the finger from the rectum, extract the plug from the tube, and attach the endoscope, which should previously be lighted and adjusted. Now,

holding the endoscope in the left hand, I proceed gradually to withdraw it at the same time that I keep my eye closely applied to the eye-piece of the instrument. In order thoroughly to investigate the canal it is well, while withdrawing the endoscope, occasionally to re-introduce it a line or two, and to increase or diminish the light; thus views are obtained which may clear up points otherwise somewhat obscure.

As the tube traverses each portion of the canal, the lining membrane comes into full view bit by bit. If a difficulty occur in seeing any portion it will generally be found to arise from oil, blood, mucus, or some other fluid, obscuring the surface. This impediment is easily remedied.

Before proceeding to the examination a number of rods, with screw ends, such as represented in Fig 9, should be prepared by winding the extremities with cotton wadding, and some should be provided with portions of fine moist sponge securely tied on.

Fig. 9.



When any obscurity of vision arises, one of the rods should be taken in the right hand, introduced into the lateral slit in the tube, and passed down to its extremity; a little pressure and a rotation or two suffice usually to take up the fluid, and the rod may then be withdrawn. Sometimes it will happen that the wadding or sponge is left behind, and to meet this emergency a little blunt hook, such as represented alongside of the rods in Fig 9, should be at hand; this may be passed down to the sponge or wadding and rotated once or twice; though blunt it immediately becomes engaged therein, and by its aid the substance can be withdrawn. I prefer this hook to Desormeaux's miniature cork screw, as being much safer and less liable to do mischief. During an endoscopic examination this wiping of the part may frequently need repetition. The screw end on the rods facilitates the removal of the cotton when soiled. It is hardly necessary to observe that the strictest care is required in the cleansing of the endoscope and its appurtenances, lest it ever should become a medium for the transmission of infection from case to case.



In the introduction of the endoscope catheter it is necessary to be careful not to enter the bladder lest a rush of urine fill it up and embarrass the examination. This is no needless precaution, for habit will teach that a straight instrument enters the bladder with almost as much facility as a curved one. This fact is well known to the continental surgeons, who mostly use catheters, either straight or nearly so.

I may also observe that the index finger of the right hand, well oiled, may, from time to time, be slipped into the rectum during the examination of the deeper portions of the urethra, as by its aid we are able to ascertain the position of the extremity of the tube, and to identify the portion which may be diseased. Thus I have frequently been able to ascertain, with positive certainty, morbid conditions of the prostatic, membranous, and bulbar sections of the canal. In cases of stricture or disease anterior to the bulb it is not requisite to place the patient reclining on a couch—he may simply stand with his back against the wall, the operator kneeling in front of him. I should here mention that the optical portion of my endoscope has been made for me by Messrs. Spencer of Aungier-street, Dublin, while the specula and other fittings were made partly by Charrière of Paris, and partly by Messrs. Thompson and O'Neill of this city. Messrs. Fannin have given me to understand that they intend to supply the instrument perfect in all details.

Before attempting to form opinions respecting morbid conditions of the urethra, our first task must be to learn its appearance in the natural state. Hence we should take as many opportunities as present themselves of studying its aspect apart from all changes resulting from disease. A little experience shows how imperfect an idea of the colour and appearance of the mucous membrane of the urethra during life, can be obtained by its inspection after death. In place of the various hues of yellowish-white, red, and violet, which mechanical anemia or congestion give to the part in the dead-room, we find it in health, in the living subject, throughout of a pale rose tint, its surface smooth and polished, and glistening with its coating of mucus. One portion is usually of much deeper colour than the remainder, namely, the region of the glans. This, I imagine, is due to the extraordinary vascularity of that part.

In an endoscopic examination we cannot see (at least I have not seen, nor has Desormeaux) the orifices of lacunæ, nor of the ejaculatory ducts, nor the verumontanum; the catheter seems to

efface these parts in its transit; but we can observe the colour and state of the lining mucous membrane, and notice how, disposed in longitudinal folds, it closes centripetally upon the opening of the tube, giving to the portion in view the outline of the cloaca of a bird, or, in miniature, the appearance of the vagina during withdrawal of the speculum (*vide* Fig. V., chromo-lithograph). This fashion in which the urethra closes upon the tube is important to notice, because it is peculiar to the elastic and supple condition of health.

No more fascinating temptation could present itself to my mind, at the present time, than the wish to enter into a full analysis of M. Desormeaux's beautiful and philosophical discussion of the subject of urethritis, occupying from page 26 to page 83 of his memoir; but I feel that the suitable limits of an article such as the present would render the attempt impossible. I shall, therefore, make but a few remarks on the subject, and hope I may thereby enlist the interest of others in this most important investigation.

Physicians are well aware that inflammation of the urethra, accompanied by discharge, may arise from many different causes; and, inasmuch as the course and consequences of such affections vary with their origin, a positive diagnosis, especially in the chronic stages, is needful both for the satisfaction of the practitioner and the advantage of the patient.

Urethritis, for the most part arising from *specific contagion*, may nevertheless, be produced by the passage of a catheter, by contact with nonspecific vaginal discharges or with chancrous pus, by venereal excesses, errors of diet, ingestion of irritant articles of food and drink, the use of cantharides, the influence of teething, intestinal worms, herpetic, rheumatic, and gouty affections, and other causes needless to enumerate.

Under all these various circumstances its course and consequences vary materially.

The *leading distinction* consists in the fact, that while all other varieties incline more or less certainly and rapidly to a natural cure, that which arises from specific contagion, or blennorrhagia, tends to run a regular and lengthened course, and to merge into a chronic form, characterized by slight colourless discharge, or blennorrhea as it is termed, uneasiness in the perineal region, and an insidiously increasing difficulty in micturition, which finally, if neglected, terminates in organic urethral stricture. Such being the case, it is a matter of vital importance to study with the endoscope the clinical



history of this malady, to watch its course, and to ascertain whether there be any signs by which it can be recognized without fail, or any mode of treatment by which the above mentioned untoward results may be prevented.

The earlier stages of blennorrhagia are characterized by inflammation of so painful a description that the use of the endoscope is wholly impossible. However, when the more acute irritation subsides, we are able to notice that the inflammation of the passage *spreads gradually backwards* until finally it reaches the prostatic region. From this period out it selects, usually, one of two courses. It either gradually abates completely and leaves the parts as they were before, or it settles in the posterior part of the canal, from the bulbar to the prostatic portion, and there brings about changes which we shall proceed to consider.

Having once seized upon the deeper portion of the canal, the bulbar region appearing to be its place of selection beyond all others, the inflammatory action assumes a new type. In place of the simple redness of the mucous membrane, and unevenness from stripping of the epithelium, hitherto observed, the part assumes the appearance of the conjunctiva of a chronically inflamed eyelid, and, in fact, becomes *granular*.

This granular condition, once fully established, appears to have no natural tendency whatever to cure, but rather goes on to the production of submucous effusion, which causes more or less coarctation of the canal and distress in micturition. This form of constriction of the urethra, as well as that from tumefaction of the mucous membrane occurring in the earlier stages of the complaint, differs essentially from the true organic stricture, wherein the granular stage, now under consideration, is certain to end sooner or later if neglected.

The pathological condition just described constitutes a stage in the course of the disease at which the patient is very likely to seek advice. The symptoms are sufficiently characteristic. He complains of a slight discharge, especially noticeable in the morning, often but not always, colourless; of some little trouble in passing the urine, which, if examined, is found to contain lymphy flocculæ; of some tenderness in the perineal region; and, in addition, details the history of an antecedent blennorrhagia of date more or less remote. If a bougie be introduced it will discover a painful spot in some portion of the urethra, and will, most probably, when withdrawn, be found tinged with blood.

In such cases the endoscope clears up all doubt, and in the great majority of instances enables us to recognize the granular condition in some portions of the canal. This once ascertained, treatment is a matter of facility. Cauterization which cures granular conditions of mucous membranes elsewhere—in the eyelids, uterus, &c.—will cure it here; and, thanks to the endoscope, can easily be applied to the exact spot diseased. Some caution is needed in the application of caustic for the cure of granular urethritis. The method which I prefer is as follows:—Having brought the anterior portion of the granulating surface into view I first carefully wipe it dry with a portion of wadding carried down by a suitable rod. I next take a second rod, armed also with cotton wadding, and, having moistened it with a solution of nitrate of silver or sulphate of copper (xv.—xxx. gr.—℥i), pass it down to the diseased part and hold it in contact therewith for a few seconds. I then withdraw the rod and endoscope catheter. This operation causes very bearable pain, which may be removed by a warm bath and moderate anodyne. In the milder cases when next we proceed to use the caustic—perhaps in the course of four or five days—we find that the portion last touched is healed, and that the endoscope catheter penetrates further than before without causing pain. Another portion may now be cauterized, and in like manner, by degrees, the whole diseased surface cured. Under the influence of the caustic the granulations are removed—certainly, though rarely quickly—submucous effusion is absorbed—constriction disappears—and finally, the parts return to a condition of health from which they are not liable to relapse spontaneously.

For illustration sake I may here give brief notes of a case of chronic granular urethritis which lately came under my notice and care. J. N., a gentleman aged twenty-four years, of strumous and delicate constitution, contracted blennorrhagia fifteen months ago. When almost entirely well of it he caught a second infection some months later. Now the disease showed itself obstinate, and, despite a vast amount of treatment he retained a chronic discharge, with some scalding, some uneasiness in the perineum, and latterly he was annoyed by slight dysuria, and by a swelled and tender testicle. About the close of last February he placed himself under my charge.

I at once carefully examined the urethra with the endoscope, from the neck of the bladder to the orifice. The condition of parts which I discovered was as follows:—The prostatic portion of the



urethra was injected and slightly inflamed; the membranous portion was quite healthy; the bulbous portion was *ulcerated and granular*, exquisitely tender, and bleeding on the most gentle touch. Its appearance is well represented by Figures II. and III. of the accompanying chromo-lithograph, which has been admirably executed for me by Mr. Lewis, of Dame-street, from a drawing taken from nature by the accomplished artist, Mr. Connolly. Fig. II. shows the granular condition well marked, and Fig. III. exhibits it smeared over with blood which has just exuded from its surface. Fig. V. represents the healthy appearance of the anterior portion of the urethra in the same patient. Having made a precise and satisfactory diagnosis, I proceeded, with the help of the endoscope, to cauterize the granular ulceration, commencing from before, and passing backwards. Fig. IV. shows the appearance immediately after each cauterization. The case rapidly got well, and after six cauterizations, extending over a period of five weeks, the granulations were removed, and the endoscope catheter could be passed into the bladder without causing the slightest pain. The discharge and perineal uneasiness also disappeared, and the swelling of the testicle—which I attribute to engorgement of the prostatic portion of the urethra, caused by the slight obstruction in micturition—having yielded to strapping, has not shown the least tendency to return. Of the utility of the endoscope in this case I shall only remark that, in the first place, it enabled me to make a precise diagnosis at once, and subsequently greatly facilitated treatment. I do not know how I could have cured this case without its aid, because strong caustic solutions were required to conquer the granular ulceration of the bulbar region, and I could not have used injections of adequate potency without seriously damaging the anterior part of the canal, which was sound.

From this and other cases which I have examined and treated, as well as from M. Desormeaux's more extensive experience, I am strongly disposed to believe that the chronic granular urethritis which I have just described, is the pathological condition most frequently associated with gleet, and constitutes the transition stage between the acute inflammatory constriction produced by blennorrhagia, and its final issue in organic stricture.

I think it scarcely needful to speak of the importance of diagnosis in this affection, or to urge the utility of the endoscope respecting it. To this instrument our knowledge of the disease is entirely due, as well as our present ability to treat and control it. The absolute

necessity of efficient treatment is urged upon us by two serious considerations. In the first place, the discharge from the granular surface is undoubtedly contagious, as M. Thiry of Brussels has proved experimentally, and retains this quality in every stage of its existence. M Desormeaux[a] mentions a case which clearly proves its infectious nature, even when the disease had become so chronic that it actually escaped the notice of the patient. Moreover, if left uncured, granular urethritis is certain, sooner or later, to produce organic stricture. The submucous effusion becomes organized, the inflammation spreads to the fibrous structures of the urethra, and the whole morbid mass terminates by undergoing a cicatricial shrinking, which produces contraction notoriously difficult to remedy. The time occupied in the process is uncertain, but the final result none the less sure in the vast majority of cases. A few years generally suffice, although there are marked exceptions. Desormeaux[b] mentions one case in which chronic granular urethritis existed for eleven years without producing organic stricture, and another[c] of over forty years' standing, in which that stage had not been reached. I have good reason to believe that the disease has existed nine or ten years in a patient lately brought to me by my friend Dr. James Brady, and yet in that instance no stricture exists.

There is one circumstance connected with chronic granular urethritis of great significance, namely, that during its entire duration it is liable under the stimulus of erotic excitement to assume an acute form, with muco-purulent discharge. Herein, I believe, lies the explanation of the supposed proclivity of individuals to infection, which is familiar enough to the practitioner.

Desormeaux makes the highly interesting and important observation that, for the most part, whenever we find a chronic and intractable inflammation of the testicle, an endoscopic examination will exhibit granular disease in some deep portion of the urethra. This fact, if discoverable, will always give a valuable hint relative to the origin and treatment of this complication, and the absence of the urethral affection may, perhaps, even be looked on as presumptively diagnostic of a disease of the testicle, arising from some other cause, such as tuberculosis, not directly connected with the urino-genital organs. It will probably occur to many that Desormeaux's observation is but a confirmation of an opinion held long ago by Mr. Ramsden of St. Bartholomew's Hospital, whereby he

[a] Op cit, page 69. [b] Op. cit., p. 48. [c] Op. cit., p. 55.



connected many chronic affections of the testicle with disease of the deeper portion of the urethra.

The length to which the foregoing observations have extended forbids any attempt to enter upon the description of the endoscopic appearances presented by other urethral inflammations, as well as any allusion to the complications and treatment of each. I may however observe in brief that in no disease, blennorrhea alone excepted, do we find a *persistent* granular condition of one portion of the passage, with submucous effusion and consequent chronic inflammatory constriction of the canal. In a future paper, I hope to discuss at greater length the subject of urethritis and its varieties.

Heretofore we have discussed the value of the endoscope principally in reference to the study of blennorrhea. Now we shall consider the light which it is capable of throwing upon that disastrous and frequent sequel of blennorrhea—urethral stricture. Without entering into any exhaustive discussion upon stricture, we may here call to mind the three varieties which are immediately connected with specific urethritis:—

First.—The acute inflammatory form, due to tumefaction of the mucous membrane, and seen during the height of the ailment.

Secondly.—The chronic inflammatory constriction produced by the granular state of the canal already described. And

Thirdly.—The true organic stricture, due to the cicatrization of parts long the subject of the granular condition.

These varieties, it is plain enough, are merely different stages of the same disease. Of the first we have little to remark in connexion with endoscopy; the tenderness of the parts forbids the use of the instrument, and the urgent symptoms subside naturally with the abatement of the acute stage of the blennorrhagia. The second variety, though but little understood hitherto, is of great importance. The existence of this transition stage between the acute inflammatory and organic stricture was first, I believe, pointed out by M. Robert, but our knowledge of its etiology, and our powers of rational treatment, as we have seen, are solely the work of the endoscope.

The third variety, or organic stricture, remains to be considered.

We shall not delay long upon the anatomy of organic stricture; suffice it to say that in the vast majority of cases it is neither more nor less than a cicatricial condition of parts long diseased, and is itself actually the result of the cure of the preceding stage, or

chronic granular urethritis; just as contraction of the fingers is often the result of the healing of ulceration following a burn or injury of the palm of the hand. Traumatic stricture, too, although different as to its mode of origin, is very similar in its organization. Like other cicatrices organic stricture is indurated, sparingly vascular, contractile, and little susceptible of vital processes. Hence we find it difficult to dilate, and when dilated speedy to re-contract; difficult, in fact, to get rid of by any process natural to highly organized structures. Its treatment necessitates far more than the chronic inflammatory or granular constriction already considered, and to obtain even a temporary success we must either cut or burst through it; in fact treat it as we would a cicatrix in any other situation which produced untoward effects by its tightness.

For these reasons it is manifest that a precise diagnosis is absolutely necessary; and inasmuch as the selection of the mode of treatment depends upon that diagnosis, the sooner it is made the better. The endoscope alone, I believe, can enable us in all cases to arrive immediately at a positive conclusion on the subject.

An experienced hand, armed with the instruments in common use, especially the bougie terminating in a bulbous extremity, or "bougie à boule" of the French writers, can, in many instances, ascertain, without further aid, a great deal about a stricture; but certain points, nevertheless, are left in obscurity. With the help of such a bougie the existence and seat of obstructions can be learned with tolerable accuracy, also their number, length, calibre, elasticity, retractility, and consistence, yet, much experience and habit is required on the part of the examiner, and skilful practitioners will differ from time to time regarding the nature of a particular case, thereby proving the doubtfulness of the matter.

The endoscope, however, clears up all uncertainty, enabling us, upon the moment, to see the constriction and make a positive diagnosis of its nature. Furthermore, it shows us the form of its anterior extremity, the exact position of the orifice, and the colour and state of the mucous membrane in its neighbourhood.

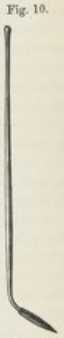
Nothing in medicine can be more certain than the diagnosis of organic stricture with the aid of the endoscope. On bringing the part into view we find it to present either the dull whitish aspect with which we are familiar in cicatrices in other situations, and in *post mortem* examinations of strictured urethræ; or we discover its



investing mucous membrane injected, red, or even granular, and ulcerated.

On proceeding to examine the parts with a probe, such as is represented by Fig. 10, introduced through the aperture in the exploring tube, we obtain information of a perfectly conclusive nature. When the constriction is organic, the parts touched with the probe, whatsoever their appearance may be, give a most characteristic sensation of induration, and move *en masse* before it. The actual amount of hardness is thus easily felt and recognized.

Fig. 10.



On proceeding to withdraw slightly the instrument, we observe the manner in which the consolidated and inelastic parts refuse to follow and close up after it; and on re-introducing the tube, the eye of the observer remaining undisturbed, we notice the fashion in which the immovable face of the stricture abruptly comes again into view. Nothing can be more characteristic than the signs just described. Written descriptions fail often to convey sensations easily understood when experienced, but I am quite positive that any one who has once examined endoscopically an organic stricture of the urethra, will acknowledge the impossibility of confounding it with a fold of mucous membrane, with a deviation in the canal, with the obstruction sometimes offered by the triangular ligament of the perineum, or, in fact, with any other condition of the part.

Besides aiding in the diagnosis of stricture the endoscope shows us many interesting points connected with it. It enables us easily to recognize the configuration of its anterior extremity, and a little experience shows us how this varies. Sometimes it is infundibuliform, sometimes shelf-like, sometimes presenting a number of minute projections which surround more or less regularly the orifice. On the whole, I think the latter disposition is most commonly met with, and corresponds to what Desormeaux terms "la forme mamelonnée." The orifice of the stricture can in most cases be easily made out, and we notice how much it varies in position. For the most part I have found it situate in the lower segment of the urethral tube, as if the deposit of indurated tissue were principally confined to its pubic aspect; but in this respect it varies much; occasionally it is very difficult to make it out, even after careful examination with the probe. I have noticed one circumstance in a great number of cases which I believe to be

worth recording, namely, that the parts *immediately surrounding the orifice* are more prone to bleed when probed than other portions. This fact has often given me a valuable hint, and induced me to persevere in my endeavours to penetrate the opening.

I need hardly observe that the variation in the form of the anterior aspects of strictures, and in the position of their orifices, such as I now mention, satisfactorily explains the facility or difficulty which cases present in the introduction of an instrument into the bladder. Many of my *confrères* in Dublin, who have done me the honour of inviting me to examine their cases, and of inspecting some of mine, will call to mind the applicability of the foregoing remarks upon urethral strictures to instances in which I have demonstrated all that I now put forward.

After what I have already stated of the use of the endoscope in the examination of strictures, it is hardly necessary for me to insist upon its manifest utility in their treatment.

As we have seen, it lends itself to the discovery of the orifice and to the introduction of a probe, and this first step in treatment paves the way to cure; nay more, under circumstances of great difficulty, in retention of urine, it may enable the practitioner to penetrate the obstruction, and thus save him from the serious alternative of puncturing the bladder, or of cutting down upon the stricture in the perineum without the aid of a director. M. Desormeaux mentions such a case which occurred in his practice,* and a somewhat analogous one has happened in mine.

M. Desormeaux's case was that of a man named M., aged thirty-six years, who laboured under stricture of traumatic origin for five years. At the end of this time, being in great suffering, he entered the Hôpital Necker in December, 1862, under the care of M. Civiale. This eminent and accomplished catheterist tried, during twenty-eight days, to pass an instrument into the stricture, but without success. He then called upon M. Desormeaux to try what he could do with the endoscope. M. Desormeaux, at the second endoscopic *séance*, January 11th, 1863, succeeded in passing a fine bougie through the constriction, and from that time treatment was carried out with facility and good results.

My own case was that of a man named E. B., aged seventy-three, who is still under my care in the Mater Misericordiæ Hospital. He entered early in March, 1865, suffering much from a tight stricture

* Op. cit., p. 107.



of old standing, and originating in blennorrhagia. I long tried in vain all description of bougies, but could not succeed in introducing one until, on the 15th of March, at the third endoscopic *séance*, I passed a probe through the constriction. Having left it in place for a short time, on withdrawing it I was able to get in a small bougie, and since then the case has progressed so favourably under treatment by gradual dilatation, that I am now able to pass a fair-sized instrument. The extreme age of this patient forbade the adoption of any more decisive method of treating the stricture than progressive dilatation, so I have taken the opportunity of watching endoscopically the appearance presented by the parts during that process. The local results, thus seen, appear to me very interesting. In brief, I may observe that the effect of instrumental dilatation upon the stricture was to *inflame* it in a very decided manner, and in fact to a great extent to bring it into a condition resembling granular urethritis—differing, however, from the latter affection in the existence of a surrounding *callous* ring. On several occasions, when for a few days treatment was suspended in consequence of vesical irritation and other causes, the inflammation subsided, but the stricture again recontracted, giving me the impression that the temporary cure was consequent only upon the temporary inflammation and partial absorption caused by the use of the bougie. In a case of stricture treated by gradual dilatation, which Dr. P. C. Smyly kindly gave me an opportunity of examining at the Meath Hospital, a very similar condition existed; so also in two cases of organic stricture under Dr. Quinlan's care in St. Vincent's Hospital, which I examined for him both before and after treatment. Should further experience confirm this observation, I think we may be considered to have arrived at a satisfactory explanation of the reason why progressive dilatation of organic stricture produces no permanent benefit—and also to have acquired the power of judging, from the endoscopic appearances in any case in point, whether treatment by dilatation is likely to be followed by immediate relapse or not. Figures VI., VII., and VIII., of chromo-lithograph plate, represent the stricture at different stages, as seen in the case of E. B. Fig. VI. shows it before treatment was commenced, pale and cicatrix-like in aspect, mammillated in form, with the opening in the centre. Fig. VII. exhibits it moderately inflamed during the earlier periods of treatment. Fig. VIII. is intended to illustrate its appearance as seen in the endoscope with a bougie introduced.

During later periods it became of deeper colour, approximating to the hues in Figs. II. and III.; but, even then, although a good-sized bougie (No. 9 or 10) slipped with the greatest ease through it, I could, with the endoscope and probe, most distinctly feel the surrounding ring of indurated tissue.

However, to return to the question of the utility of the endoscope, I think it may be looked on as proven that in certain instances it is capable of giving valuable assistance in the introduction of an instrument through strictures impregnable to other modes of attack. I can easily imagine its triumphant success in a case of tight and otherwise impassable stricture, wherein, having by its aid got a fine conductor into the bladder, Dr. Hutton's railroad catheter might be slid over it, and retention of urine relieved. For my own part, I am confident that time and opportunity are alone wanting to develop the resources of the instrument under these and similar circumstances of difficulty.

Useful as progressive dilatation may be as a preliminary step in the treatment of stricture, we are but too often compelled to adopt more decisive methods in order to obtain lasting relief. Of these methods rupture, and division by cutting, appear to be the most eligible, and our choice mostly lies between them. Of the employment of destructive caustics I shall say nothing, as I am convinced it is worse than useless.

Rupture, by Holt's method, has already been proved experimentally a useful mode of treatment, but it is now a matter of certainty that it is not, as was at first supposed, free from all immediate danger, or liability to relapse. This might be expected *a priori*, because, from the eccentric position of the canal of the stricture occasionally noticed, we can understand that the laceration must sometimes extend into sound rather than callous parts, and consequently immediate danger of hemorrhage and infiltration be incurred, and of recontraction of the constriction so soon as healing ensues.

If, on the other hand, the laceration opens up the callous parts alone, permanent relief may be anticipated. I lately examined endoscopically, with great interest, a patient sent to me by Dr. P. C. Smyly, who had performed this operation on him more than a year ago. The case was one of undoubted organic stricture, of remarkable closeness, and of twenty years duration. Gradual dilatation had been repeatedly used, but was invariably followed by immediate relapse. However, since being ruptured, the stricture



never closed sufficiently to cause distress, or to prevent the introduction of a catheter of No. 9 or 10 size. On inspection, I found in the site of the constriction an open vertical slit, about three-sixteenths of an inch in length, and all the surrounding parts indurated and cartilaginous. The mucous membrane was, moreover, chronically inflamed. In a case operated upon last October by Dr. R. M'Donnell, a similar condition of parts existed, with the exception that the slit was crescentic and somewhat transverse, and the state of the mucous membrane was less unhealthy. In fine, the mode of cure by Holt's method appears to be laceration of the indurated tissues, which should be prevented from reuniting by the careful after-use of dilatation.

In the hands of many practitioners division of the constriction has been found eminently successful, and upon theoretical grounds this might be expected.

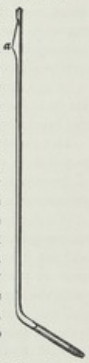
The division of external cicatrices, followed by moderate care to maintain parts in the desired position, on the whole, is a mode of treatment generally successful, yet, as now-a-day practised, urethrotomy is liable to great objections.

We need not enter into minute details of the various methods of accomplishing division of organic stricture. External urethrotomy without a staff is a formidable proceeding, eligible only in those cases in which acute retention obliges us, after the failure of other methods, to choose between it and puncture of the bladder. Perineal section with staff, after the method of Syme, is but little better. Internal urethrotomy by the methods of Stafford, Civiale, Sedillot, and Maisonneuve, are open to the same serious objection as Holt's method of dilatation, namely, that although by any of them we can open up the constriction, we cannot tell whether in so doing we divide the sound or the indurated parts. If, perchance, we touch the diseased parts alone, all is well; but if, from the impossibility, heretofore unremedied, of knowing and following the exact disposition of the canal of the stricture, we cut into the healthy parts, then, as in the method by rupture, we incur immediate risk of hemorrhage and infiltration; and so soon as these parts heal up the case is in the same position as before. In a word, the operation is a failure, and by no means devoid of risk.

Now to clear up the difficulties of those embarrassing cases in which division of a stricture becomes necessary, the endoscope comes to our aid and gives invaluable assistance. When the stricture is brought fairly into view, and its orifice ascertained by means of the

probe, the operator can see the exact disposition of the indurated parts, and can easily, under his sight, divide the stricture, confining his incisions to the indurated and callous parts. M. Desormeaux uses for the purpose a miniature button bistoury, with a handle similar to that of the probe represented by Fig. 10. I would venture to propose instead a blade somewhat different, which is represented by Fig. 11. It will be noticed that it has a long probe point and a short cutting edge, which is blunted towards its posterior extremity, *a*, so as to limit the incisions to the contracted parts, as in Maisonneuve's urethrotome. Such precaution is hardly necessary, as the stricture can be incised under the eye of the operator, but it is an additional safeguard against an over extensive division of the parts. The stricture being in view, and the orifice discovered, this knife should be introduced carefully into the catheter of the endoscope, so as to avoid injury to its cutting edge by contact with the interior of the tube. The catheter may then be rotated, so as to bring its slit into the requisite position to enable the operator to turn the edge of the urethrotome in any direction he may think desirable. Now its probe point may be engaged in the orifice of the stricture, and the instrument gently pressed onwards until the constricted parts yield. The after treatment consists in the use of quinine and opium to prevent urinary fever, and careful dilatation to maintain the incision patent.

Fig. 11.




The extreme simplicity of this proceeding renders further details unnecessary, and I may observe that M. Desormeaux, who has performed it a great many times, has found it easy of execution, free from risk of considerable pain, hemorrhage, infiltration, or serious shock to the constitution, and moreover very efficacious in its results. One of its greatest advantages consists in its applicability to cases of acute retention of urine; and there is no doubt it will often obviate the necessity of perineal section without staff, or puncture of the bladder.

Its performance is a matter of facility in all instances wherein the endoscope enables us to pass a probe into the orifice of the constriction, and, as we have seen, this has been accomplished in strictures which defied all other manœuvres.

There is a frequent and distressing complication of urethral



stricture, in the treatment of which it seems probable that the endoscope may prove a useful help to the practitioner. I allude to urethral fistulæ.

Although these frequently heal up on the removal of the stricture, unfortunately it is not always so. The continuous wearing of a catheter for some time, with pressure by compresses, and cauterization of the tract with a probe dipped in melted caustic, have from time to time been found successful; nevertheless, in many instances these and the like measures fail, and free division of the fistulæ becomes requisite. This is a severe operation, and one to be avoided if possible.

There is one point respecting urinary fistula, hertofore neglected, which, doubtless, is of great importance, namely—the condition of the *internal orifice*, and this the endoscope allows us to investigate. If this opening permits the urine to enter the fistula it is futile to hope that external pressure, cauterization, or other measures can succeed. On the other hand, if the portion of the false passage nearest to the urethra can be rendered healthy and closed up, the obliteration of the remainder follows as a matter of course. Now, the endoscope enables us to examine the internal orifice of the fistula—to ascertain whether it presents the characteristic papilla and surrounding boggy ulceration which the external orifice always presents; and, in case we think requisite, it enables us to apply caustic directly to the spot, so as to favour the healing process.

The nitrate of silver may be applied either with a miniature porte-caustique, or with the endoscope probe, its point having been dipped in the melted lunar caustic. I much prefer the latter device whenever the solid nitrate of silver is required, as there is no danger of a portion becoming detached and remaining in the urethra, where it might give rise to serious inconvenience. After the application of the caustic, injections of a weak solution of common salt and water may be used to limit its action and prevent undue irritation. Should this treatment fail, more decisive measures remain in reserve, and the endoscope even now is of service, exhibiting the course taken by the probe, and thus helping us to ascertain the point at which the fistulæ enter the urethra, and so guiding us while planning the operation best suited to the exigencies of the case.

A few words, before we leave the endoscopic study of the urethra, on the use of direct exploration in affections of its prostatic portion. We have seen how frequent are granular ulcerations of the bulbous

portion, and how injurious from their tendency to produce constriction. Granular ulceration of the prostatic portion, although by no means as common, is a very serious disease. Among its evil consequences we observe chronic enlargement of the gland, which is liable, on slight provocation, to merge into the acute form, painful irritation of the neck of the bladder and of the rectum, and forms of spermatorrhea most rebellious to treatment. The prostate is also liable to calcareous depositions—to excavating ulcers of strumous origin—to cancerous disease, and to chronic enlargements, often affecting the middle lobe in such a manner as to produce great difficulty in micturition.

With the endoscope the differential diagnosis of these and other prostatic affections is a matter of facility and positive certainty, and topical treatment can be efficiently directed to such as are likely to derive benefit therefrom. In my own practice I have found it most useful in the diagnosis and treatment of certain forms of spermatorrhea.

This latter subject, if fairly discussed, would occupy much larger space than the present article; therefore I shall confine myself for the present to a few practical observations, reserving for a future communication a more thorough and exhaustive analysis of this important affection. I think one of the nicest points to determine in a case of seminal incontinence, is, whether the malady is directly connected with a morbid state of the genital organs, or referable to a far more general pathological condition. Even granting it to be clear that it is really dependent on some lesion of the generative apparatus, it is occasionally difficult to ascertain whether its origin and cause entitle it to be classified as *irritative* or *atonic* in its nature. Of the *sthenic* variety I make no mention here, as its diagnosis hardly admits of uncertainty; neither do I mean to imply that well-marked cases of the irritative and atonic forms are liable to be confounded; but the difficulty, I believe, rests in this, that, whatever its origin may be, the ailment tends finally to the atonic phase. Withal, it is absolutely necessary for success in treatment that a correct diagnosis be made in the first instance, because no amount of remedies directed to the constitution alone will suffice to cure a case of irritative spermatorrhea; and, on the other hand, no amount of topical medication will even benefit one purely atonic in character.

Without delaying upon this subject, the pathological complexity of which is, I believe, far greater than is ordinarily admitted, I



would observe that it is of the utmost importance to discover the exact condition of the prostate, and especially of the prostatic portion of the urethra, in all cases of obstinate seminal emissions. If the mucous membrane thereabouts be inflamed and ulcerated, and the gland engorged, local treatment is of primary consideration. Nothing short of the cure of the local disease will appease the irritation of the orifices of the ejaculatory ducts which reacts so prejudicially upon the testicles, keeping them in a state of continual activity, in consonance with the well-known law that glands are stimulated by irritation of their excretory canals.

In our uncertainty the endoscope gives invaluable aid, shows us the condition of the prostatic portion of the urethra, and enables us to cauterize and heal it if need be. The application of caustic to the prostatic urethra was lauded years ago by Lallemand as a specific in all cases of spermatorrhea. A little experience, however, demonstrated that it did not universally succeed—in fact, that it acted like a charm in some instances, while in others it totally failed. Additional knowledge has led to the opinion that its successful operation is confined to those cases wherein the prostatic urethra is *highly irritable*. This I fully believe to be the truth, but, until I used the endoscope, I remained always in uncertainty relative to diagnosis.

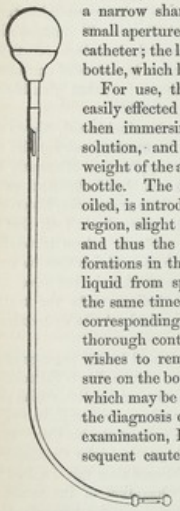
The commonly accepted test of *pain* caused by the passage of a bougie through that region of the urethra, is exceedingly fallacious, because at best the part is exceedingly sensitive, and patients who are not used to such explorations are certain to wince and complain when the instrument reaches the vicinity of the neck of the bladder. The only satisfactory proof of disease thereabouts is ocular demonstration, and this the endoscope gives us. Some time ago I cured a bad case of spermatorrhea, caused by ulceration of the mucous membrane of the prostate, by two thorough cauterizations effected with the endoscope, and at the present time I have another under treatment.

Many years ago I devised an instrument (Fig. 12) for the application of caustic solutions to the urethra in these cases; and, in the absence of more precise means, I, and several medical friends who tested it, found it most useful.

Solid caustics, I think, are objectionable, except when applied with the aid of the endoscope, for all instruments made with a slide to project are apt to lacerate the urethra and do mischief. Those intended for liquid applications, for the most part are faulty, because

they do not confine them to the spot where they are required. My instrument, however, meets these difficulties most satisfactorily. It consists, as may be seen by reference to the woodcut, Fig. 12, of a catheter, which terminates in two balls connected by a narrow shank; this shank is perforated by several small apertures, and communicates with the tube of the catheter; the latter is surmounted by a small gum-elastic bottle, which holds the solution intended to be applied.

Fig. 12.



For use, the instrument is first charged. This is easily effected by compressing the Indian rubber bottle, then immersing the end of the instrument in the solution, and withdrawing the pressure, when the weight of the atmosphere drives the fluid into the elastic bottle. The instrument, having been wiped dry and oiled, is introduced; so soon as it arrives at the tender region, slight pressure is made on the gum-elastic bag, and thus the fluid is squeezed out through the perforations in the narrow shank. The balls prevent the liquid from spreading to the parts beyond, while, at the same time, they distend the portion of the urethra corresponding to the narrow shank, and thus ensure its thorough contact therewith. As soon as the operator wishes to remove the instrument, he relaxes the pressure on the bottle—the fluid then re-enters the catheter, which may be withdrawn. In cases where I have made the diagnosis of granular ulceration from an endoscopic examination, I frequently use this instrument for subsequent cauterizations, as it is quick in operation, and unlikely to frighten a timid patient. The solution I prefer in most cases is ten or fifteen grains of sulphate of copper dissolved in an ounce of distilled water; I find it less irritating than nitrate of silver, and equally efficient. For an unpractised hand it is a wise precaution to operate when there is some urine in the bladder, as thus any of the fluid which might perchance enter it is at once decomposed and rendered innocuous. Latterly I prefer this instrument made with a straight shaft in place of the curved one represented in the woodcut, and I find it convenient to have it graduated in inches. The straight form, moreover, renders it as useful for cauterization of the cavity of the uterus as for urethral applications.



Diseases of the female urethra are rare, contrasted with those in the male subject, nevertheless they do occur from time to time, and give rise to frightful suffering. The endoscope appears likely to be a useful assistant in their diagnosis and treatment. I may here allude to a case of this nature, which Dr. Aquilla Smith has kindly asked me to see and treat in conjunction with him.

The case is that of Miss H., a young female, who, for the past two years, has suffered atrocious pain during and after passing water. The urine is healthy, and nothing can be detected, by an ordinary examination of the parts, to explain the distressing symptoms. Latterly her general health has given way to a certain extent from the excess and continuity of the pain. Having, in vain, undergone an endless variety of treatment, she lately placed herself under Dr. Smith's care, and by his request I saw her. An endoscopic examination, which was made with difficulty, owing to the nervousness of the patient, and the pain which it produced, revealed a morbid condition of the urethra, near to the neck of the bladder. In this situation the passage, for about half an inch in length, was highly vascular, granular, and of the colour of a mulberry.

The special treatment which naturally suggested itself, and was determined upon by Dr. Smith and myself, was thorough cauterization of the diseased part with nitrate of silver. On the 31st of March I performed this operation, with the assistance of the endoscope; it caused sharp pain, which lasted for some hours. However, the patient told me to-day (April 4th) that since the cauterization she has obtained more relief from suffering than she has known since the commencement of her disease. Encouraged by this success I repeated the application, and hope, at some future time, with Dr. Smith's permission, to record the termination of the case. It reminds me forcibly of an instance mentioned by Desormeaux, in which horrible pain at the neck of the bladder, in a gentleman under his care, was caused by a small fissure-like ulcer, situated thereabouts—which, moreover, was easily cured by a few cauterizations.[a]

Before concluding I shall make a few observations on the utility of the endoscope for the examination of the interior of the bladder.

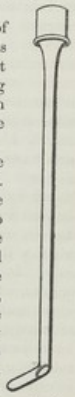
With respect to the practicability of the operation, I may remark that in a large proportion of cases it is quite possible to obtain a satisfactory view of the interior of that viscus, and to acquire by

[a] Op. Cit., p. 155.

that method of investigation information otherwise wholly unattainable.

For the performance of vesical endoscopy certain conditions must be fulfilled. In the first place, the bladder must be distended somewhat, in order to give the exploring implement space to move about; and moreover, the fluid distending it must be transparent. Clear tepid water is the most suitable and convenient fluid, and should be injected with a double-current catheter until the interior of the bladder is thoroughly washed out, and the returning fluid appears perfectly limpid. Next, an instrument must be provided to convey light, and permit the observer to look into the viscus, and inasmuch as the latter is full of liquid, the extremity of the exploring tube must be closed with a piece of transparent glass. The instrument which Desormeaux uses is represented by Fig. 13, and in shape resembles the catheter recommended by Mercier in certain affections of the prostate gland.

Fig. 13.



At the extremity of the long shaft a little window of glass is let in to permit the transmission of light, and is carefully cemented round, so as to render the instrument water-tight. The glass is set in a somewhat slanting direction, so as to obviate the reflection of the light from the perforated mirror, which might greatly embarrass the observer.

This form of catheter is easily introduced into the bladder, and then the endoscope may be attached thereto.

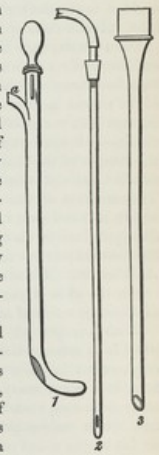
As the instrument is moved about, the eye of the examiner can see, bit by bit, the whole surface near to which its glazed extremity can be brought, namely, the border of the prostate, the trigone, the fundus, and greater portion of the posterior surface. The endoscope being held in the left hand, and manipulated therewith, the index finger of the right hand introduced into the rectum can give much assistance in the investigation, by raising the fundus and bringing it into proximity with the exploring tube. The anterior surface of the bladder has heretofore eluded ocular examination, but I am sanguine of being able to remedy this disability; fortunately, it is rarely the seat of disease.

This cystoscope of Desormeaux is liable to certain practical disadvantages. In the first place, the glass is rendered dull by the oil and urethral mucus which it comes in contact with during



introduction, and cleaning of it is impracticable. Moreover, if, during an examination, the water in the bladder becomes turbid, from slight bleeding or any other cause, it is requisite to withdraw the cystoscope, resort to the double current catheter, and then re-introduce it. To avoid these faults I have had an instrument made after my own designs, by Messrs. Thompson and O'Neill, of Henry-street; its various parts are represented in Fig. 14.

Fig. 14.




It consists of a full sized catheter, 1, with a very short curve, and on the curve is an opening, made, as it were, in continuity with the shaft. To facilitate introduction there is a wooden plug, which is represented as being in the instrument. After introduction the plug is withdrawn, and the small flexible catheter, 2, inserted; the latter is connected with an enema pump, which, for sake of clearness, is omitted from the woodcut. By its means tepid water is pumped into the bladder until, after distending same, it returns alongside of the small catheter, and delivers itself externally at *a*. The pumping is continued until the water returns perfectly limpid, when the flexible catheter may be withdrawn, and the tube, 3, with glass window at its extremity, introduced in its stead The latter is made of such a size as to fill accurately the catheter, 1. By this arrangement it will be perceived that the glass window is not smeared with oil or mucus, and thereby rendered dull. Moreover, if perchance it should become so, or the contents of the bladder become turbid, the tube, 3, can be withdrawn and cleaned, the catheter, 2, introduced, and fresh tepid water pumped in until it returns limpid. All this done, the tube, 3, may be re-introduced, and the examination proceeded with. For the examination of the female bladder a somewhat shorter but much larger tube may be used with facility and advantage.

So much for the details of the operation; now we may consider how far the endoscope can serve us in the investigation of the bladder. It enables us to see the mucous membrane lining the portions already named, to recognize its pale whitish rose colour

and smooth surface in health; its various deeper shades in cystitis, acute, subacute, and chronic—varicose vessels coursing beneath it—mammillated projections—roughening and stripping of its epithelium—ecchymoses here and there—thick tenacious muco-purulent matter adhering to it—columnar bands forming a network beneath it—saccular offsets from the cavity of the bladder—malignant tumours projecting into it, and so forth. Moreover, it allows us, while in the act of withdrawing it, to investigate the orifice of the neck of the bladder, to see the border of the prostate, prominences of its middle lobe, valvular folds or bars, and so on.

But a few days ago Professor Macnamara requested me to examine endoscopically a patient of his in the Meath Hospital, who suffered from hematuria, depending, in his opinion, upon a diseased condition of the vesical mucous membrane. The case was rather difficult to manage from the rapidity with which blood exuded, rendering turbid the injected tepid water. Nevertheless I was able to demonstrate the interior of the bladder to my own and to Professor Macnamara's satisfaction; and it is with his permission that I mention the case. The condition of the mucous membrane was, as he had suspected, highly inflamed, and in points ulcerated; every gradation of colour, from pale rose to deep purple and almost black, could be seen, and the diseased portions recognized and distinguished from the healthy. As Professor Macnamara observed at the time, I was enabled to render the state of the mucous membrane of the bladder as visible as the conjunctiva of an inflamed eye.

With our present knowledge of the endoscope it is scarcely possible to measure the advantages which may be expected from its employment in cases of calculous disorder. Undoubtedly, by its help, in a great many instances, it will be practicable to see the stone or stones, examine the surface, colour, form, and dimension, and obtain various practical hints. Thus, a calculus too small to be felt by the sound may be seen by the eye, and conditions of the bladder likely to be mistaken for stone—such, for example, as phosphatic incrustations—may be recognized, and patients thereby saved from needless and often fatal operations. One of the most important uses of the endoscope in such cases is the diagnosis of an encysted condition of the stone, which, with our former means, too often was discovered only during the operation.*

I have not chanced to meet with a case of stone since I have

* *Vide* Desormeaux. Op. cit., page 175, &c.



succeeded in making the endoscope practically available, therefore I have no positive results to show. However, my friend and colleague, Dr. Robert M'Donnell, submitted my instrument to a test upon the dead body, which I think may fairly be considered an "*experimentum crucis*," and, in illustration of its capacity, I record the trial, for the veracity of which Dr. M'Donnell is as responsible as I am myself:—He first prepared a subject by opening the bladder and introducing into it three substances of a nature the most unlikely to be thought of, and respecting which I was in total ignorance. He then brought me to the body, and challenged me to tell with my endoscope what the articles in the bladder were. In a few minutes I was able to do so, and to demonstrate them to him. The articles were—a brass screw with a milled head, a short Minié bullet, and a mass of plaster of Paris.

In conclusion, I have to apologize to the readers of the Journal for the length—far exceeding what I originally purposed—to which this communication has extended, and to ask their indulgence for the too obvious haste with which the materials at my disposal were thrown together. I feel that I must depend on their consideration, and kind allowances for the fact that I am myself but a neophyte in the unexplored study of endoscopy, and for the difficulties which I have experienced in stealing a few hurried moments from other engagements to record briefly my experiences in this somewhat new, but I hope not uninteresting, field of inquiry. If I have made it clear that with the endoscope it is easy to see portions of the body supposed to be wholly invisible, and thereby added even the smallest new facility towards accurate diagnosis, I shall be perfectly satisfied. If, however, I have succeeded in aiding, directly or indirectly, in the relief of one iota of human suffering, and in inducing others to work with the endoscope and labour to extend its usefulness, then indeed the object of my ambition shall have been most fully realized.

ON THE USE OF

# GALVANISM AND ELECTRO-MAGNETISM

IN

# MEDICINE AND SURGERY.

BY

JULIUS ALTHAUS, M.D., M.R.C.P. LOND.,

FELLOW OF THE ROYAL MEDICAL AND CHIRURGICAL SOCIETY, OF THE HARVEIAN SOCIETY AND OF THE MEDICAL SOCIETY OF LONDON;
PHYSICIAN TO THE INFIRMARY FOR EPILEPSY AND PARALYSIS.

With the author's compliments.

LONDON:
JOHN CHURCHILL AND SONS, NEW BURLINGTON STREET.

MDCCCLXVIII.

ON THE

# USE OF GALVANISM AND ELECTRO-MAGNETISM IN MEDICINE AND SURGERY.

---

So much progress has recently been made in the knowledge of the physiological and therapeutical effects of galvanism and electro-magnetism that it has appeared to me worth while to lay the latest results of my experience, as far as they are of practical importance, before the profession. I am so much the more induced to this as, with the advancement of our knowledge of these agents, their substantial value as remedies has become more obvious, and the indications for their use more firmly established.

Three years ago I directed the attention of the profession to the fact* that the continuous galvanic current, if applied in a certain manner, produces considerable effects on the brain, the spinal cord, and the sympathetic system of nerves, while the induced current only acts on the parts directly submitted to its influence, and not, or only slightly, on the nervous centres.

* On the treatment of certain forms of paralysis by Galvanisation and Faradisation. The "Lancet," 1863, Vol. II., p. 179.

This discovery has naturally enlarged the field of therapeutical action of galvanism to a considerable extent, while at the same time the arrangement of the battery current has lately been rendered so perfect as to fully meet all the requirements of practice. The beneficial effects of galvanism are therefore no longer confined, as they previously were, to local paralysis, rheumatism, certain forms of neuralgia, etc., but extend to affections of the brain and spinal cord, such as hemiplegia from apoplexy, with inflammatory irritation, incipient and progressive softening of the spinal cord, progressive muscular atrophy, central neuralgia, etc. Finally, my researches on the chemical or electrolytic effects of the continuous galvanic current, have conclusively shown that an immense field for the action of this agent is opened up as far as a number of surgical diseases is concerned,* where no other operative proceedings are applicable, or where the patient's dread of the knife is such as to induce him to bear the disease rather than seek the remedy. Indeed, for most forms of tumours, for aneurism, varicocele, piles, serous effusions, and wounds and ulcers, the electrolytic treatment is by far the most rational and at the same time agreeable mode of cure.

Before proceeding to the narration of illustrative cases, I will say a few words on the absolute necessity of an intimate acquaintance with the physiological effects of the various forms of electricity and galvanism for those practitioners who intend to employ these agents in the treatment of disease. In this remedy, more than in any other, the mode of application has an all-important bearing upon the results, as with an improper selection of current, and a faulty mode of administration, the effect produced may be quite contrary to that which is desired. Not only has every organ in the body

* On the electrolytic treatment of tumours and other surgical diseases. London, 1867.



a different sensibility to the electric current, but we are able, by merely varying the mode of application, to arouse, or to exhaust the energy of organs, and to diminish or to increase their properties. Indeed, the effects produced are entirely different according to the form of electricity that is used, the quantity and intensity employed, the mode in which it is transmitted to the human body, and the length of time during which its action is kept up. It should also be borne in mind that this powerful agent is not one of those remedies which, if they do no good, can do no harm; but, on the contrary, it may in the hands of an inexperienced operator, do a great deal of mischief A galvanic treatment can therefore only be safe and successful where the operator is guided by physiological knowledge, an intimate acquaintance with the results of pathological research, and a sufficient amount of therapeutical experience.

I now proceed to illustrate the therapeutical value of Galvanisation and Faradisation in Medicine and Surgery, by a short series of cases which have recently been under my care in private and hospital practice.

## I. Affections of the Nervous System.

### *Cerebral Paralysis.*

In hemiplegia where the muscles are relaxed, the limbs loose and flaccid and more or less wasted, where the heat of the limbs is diminished, and their use partially or entirely lost, Faradisation is a valuable means of restoring power to the motor nerves and muscles, and can be used after from three to six months have elapsed since the attack. The continuous current can be applied if the case comes under treatment at an earlier period, in order to aid, by its catalytic effects, the formation of the apoplectic cyst. Sometimes,

however, Faradisation alone is sufficient, as shown by the following instance:—

Case I.—B. W., a gentleman aged 68, of gouty constitution, came under my care in June, 1866. He had during the last five or six years suffered a good deal from gravel, and excess of uric acid in the urine, and digestion and assimilation had been imperfect. Six months after, while dressing for dinner, he had an apoplectic attack, accompanied with loss of consciousness and paralysis of the left side of the body. For a week he was in a very precarious condition, and I believe his life was only saved by large doses of ammonia and chloric ether, which I ordered to be given at short intervals. He gradually, however, recovered his consciousness and intellect; the face resumed its normal appearance, and the muscles of the arm also improved. Six weeks after the attack, I proposed the application of the continuous current; but as he seemed then to be in a fair way of improvement, he wished to wait a little longer, in order to see whether he would not recover his power in the natural course of events. Four months after the attack, he was in the following condition:—His judgment and memory were not impaired, and there was no pain in the head nor the limbs. The skin of the left arm and leg was cold and flaccid, and the pulse weaker in the left than in the right side. There was a feeling of numbness, and a certain degree of anæsthesia, in the left arm and leg. The muscles were relaxed and somewhat wasted, especially the extensors, but there was no rigidity, either in the upper or in the lower extremity. These symptoms led me to believe that the clot of blood which had been deposited, most probably in the right corpus striatum and thalamus opticus, and which had produced paralysis by pressure, on account of its impeding the proper conduction of the will through the fibres of the corpora pyramidalia to the left side of the body, had, to a great extent, been absorbed. If, therefore, the original injury had been repaired, the seat of the paralysis was now not so much in the brain, as in the motor nerves and muscles, which had been weakened by their long disuse. Faradisation was therefore now resorted to, with the result that, after sixteen applications, the bulk of the muscles was increased, the circulation in the limbs was properly re-established, and the motive power had almost entirely returned. Three months later, the patient was quite recovered.

In those very numerous cases of hemiplegia, where there is rigidity of muscles, where the circulation in the paralysed limbs is vigorous, and the paralysed muscles more excitable to the galvanic stimulus than those of the healthy limb, and



where we are compelled to assume subacute or chronic inflammatory irritation of that hemisphere of the brain which is opposite to the paralysed side, Faradisation cannot possibly do any good; in such cases, however, which are generally most distressing and little amenable to any purely medicinal treatment, the continuous current applied to the head of the opposite side, to the sympathetic, and finally as cord-nerve current, frequently produces considerable benefit. From a very large number of such cases which have been under my care, I select the following:—

Case II.—Mrs. D., aged 53, came under my care at the Infirmary for Epilepsy and Paralysis, in June, 1866. She had been in good health until two years ago, when her husband being thrown out of employment, she had to undergo a great deal of anxiety and trouble, together with bad living. Two months ago she was seized with a paralytic stroke, which affected the left side, and left her entirely helpless. When I first saw her, she had recovered the use of her leg so far that she could just drag herself along with the aid of another person's arm, for a short time, but the left arm was still entirely powerless. On examining the limbs I found that the arm as well as the leg were warmer than those of the healthy side, and that there was rigidity of most of the flexor muscles of the arm and forearm, and of the hamstring muscles of the thigh. The forearm, hand and leg, appeared contracted, and on my trying to extend them the patient complained of excessive pain, which rendered further endeavours to that end useless. I applied Faradisation to both arms for the purpose of diagnosis, and found that the paralysed muscles contracted in the most violent manner as soon as the conductors were applied to them, while the muscles of the healthy limb did not answer to the feeble current used, but contracted in the ordinary and regular way, as soon as the power of the current was somewhat increased. This made it evident to me that considerable intracranial irritation existed, and that Faradisation could not be of any use. I prescribed atropine with bromide of potassium, and applied a current of twenty cells of the continuous battery to the *right* temple, the upper cervical ganglion of the sympathetic, and as cord-nerve current from the cervical portion of the spinal cord to the median, ulnar, and sciatic nerves, systematic use being made of Voltaic alternatives in order to increase the therapeutical effect. This application had a most remarkable effect in loosening the muscular tightness, and the patient was, a short time after the application, able to

stretch the arm and to open the hand. She had also somewhat less difficulty in walking. The improvement, however, lasted only for a few hours, and when I saw her again, three days afterwards, she was in much the same condition as before. The continuous current was now applied regularly twice a week, in the manner described above, with progressive improvement in all the symptoms; and at the end of six weeks the patient could walk by herself without assistance, and had also to a great extent recovered the use of the arm. This was now quite flexible, the muscular rigidity and the pain having entirely disappeared, but the power in the arm, as well as the leg, was still somewhat less than it had been before the attack.

In cases of this kind, Galvanisation of the opposite hemisphere of the brain to that where the paralysis is observed, attacks the seat of the disease, and if not able to restore any destroyed brain-matter to its previous healthy condition, yet does good in this way that it not only tends to check the inflammatory irritation, and to promote the absorption of effusions which have taken place, but also restores to its energy the neighbouring parts of brain-tissue which have not been destroyed as far as their texture is concerned, but merely deprived of their vital energy, either by the pressure of the effusion, or by the sudden shock experienced during the apoplectic attack. The presence of early muscular rigidity is therefore no longer a bad symptom in these cases; but if, in addition to the rigidity, spasms and convulsions are present in the paralysed side, the prognosis is, generally speaking, unfavourable. Galvanisation may be resorted to at a much earlier time in the treatment of paralysis from apoplexy than Faradisation, just by reason of its tending to check inflammatory irritation, and acting beneficially on the cerebral substance itself.

### *Shaking Palsy.*

In shaking palsy, Galvanisation of the brain, the sympathetic and the spinal cord, tends to relieve the pain, if such there



be, and to check the tremor, especially if this be confined to one or two limbs, and if the case be one of comparatively recent standing. In old cases, and where all the limbs are affected, the prognosis is unfavourable.

Case III.—A gentleman, aged 42, who had indulged in smoking to an almost incredible extent, his usual allowance during the last 20 years having been between 20 and 30 full-flavoured cigars in the day, consulted me in April, 1866, for shaking palsy of the right arm, which had come on four months ago. The arm, which at first shook only when the patient was excited, or wished to do anything hurriedly, now shook continually, and this shaking was much more violent when he was in any way worried or excited. During the last fortnight, the left arm had also commenced to shake occasionally, but as a rule, it was quiescent. There was no pain either in the right or in the left arm. The patient's general health was tolerable, but his eyesight was extremely weak and dim, and he complained of obstinate constipation. I first made the patient promise to give up smoking altogether, and at once, which he did. I then carefully regulated his diet, and applied the continuous current to the optic, sympathetic, and as cord-nerve current, every other day for a fortnight. At the end of that time, the patient's sight was considerably improved, his bowels were regular, and the arms perfectly steady. Three months afterwards he wrote to say that he had had shaking in the right arm only on one occasion, after having had a considerable annoyance, but that it went off the next day, and that he felt quite well again afterwards.

I have treated a considerable number of cases of shaking palsy of long standing, and where all the limbs were affected, affording considerable relief in most of them; but I have not obtained a cure where both the upper and lower extremities were affected. In some cases, Galvanisation combined with the subcutaneous injection of morphia and atropia, is followed by much more improvement than by any of these remedial measures used singly.

### *Spinal Paralysis.*

Whether any treatment is likely to be successful in cases of spinal paralysis or not, depends chiefly upon the cause and duration of the disease, and upon the age and constitu-

tion of the patient. If the affection is caused by tumours pressing on the cord, or if the nervous matter is actually destroyed by inflammation and extensive softening, we may relieve certain symptoms of the affection, but cannot cure it. On the contrary, where the paralysis is caused by over-exertion and consequent exhaustion of nervous power, by rheumatism, by a slight dislocation and subacute inflammatory softening of vertebræ, or incipient softening of the cord itself, a good prognosis may generally be given.

Case IV.—A commercial traveller, aged 38, consulted me in October, 1864, for weakness in the back, and loss of power in the lower extremities. He began to suffer in March of the same year, after unusually hard work and great fatigues; and had got gradually worse from that time. At first he felt a sensation of pins and needles in the feet, but this had now been succeeded by numbness. His gait was tottering, and he could only walk by the aid of two sticks. There was a high degree of anæsthesia in the back from the sixth dorsal vertebra downwards, and also in both thighs and legs, so that the application of an extremely powerful galvanic current was only just felt as a slight tingling sensation. The patient also suffered from costiveness and difficulty of micturition. I applied the continuous current twice a week for two months, at the end of which the patient could walk without a stick, had lost the feeling of numbness in the feet, and the anæsthesia of the back had so far yielded that the application of forty cells of the battery was all he could comfortably bear, while at first the current of a hundred cells had appeared to him "like nothing." From beginning with the latter number, I gradually came down to fifteen cells, which were distinctly felt when I discontinued the galvanism. The patient being anxious to resume his avocations, I put him on a course of nitrate of silver, in order to guard him against a relapse; and I lately heard that he had remained in good working condition ever since.

The following case is of an entirely different kind, as it was caused by mechanical violence:—

Case V.—R. M., a bricklayer, aged 37, was admitted as an out-patient at the Infirmary for Epilepsy and Paralysis in October, 1866. Three months ago he had been run over by a cart, which had injured



his back, and from that time he had lost power in the left thigh and leg. On examining the back, I found a considerable depression about the seventh dorsal vertebra, while the sixth vertebra was unusually prominent. There was great tenderness on pressure at these points, and incomplete anæsthesia of the left side of the back, and of the left thigh and leg. There was loss of power in all the muscles of the lower extremity, but no paralysis; the patient was able to move the thigh and leg, but any such exertion caused considerable pain, and exhaustion. These symptoms could only be due to a slight displacement, and probably subacute inflammatory softening of part of the posterior arch of the sixth dorsal vertebra, whereby the dura and pia mater, and the left postero-lateral column of the cord, including the left grey horn, were compressed. In this case I used a cord-current of twenty cells. When I saw the patient again, three days afterwards, the tenderness on pressure and the anæsthesia were considerably less, but there was no more power in walking. The continuous current was repeated four times more, after which the depression of the seventh, and the prominence of the sixth dorsal vertebra, had very nearly disappeared, and there was neither tenderness nor anæsthesia. As the muscular power, however, did not return, I applied Faradisation to the muscles of the thigh and leg, with the result that, after three such applications within ten days, the patient had entirely recovered.

### *Spinal Weakness.*

This disease, the nature of which has hitherto not been properly understood, has formed the subject of careful study on my part. It is far more frequent than is generally admitted, because medical practitioners are too much in the habit of looking upon all the complaints of these patients as the mere offspring of a disordered imagination, and, therefore, class them under the convenient name of hypochondriasis, if the patients belong to the male sex; and of hysteria, if occurring in women. The illness of such patients, however, is not imaginary, but very real. One form of spinal weakness has, as chief symptoms, weakness and irritability of the nervous system (commonly called nervousness), together with imperfect digestion, and increased elimination of urea by the urine. Of this form, which I have reason to

believe to be very frequent, the following is a good example:—

Case VI.—F. S., aged 42, a gentleman actively engaged in speculative business, had to do unusually hard work, and to undergo considerable anxiety during the autumn of 1865. He had felt nervous and irritable for a long time previous to this; but the first symptom of real illness which supervened was sleeplessness, which commenced in November, 1865, and gradually got worse until March, 1866. He either did not go to sleep at all on getting into bed, or if he dropped asleep from utter weariness, he woke up again in about half-an-hour, and lay restless during the remainder of the night. Besides this he complained of a feeling of great exhaustion, total disinclination to work, and to bodily exercise of any kind; of weakness in the back, and pain at the nape of the neck. He was easily excited and worried by little things, and extremely intolerant of noise, or of being asked any questions. He was frequently troubled with a sense of vague alarm, and distressing sensations in the head. He disliked his meals, and generally suffered from heaviness on the chest, flatulence and acidity, which seemed to be quite independent upon the quality or quantity of the food taken, and which came on chiefly after any mental emotion or excitement. He was also much inconvenienced by frequent calls to pass the urine, especially in the morning, after breakfast. The analysis of the urine showed at once the nature of the morbid condition, as I found it to contain a considerable excess of urea. I now examined the urine daily for some time, and found that this excess of urea was not accidental, but constant. The body-weight of the patient was 11 stone 3 pounds, and the daily quantity of urea excreted by him should therefore have been about 550 grains. It was however continually several hundred grains in excess of this, as shown in the following table:—

| March. | Number of fluid ounces of urine passed in 24 hours. | Specific gravity of urine. | Quantity of urea in grains. | Morbid excess of urea in grains. | Treatment. |
|---|---|---|---|---|---|
| 10 | 66 | 1027 | 920 | 370 | Galvanism. |
| 11 | 64½ | 1027 | 900 | 350 | |
| 12 | 67 | 1027 | 934 | 384 | Galvanism. |
| 13 | 63 | 1027 | 878 | 328 | |
| 14 | 65½ | 1027 | 904 | 354 | Galvanism. |
| 15 | 61 | 1027 | 850 | 300 | |
| 16 | 62 | 1027 | 864 | 314 | Galvanism. |



| Name. | Number of fluid ounces of urine passed in 24 hours. | Specific gravity of urine. | Quantity of urea in grains. | Morbid excess of urea in grains. | Treatment. |
|---|---|---|---|---|---|
| 17 | 58 | 1027 | 808 | 258 | |
| 18 | not noted. | not noted. | not noted. | not noted. | |
| 19 | " | " | " | " | |
| 20 | 56 | 1027 | 780 | 230 | Galvanism. |
| 21 | 52 | 1027 | 724 | 174 | |
| 22 | 57½ | 1027 | 801 | 251 | Galvanism. |
| 23 | 46 | 1026 | 638 | 88 | |
| 24 | 52 | 1026 | 721 | 171 | |
| 25 | not noted. | not noted. | not noted. | not noted. | |
| 26 | 57 | 1026 | 790 | 240 | Galvanism. |
| 27 | 52 | 1025 | 718 | 168 | |
| 28 | 48 | 1025 | 662 | 112 | Galvanism. |
| 29 | 47 | 1025 | 649 | 99 | |
| 30 | 49 | 1024 | 671 | 121 | |
| 31 | 44 | 1024 | 603 | 53 | Galvanism. |
| April 1st | not noted. | not noted. | not noted. | not noted. | |
| 2nd | " | " | " | " | Galvanism. |
| 3rd | 42 | 1023 | 557 | 7 | |
| 4th | 46 | 1023 | 611 | 61 | Galvanism. |
| 5th | 43 | 1022 | 554 | 4 | |

This patient was treated with nothing but the application of the continuous galvanic current, as cord-and cord-nerve-root-current, with Voltaic alternatives. The influence of each application in diminishing the excretion of urea is well shown in the table; and the improvement in the general health went *pari passu* with this. The patient had three hours' uninterrupted sleep after the first application of galvanism, and that most troublesome symptom, sleeplessness, which had resisted morphine, was soon entirely removed. After three weeks' treatment the patient felt like another man, being again able to exert himself both mentally and bodily, to enjoy his meals, and to take an interest in everything that before had only proved a source of annoyance and disgust.

The case just related, to which I might add a dozen others, shows in a striking manner how much the functions

of digestion and urinary secretion are under the influence of the nervous system. Patients of this class have no disease of the stomach or the kidneys, as they are often inclined to believe, but suffer from spinal weakness, that is, functional disorder of the spinal cord, which, in my opinion, consists chiefly of a deficiency or perversion of the current of animal electricity, which Professor Dubois-Reymond, of Berlin, has shown to pass through the cord in its normal condition. Dr. Ranke, of Munich, has proved by experiments on animals, that, if this current proper of the cord is deficient, the animals suffer from a morbid increase of reflex excitability, and are often in a miserable and wretched state of health. He also found that in such animals, this morbid reflex excitability could be removed by the application to the cord of a continuous galvanic current. I have myself found that in patients suffering from nervousness, dyspepsia, and increased elimination of urea, the most effective means of cure is the application of the cord-and cord-nerve-root-current. No doubt patients of this class often derive great benefit from rest, change of air, mineral acids, arsenic, nitrate of silver, and other nerve-tonics; yet in almost all cases which I have had under my care, some remedies of this kind had already been employed without much or any result; and I am satisfied that none of them equal in efficacy and quickness of effect, the continuous galvanic current. If applied in the manner described above, the current has no direct effect on the stomach, and yet it cures dyspepsia; it has no immediate action on the kidneys, and yet it checks the morbidly-increased elimination of urea; it has however a most decided and powerful influence on the molecular condition of the ganglion-cells of the spinal cord, and chiefly on the current of animal electricity to which I have just alluded. In strengthening this current, where it is weak; in correcting it where its direction may be perverted, it not



only does away with those symptoms of weakness and morbid excitability more immediately depending upon the pathological condition of the cord, but it also indirectly cures those symptoms on the part of remote organs, such as the stomach and kidneys, which are due, not to a disease of their own structure, but to a perverted and diminished nervous supply, which prevents them from properly fulfilling the part they are meant to play in the economy of the human frame.

Spermatorrhœa is another form of spinal weakness, and depends upon a weakened or irritable condition of the lumbo-sacral portion of the spinal cord, and the spinal nerves supplying the vesiculæ, veru montanum, and neighbouring parts. It is almost always curable by Faradisation or Galvanisation of the veru montanum, and of the lumbo-sacral portion of the cord. Where weakness is the most prominent symptom, Faradisation should be used; but where the characteristic feature is irritability, Galvanisation finds its appropriate sphere of action. In some cases a combined treatment, by Faradisation and Galvanisation, proves most successful.

*Spinal Weakness from Over-growth.*

Over-growth gives rise to morbid symptoms, chiefly on the part of the spinal cord, and of the bones of the vertebral column. It is almost always associated with a deficiency of phosphorus in the system, and it is, therefore, only natural that nervous and osseous matter, which cannot be properly formed without a plentiful supply of phosphorus, should suffer under these circumstances. In the early stages of the affection, I have found that an artificial supply of phosphorus is sufficient for a cure; but when the affection is fully developed, the continuous current, used as cord-and cord-nerve-root-current, is the best remedy.

Case VII.—A young lady, aged 22, very tall and of sallow complexion, came under my care in February, 1866. She had grown very fast, especially between her seventeenth and nineteenth year, and had been ailing ever since. All the symptoms were referable to imperfect formation of the spinal cord and osseous system, and had lately increased to such an extent as to cause her parents much uneasiness. Being of an impulsive and highly gifted nature, she would take a passionate interest in certain things, and devote many hours of hard work to mastering a subject which attracted her imagination; after which she would be completely exhausted and prostrated for days or weeks, and be unable to do anything whatever. She often suffered from excruciating pains in the lower part of the spine, especially on making a sudden movement. She was almost entirely incapacitated from taking any active exercise, partly by pain and partly by weakness. The bones were sore and tender, and there was an excess of phosphates in the urine. Her appetite was very fanciful, her digestion weak, and the bowels habitually costive. The catamenia were regular, but pale and scanty. She had already taken a great many medicines, amongst which was phosphoric acid in combination with iron. I prescribed phosphorus in the form of the hypophosphite of lime, as being most appropriate for promoting a healthy nutrition of nervous and osseous matter, and used the continuous current as cord- and cord-nerve-root-current three times a week for a month. The patient was, in about a fortnight from the commencement of the treatment, able to walk out and take active exercise. Her digestion gradually improved very much, the morbidly-increased elimination of phophates by the urine was checked, the catamenia became of a healthy character, and the bones became less sensitive in course of time. She took the hypophosphite altogether for three months, after which she appeared perfectly well. She had become stouter, and could walk for miles without fatigue. The beneficial effects of Galvanisation were very strikingly felt, inasmuch as at first the patient could only walk on those days when the galvanism had been applied, but not on the other days. The pain which she used to feel in the spine disappeared after two applications of the galvanism, a circumstance which could not be ascribed to the medicine she was taking, as this has a very slow and gradual action in the system, while the effect of Galvanisation is generally immediate. This lady was married in June last, and has continued in excellent health.

### *Hysterical Paralysis.*

This form of paralysis, which occurs almost exclusively upon mental shock and emotion, in girls and women whose



sensibility is unusually acute, may attack a few muscles only, or an entire limb, or the whole body. It is frequent in the form of paraplegia, but hysterical hemiplegia is by no means uncommon. Hysterical paralysis is altogether a functional disorder, and in no way connected with structural lesions in the nervous centres, the peripheral nerves, or the muscles. Many of these cases may be cured by Galvanisation or Faradisation, whilst some are extremely stubborn.

Case VIII.—A girl, aged 19, living at Kilburn, became an out-patient at the Samaritan Free Hospital in September, 1864, and was sent to me by Dr. Savage. She had always been in indifferent health, and during the last three years had gradually lost the power over her arms and legs, to such an extent that she was scarcely able to walk even when supported, and entirely incapacitated from doing any work whatever. The cause of the affection was said to be due to "some trouble" she had had. She first menstruated at 15 years of age, but was always irregular, the discharge being very pale and scanty. Sixteen months ago the catamenia ceased altogether, and from that time she became nearly idiotic. She was very listless when I first saw her, had a vacant look, and considerable dilatation of both pupils, more especially of the left one. The left iris was scarcely at all influenced even by strong light. The voice was almost entirely gone; she could only speak in a faint whisper. She was frequently troubled by pain in the head and the back. Her hands and feet were always quite cold. She complained of sickness in the morning, total want of appetite, and constipated bowels. She was always worse after emotions, and had frequently had hysterical fits. The muscles were very badly nourished, but contracted tolerably well under the influence of the electro-magnetic current. Besides there was nearly complete anæsthesia of the whole left side, including the conjunctiva. On the right side the loss of sensation was not so much marked as on the left; but the prick of a pin was only felt as if it were a touch by some blunt instrument. I applied a continuous current of from 40 to 50 cells to the spine twice a week. After six weeks the patient was so much improved that she could walk three miles at a time without support; she could dress and feed herself; was able to do heavy work about the house, and had always warm hands and feet. The voice had returned, the bowels acted regularly, and she was cheerful, and took an interest in everything relating to her affairs. The pupils also gradually recovered

their normal size; and the catamenia re-appeared on the 27th of December, and continued from that time at regular intervals. The patient has several times called upon me within the last two or three years, and informed me that she has continued in perfect health ever since.

*Paralysis from Pressure on Nervous Plexuses.*

Cases of loss of power from continued pressure, especially from the head resting on the arm, which occurs frequently during intoxication by alcohol, or in patients who are under the influence of chloroform, are generally curable by Faradisation.

Case IX.—A lady, aged 23, had her first confinement in November 1864, during which she was for some time under the influence of chloroform. While in this condition her head rested heavily on the left arm, and pressed so much on the brachial plexus that a number of muscles, animated by the latter, became completely paralysed, there being also anæsthesia of the left arm. She was sent to me in January, 1865, by Mr. Paget. The affection was most severe in the muscles of the forearm, the patient being quite unable to lift the wrist, which was much swollen and had to be bound up with a splint. As she also complained of great weakness in the other limbs and the back, I combined a cord-current of fifty cells with Faradisation of the left shoulder and arm. After six weeks of this treatment, the patient had entirely recovered the use of the left arm, and felt very much stronger generally.

*Traumatic Paralysis.*

Where the connection of the motor nerves with the brain or the spinal cord has, by external violence, been interrupted, a period varying from six to twelve months is generally required for re-establishing nervous conduction. Experience shows that Faradisation, soon or immediately after such accidents, is useless, and does not even prevent atrophy of the muscles deprived of their connection with the cord. On the contrary, if resorted to from about eight to twelve months after the accident, Faradisation frequently restores the lost power to the paralysed muscles.

Case X.—A porter, aged 32, suffered compound fracture of the



right arm and other injuries from being run over by a van, in December, 1860. After three months the fracture was healed, but the arm remained useless. He came to me in May, 1861, when I found complete anæsthesia, paralysis, atrophy, and loss of electric contractility of the muscles, from the acromion downwards. I recommended him to do nothing for three months, and then to present himself again. This he did in the October following, when he appeared to be much in the same condition as when I first saw him. I then commenced the Faradic treatment, and after four months he had to a great extent recovered the use of the arm, although it was still weaker than previous to the accident.

*Lead Palsy.*

In this disease, which affects chiefly painters and compositors, but may also be caused by drinking water, beer or wine, which has been impregnated with lead, or by taking snuff which has been packed in lead-foil, the internal administration of iodide of potassium is necessary for removing the lead from the system; but this alone is seldom sufficient for curing the disease, the most frequent symptoms of which are dropping of the wrists, colicky pains in the abdomen, obstinate constipation and weakness, or even loss of sight.

For these symptoms Galvanisation of the optic, sympathetic, and the cord, and Faradisation of the paralysed muscles, is the best treatment.

*Paralysis from Disease of the Urinary Organs.*

Inflammation and abscess of the kidneys, renal calculus, inflammation of the mucous membrane of the bladder, chronic inflammation and enlargement of the prostate, stricture of the urethra, and other diseases of these parts, may produce incomplete paralysis of the lower extremities. In most of these cases a constitutional treatment is absolutely necessary for the cure of the affection, since the mere application of galvanism to the paralysed limbs cannot remove the cause of the disorder. In some cases the

paralysis disappears after the cause has been removed; but if it still persists after that, a Faradic treatment is generally required. In some such patients, Faradisation may even remove the cause, and thus cure the disorder, as is well shown by the following:—

Case XI.—A gentleman, aged 36, consulted me in December, 1866, for general debility, and want of power in walking. He was not actually paralysed, but very weak in his legs, which was partly due to malnutrition of the muscles, and partly to pain in the thighs, which increased on walking. This pain seemed to radiate from the perinæum, and was increased on emptying the bladder and on taking exercise. As the perinæum was very tender to touch, I made a rectal examination of the prostate, and discovered that the organ was very sensitive and considerably enlarged. The patient then told me that he had had gonorrhœal inflammation in 1862, and again in 1865, which was evidently the cause of the chronic inflammation of the prostate. The urine was neutral, and contained a good deal of muco-pus. The patient had already taken iodide of potassium, iron and strychnia, without benefit. I prescribed small doses of liquor arsenicalis for improving the secretion of the urine, and applied Faradisation to the prostate, for reducing the enlargement of that organ. The first application gave immediate relief, as the tenderness in the perinæum was diminished, and the patient could walk with more ease afterwards; nor was micturition so painful as it had been before. The urine was slightly acid after the arsenic had been taken for five days, and in about a fortnight it was perfectly healthy. After twenty-one Faradic applications, the size of the prostate had become normal, with proportionate improvement in all the symptoms. The muscles of the thighs and legs were now galvanised several times, and within six weeks the patient was quite recovered.

### *Progressive Muscular Atrophy.*

The prognosis in this disease is no longer so bad as it was formerly, since the continuous current, applied to the sympathetic nerve and the spinal cord, has been shown to exert a decidedly curative effect in cases which have not progressed too far, and produced considerable relief even in very bad cases. The partial form is, of course, always more curable than the general form, and a constitutional treatment should always be combined with the galvanism.



### *Ptosis, Double Vision, Mydriasis, etc.*

In ptosis, double vision, mydriasis, and other paralytic affections of the motor nerves of the eye, the continuous current, cautiously and gently applied, generally produces very striking results, even if the disease is caused by affections of the brain. It is essential in these cases to make very short applications, for long applications only do harm.

Case XII.—A lady, aged 40, was sent to me by Mr. White Cooper, in October, 1862. She had for some time suffered from mydriasis of the right eye, which considerably interfered with sight. She was otherwise in good health, and unable to account for this affection, which was probably the first symptoms of incipient brain-disease. I applied a gentle current for a very short time, which caused the iris to contract visibly. She was only able to stay in town for a very few days, so that the treatment could not receive a full trial; but she was considerably improved, even by the very short treatment she had followed.

Case XIII.—A gentleman, aged 49, had for ten months suffered from ptosis of the left eyelid, for which he had undergone a variety of treatment without benefit, when he consulted me in December, 1864. There were many other symptoms, exciting the suspicion of cerebral disease. He had six applications of the continuous current to the eye in a fortnight, during which he recovered the power over the eyelid, although there was no improvement in the other symptoms.

Where both eyelids are paralysed, an affection of the corpora quadrigemina may be diagnosed with a probability amounting almost to certainty; yet even in such cases the continuous current may prove of benefit, but which I fear is generally only temporary.

### *Amblyopia and Amaurosis.*

In cases of amblyopia and amaurosis of long standing, we cannot expect much from a galvanic treatment, although it

is the most rational remedy which can be advised, as no other agent has so powerful and direct an influence on the retina and the optic nerve as the continuous current. Where the sight has been entirely lost for months or years, I have never succeeded in permanently restoring it; but where a faint perception of light still existed, and where, therefore, a certain number of the rods and cones of the retina had escaped destruction, I have frequently succeeded in improving the sight so much as to enable the patients to perceive objects distinctly, and to guide themselves in the streets. In cases of this kind, the applications must likewise be very short and gentle, as long and strong applications would only exhaust the feeble remnant of visual power which is still extant, and thus destroy all hope of eventual recovery. In sudden amaurosis, either from shock, injury, or over-straining of the eyes on some particular occasion, and where the patient comes under treatment shortly after having lost his sight, the continuous or even the interrupted current generally restores the sight perfectly, and at once.

### *Nervous Deafness.*

Case XIV.—A married woman, of a highly nervous constitution, aged 37, became deaf as far back as 1849, and the only cause she could assign for it was cold. She was always worse when she was excited or embarrassed. There had never been any inflammation of, nor discharge from, the ear; nor was anything pathological in the ear discoverable when Dr. Henry G. Wright examined her at the Samaritan Free Hospital. My examination of the patient's organ of hearing had the same negative result, and the case was therefore put down as one of nervous deafness. Faradisation of the membrana tympani did good at once; the patient who, when she came to me, did not notice any questions I addressed to her, nor heard any sounds produced, heard, on leaving my house, a dog bark, and on turning into Oxford-street, she heard the whistle of an omnibus conductor. From that time she steadily improved, so that it soon became easy to converse with her. At the same time the catamenia, which had been very scanty, became more abundant and of a better character.



This case belonged evidently to that class of cases where there is a defect of power of the auditory nerve to receive sounds. But it is not merely this class of cases which may be beneficially influenced by Faradisation, or Galvanisation, for there are also cases in which the deafness is due to the brain refusing to appreciate sounds. In these, the deafness is mostly accompanied by general debility, and seems to arise from causes which have a tendency to weaken the tone of the nervous centres, such as grief, anxiety, sleeplessness, over-exertion of mind or body, and exhaustive discharges. I have also seen it come on during convalescence from acute diseases. In this latter class of cases the continuous current is more useful than the interrupted, as in them a tonic influence on the brain is chiefly required. The simultaneous use of quinine and morphine is often advisable.

The most powerful effect on the auditory nerves is produced by applying the continuous current to the mastoid processes; but I generally do not resort to this mode of application, just on account of its influencing the brain in too powerful a manner, as made evident by a feeling of giddiness and faintness which it causes. I therefore prefer the application of the negative pole to the membrana tympani, and of the positive pole to the Eustachian tube.

The continuous current applied to the ear may also be utilised for the diagnosis of perforation or destruction of the drum of the ear. Wherever this has occurred, we find that the application of the continuous current to the meatus produces not only those sounds which are due to its rousing the vital energy of the auditory nerve, but also contractions of the muscles of the face. The reason for this is that, in the absence of the drum, the galvanic current is more easily transmitted to the facial nerve than in the normal state, where the drum offers a certain impediment to the passage of the current towards the base of the brain.

### *Facial Palsy.*

Most cases of paralysis of the portio dura are curable by Galvanisation or Faradisation. The prognosis of the individual case, however, will always be determined by the cause of the affection, and is unfavourable where it is due to malignant disease at the base of the brain, or to caries of the petrous portion of the temporal bone, etc. Facial palsy is, however, most frequently caused by the influence of damp and cold, and subsequent effusion of lymph in the sheath of the facial nerve. If we find that the induced current causes satisfactory contractions of the muscles of the face, Faradisation is the best treatment; while in those cases where we only succeed in inducing contractions by the continuous current, Galvanisation should be employed. The following is a case of the latter kind:—

Case XV.—George W——, a shoemaker, aged 44, came under my care at the Infirmary for Epilepsy and Paralysis, on April 25, 1866. He had for the last ten weeks suffered from paralysis of the right portio dura, which he ascribed to having become wet through, and been exposed to a cold draught in a doorway. He was unable to close his eye, to laugh, or to whistle, and could not pronounce the letter "f." The right nostril was "shut up," and he had great difficulty in masticating his food at the right side. He also complained of headache, and occasional attacks of vertigo; but was otherwise in good health. Faradisation produced no contraction in the muscles of the face, while the continuous current caused contractions both on closing and opening the circuit. A continuous current of twenty cells was now applied regularly twice a week, and after six weeks of this treatment the patient had entirely recovered.

### *Difficulty of Deglutition.*

Where difficulty of swallowing is due to paralysis or spasm of the pharynx or œsophagus, Faradisation and Galvanisation are the best, and in many instances, the only means by which we can hope to cure this most troublesome and annoying affection.



Case XVI.—Major L, aged 42, consulted me in September, 1862, for loss of voice and difficulty of deglutition, brought on by an apoplectic attack which he had had in 1859, and which affected the entire left side of the body. For several months after this he had been in such a condition that his life was despaired of. He gradually, however, got better, and partially recovered the use of his arm and leg, while the voice and deglutition did not improve. The latter symptom even became worse as time went on, there being constant regurgitation, especially of fluids, which distressed the patient more than anything else. After a fortnight's Faradisation the voice was so much improved that he could converse with ease, while the power of swallowing had not yet returned. I then applied a continuous current to the pharyngeal and œsophageal nerves, with the result that, after the second operation, a most remarkable improvement took place; and in a week the patient was able to swallow quite easily, without any regurgitation taking place.

Case XVII.—A gentleman, aged 34, had ague while travelling in Tuscany, in summer, 1862. Ever since that time he had felt difficulty in retaining his food, which generally returned in from five to ten minutes. As time went on, the interval between taking and returning the food increased, which was probably due to that portion of the œsophagus which was just above the seat of the paralysis, having become dilated, and forming a pouch which would contain as much as half a pint of beef tea, and retain it for twenty minutes or half an hour; after which the greater part of it would be suddenly returned through the mouth and the nostrils. The only way in which this patient succeeded in obtaining the passage of food into the stomach was by eating very small quantities of food frequently. There was no stricture, as a probang introduced into the œsophagus did not encounter any resistance. The patient had already taken iron, quinine, strychnia, cod liver oil, and many other remedies without benefit, and he had become very much emaciated and reduced in strength. I applied Faradisation by means of an insulated conductor, in the form of a probang, three times a week, and prescribed Ol. Morrh. and liquor arsenicalis. Within a month from beginning this treatment, the patient had recovered the faculty of œsophageal deglutition, and had gained nearly a stone in body-weight. He continued the constitutional remedies for another month, after which he was perfectly well.

### *Loss of Voice.*

Where loss of voice is due to a paralytic affection of the vocal cords, as it is in most cases where it occurs suddenly

in girls and young women, in consequence of a cold, or after a mental emotion, Faradisation generally restores the voice in a short time.

Case XVIII.—In May, 1862, I treated an interesting case of this kind, together with Prof. Czermak, of Prague, who had just then introduced the use of the laryngoscope into this country. It was the case of a patient, aged 30, who had lost her voice two months before, in consequence of a great emotion. An examination of her throat showed that both vocal cords were perfectly motionless and paralysed. After two applications of galvanism, the patient could speak again, although still in a hoarse tone only. It was then discovered, by another examination with the laryngoscope, that the right vocal cord had, to a great extent, recovered its motion, but there was as yet no improvement in the left. By further treatment, the left cord was also brought back to its normal condition, and the voice entirely restored.

*Neuralgia.*

In cases of tic douloureux, sciatica, intercostal neuralgia, and lumbago, both Galvanisation and Faradisation are excellent remedies, by means of which we often succeed in conquering these most rebellious affections. For cases, see my work on paralysis, neuralgia, etc., p. 225-236. Care should be taken to avoid Voltaic alternatives.

*Headaches.*

There are few headaches which resist Faradisation by the electric hand, or a gentle continuous current; but we should at the same time not neglect to enquire into any derangements of the stomach or other organs which may be present, and which are so frequently instrumental in producing headaches. Yet many cases occur where a judicious medicinal treatment entirely fails in relieving the headache, and where this is promptly cured by electricity. I have notes of more than fifty such cases, in which either of the above mentioned methods of applying galvanism proved successful.



*Gastrodynia.*

In the neuralgic stomach-ache, which must be traced to a functional derangement of the solar plexus of nerves, and where the pain is frequently confined to a small place on the level with the central ganglion, the continuous current, without Voltaic alternatives, is one of the most effective remedies at our disposal. The effect is, in most cases, immediate, and if the treatment be persevered in for some time, permanent.

*Anæsthesia.*

Numbness and loss of sensation may be of central or peripheral origin. In the former, Galvanisation is frequently useful, while the latter is better treated by Faradisation. The following is an instance of central anæsthesia cured by the continuous current:—

Case XIX.—A gentleman, aged 64, widower, accustomed to generous living, suffered two years ago from a severe cold and indigestion, after which he was frequently troubled by a very unpleasant sensation of numbness and coldness about the left thigh. Of late he had had the same feeling of cold, heaviness and numbness about the left side of the head, especially after a chill. Walking had also become rather troublesome. The memory was good, and although the patient had given up active occupation, yet there was no deficiency in his power of application, whenever it seemed to be required. There was a well-marked arcus senilis, and the sense of smell was defective. My opinion on this case was requested by Dr. Allan in July, 1866. We agreed that the symptoms could only be due to want of cerebral power in the right hemisphere, and that the continuous current should be used. I applied fifteen cells to the left side of the head, and thirty to the thigh, with Voltaic alternatives. After four such applications, the sensation of numbness, heaviness and cold about the head was gone, and two more also relieved the anæsthesia of the thigh.

*Indigestion.*

In most forms of indigestion Faradisation of the stomach and intestines is useful, but more especially in that form

which is due to weakness. A special form of dyspepsia, which is connected with nervousness and increased elimination of urea, has already been considered (p. 11).

Obstinate *vomiting*, from whatever cause, is generally promptly relieved by Faradisation.

### *Habitual Constipation.*

The treatment of habitual constipation by diet, regimen, and medicines, is frequently unsuccessful; while Faradisation of the bowel readily overcomes that most troublesome affection, even after immense quantities of purgatives have been ineffectually taken, and after years of mental and bodily distress to the patients.

Case XX.—An unmarried lady, age 43, tall, of sallow complexion and sedentary habits, consulted me on Feb. 2nd, 1866, for a "nervous affection," from which she had suffered for many months past. She complained of a constant dull headache, of giddiness on rising in the morning, a wearying feeling of mental depression, and frequent flushings of the face and ears. Her hands and feet were habitually cold. Her sleep was unrefreshing, being disturbed by unpleasant dreams; and too short, for she slept on the average only two or three hours a night. Her intellect and memory were as good as ever, but she found it difficult to fix her attention on any subject, and felt a distressing sensation of pressure on the head after reading or writing. The latter circumstance annoyed her a good deal, as she had been a zealous supporter of various philanthropic undertakings, which required a considerable amount of correspondence. She was sometimes troubled with palpitations of the heart: the heart's sounds were weak; the pulse small and feeble. The breath was generally short; the chest otherwise healthy. The tongue was dry, and covered with a yellowish white coat The appetite was feeble, and digestion tedious and painful. For many years past the patient had suffered from obstinate constipation, for which she habitually took purgatives. If she attempted to do without any, she felt great pelvic distress, especially in walking and standing, and considerable increase of all the head symptoms. She had chiefly taken cremor tartari, aloes, nux vomica, colocynth, scammony, and podophyllin. The evacuations were hard



and ill-formed. The urine was generally scanty and highly turbid, and she had often a scalding sensation in passing it. She had a small fibroid tumour of the uterus, for which she had consulted several obstetric physicians, who had advised that it should be let alone. At the time of the catamenia her sufferings increased very much indeed. Purgatives then seemed to augment the menstrual flow to an alarming extent; it often, in fact, amounted to true menorrhagia, which lasted for ten or twelve days. She therefore generally took much smaller doses of purgatives during that time; with the effect that the loss of blood was not so copious, while, on the other hand, the pain and discomfort about her head were so dreadful that she often thought she would lose her senses. Her habitual dose of purgatives was now two teaspoonfuls of cream of tartar twice a day, and ten grains of compound colocynth pill at bed-time.

As she had lived too exclusively on meat diet, I ordered her to take boiled fruit and saccharine vegetables; to discontinue the cream of tartar entirely; to take five grains of compound colocynth pill at bed-time, and a tumblerful of Marienbad water twice during the day; and finally, to take as much exercise in the open air as possible without fatigue.

Feb. 25th.—Has found great relief from the change in her diet, and from the Marienbad water. Last period was more comfortable than it had been for many months past. Has not been able to take much exercise, because it brought on palpitations of the heart. Ordered to go on as before, but to take the colocynth pill only every other night.

March 18th.—Has been worse for the last week or ten days. The Marienbad water seems to have lost its effect. Has been obliged to take ten grains of colocynth pill daily for the last few nights. Head most uncomfortable; extreme depression of spirits. I now substituted Friedrichshall for Marienbad water, and allowed her to take five grains of colocynth pill every night.

April 20th.—The last period was just as bad as ever. The Friedrichshall water only relieves constipation when taken in large doses, which she believes to be lowering, and is ineffectual as soon as the dose is reduced. I now proposed to the patient the application of galvanism for inducing a healthier action of the bowels; and as she consented at once, I sent a current of moderate power for fifteen minutes through the intestines. The patient did not complain of any pain or discomfort from the application, but said she felt more exhilarated and hopeful than she had done for a long time.

24th.—She came to me in high spirits, saying that since the Faradisation was used she had every day had a better motion than for

many months past. I ordered her now to discontinue the colocynth pill entirely, and merely to take a wineglassful of Friedrichshall water twice a-day.

From that time forward the patient made an uninterrupted recovery. Faradisation was continued twice a week for a month, after which neither medicines nor mineral waters nor the galvanic stimulus were any longer required. The head symptoms disappeared gradually in proportion as the action of the bowels was restored; and when I last saw the patient (July, 1867) she was perfectly well, excepting the somewhat too copious menstruation, which was now the only trouble she experienced from the fibroid tumour of the uterus.

Case XXI.—A married woman, aged 28, came to me in July, 1866, with the complaint that her bowels were very much bound, and that she suffered from difficulty of walking and micturition, and a sense of distressing fulness in the pelvis. She said that her parents had made her take Morison's pills from a very early age for everything that ailed her, whether it might be a headache, a bad finger, or a sore throat. She had always had difficulty with the bowels after taking pills for some time. She was married in 1863, and had had two children, the last in January, 1866. After the first confinement, the bowels were very sluggish indeed, and required strong aperients to make them act. After the second delivery, this condition was, if possible, worse. She now went sometimes a whole week unrelieved, and, on making exertions for defecation, experienced intense pain about the diaphragm, so as to feel quite sick and giddy. She was restless at night, and generally thirsty, but the appetite was very feeble. The tongue was dry, the abdomen very full and tense, and painful on pressure, and the rectum was choked with hardened fæcal matters. The galvanic stream was sent through the bowels for ten minutes. On the evening of the same day, a very large quantity of highly offensive fæcal matters came away, with a feeling of intense relief to the patient. Suitable rules as to diet and regimen having been given, and Faradisation having been repeated four times more, the patient could be discharged cured. I saw her in May last, when she told me that she had continued perfectly well ever since.

Case XXII.—A hard-working merchant, aged 38, first consulted me in June, 1865, for a troublesome form of dyspepsia, from which he had suffered for many years past. He complained of a feeling of heaviness and oppression after meals, especially after breakfast, coupled with eructations and flatus, which latter gave rise to acute pain until they were discharged. The bowels had been habitually costive since a journey the patient had undertaken to the west coast of Africa, in 1857, where he had suffered from a bad form of dysentery. Ever since



that time he had been obliged to "assist the bowels" with purgatives. He had also used enemata of various kinds, but the rectum seemed to resent them, and the patient had taken a great dislike to their use. The tongue was dry and furred. The patient had lost flesh lately, in consequence of being compelled to restrict his food to the smallest possible quantity. The urine was clear; the motions dark, hard, and ill-formed

I carefully regulated the diet, and prescribed a tumblerful of Eger water night and morning, and five grains of carbonate of bismuth twice a day after meals. Digestion and defecation soon improved under this treatment, so that the patient was able to take more food than before, and he felt and looked much healthier and stronger than he had done for a considerable time past. About two months after I first saw him, business obliged him to return to Africa, and I did not see him again till March, 1866, when he was very much worse than he had ever been before. He had been obliged in the interval to take strong purgatives habitually, for ensuring sufficient action of the bowels. Indigestion and costiveness were now more troublesome than ever. The patient was emaciated and exhausted to the last degree. He was unable to do any work or take any exercise, and refused all nourishing food, so that his family were extremely alarmed about his condition. Under these circumstances, an energetically tonic plan of treatment appeared indispensable. I prescribed liquor arsenicalis, with vinum ferri, a dose of pancreatic emulsion in rum and milk twice a day, a compound rhubarb pill, with the twenty-fourth part of a grain of strychnia at bedtime, and Faradisation of the bowel twice a week. Under the influence of this treatment the patient rallied wonderfully. The beneficial effects of Faradisation in inducing a healthy action of the mucous and muscular coat of the bowel were well shown by the circumstance, that there was always a very good motion the evening after the application of the electricity, while on those days where it was not applied the action was rather sluggish. At the end of a month the aperient pill was discontinued; the arsenic was taken for another fortnight, and the emulsion for a month more. Faradisation was discontinued at the end of three months, when digestion and defecation were normal. Ever since that time the patient has been in good health, and taken no medicine whatever.

### *Ileus and Incarcerated Hernia.*

I have myself not had the opportunity of using Faradisation in cases of this kind, but am inclined, from analogy,

to consider it the best remedy for them. I have been glad to find, in a French periodical, a case in point, which occurred in the practice of M. Delaux, of Toulouse. It was the case of a woman who suffered from femoral hernia, which, after a violent exertion, became incarcerated. The patient refused to submit to the usual surgical operation. After three days, she being then in a most critical condition, M. Delaux faradised the hernia, and afterwards put one pole into the rectum and the other on the hernia. The tumour soon began to move, and disappeared in a very short time. A few days after, the patient was perfectly well.

### *Flatulence.*

An undue accumulation of gas in the intestines is very frequently due to intestinal atony and weakness of the abdominal muscles. Where it is habitual, in nervous persons, or where it occurs suddenly after mental or surgical shock, Faradisation is the quickest and most effective means of cure.

### *Paralysis of the Bladder.*

This most annoying affection sometimes comes on after childbirth, or after the desire to empty the organ has not been complied with, as when travelling by express train, etc. A dose of belladonna or atropine, in the aged, will sometimes completely paralyse the bladder, and so will morphine. The affection is altogether more common in the aged than in youth or middle life. It frequently accompanies diseases of the nervous centres, and senile enlargement of the prostate. Whatever may be its cause, Faradisation, if judiciously performed, is the most effective remedy for it; but it must, in enlargement of the prostate, be combined with Galvanisation of that organ.



*Incontinence of urine*, from irritability of the bladder, may, if this be a functional derangement, unaccompanied with structural disease, such as calculus, tumour, etc., be cured by Galvanisation. The precaution must, however, be taken of merely applying the negative pole to the bladder itself, as the application of the positive pole to that organ would only increase its irritability.

### *Spasmodic Diseases.*

Chorea, spasmodic wry-neck, and hysterical cramps and contractions, are often curable by Faradisation and the continuous current.

I believe that the convulsions of tetanus and hydrophobia may also be stopped by the persistent use of a sufficiently powerful continuous current; but I have not yet had the opportunity of testing its efficacy in these diseases. My reasons for believing in it are chiefly founded on the results of physiological research, and also on two authentic cases which have thus been treated by Signor Matteucci (one of tetanus), and Schivardi (one of hydrophobia). In such cases, however, an energetic constitutional treatment should at the same time be resorted to.

### *Rheumatism and Gout.*

In rheumatic fever, no form of electricity should be employed; but, where chronic rheumatism affects the muscles, joints, and other parts, Galvanisation and Faradisation are often successful, after all other remedies have failed.

Gouty pains and effusions are generally more rebellious to an electric treatment than rheumatic affections, yet I know of no remedy which so eases the pain of a true attack of gout as a long-continued application of the secondary Faradic current to the suffering part.

## II. Diseases of Women.

The application of the various forms of electricity and galvanism in diseases of women has, up to the present time, been generally unsuccessful. This is, in my opinion, only due to a faulty mode of using these remedial agents, which, if properly applied, I believe to be the most powerful means at our disposal for the cure of many uterine diseases. Hitherto, the galvanic current has generally been directed to the os of the womb and the os pubis, with the result that by far the greatest portion of the current passed through the bladder and the abdominal parietes, and hardly any electricity through the body of the womb itself. This explains sufficiently the want of success which has attended such proceedings. If we wish to be successful in the galvanic treatment of uterine diseases, the whole of the pelvis must be subjected to the influence of Faradisation or Galvanisation. This mode of application has the additional advantage of being equally suited for married and unmarried women, besides which the delicacy of the patient is not hurt. Any direct galvanic interference with the sexual organs themselves I believe to be utterly useless, except in cases of tumours, where a local destructive effect is required.

The influence of Faradisation in uterine disease is easily understood if we consider the minute anatomical structure of the womb and its appendages, and the pathological nature of the principal diseases to which this organ is liable. The substance of the uterus consists of three different layers of organic muscular fibre-cells, which are intimately connected with one another, and pervaded by a considerable mass of nucleated connective tissue, with which the muscular fibres are so interlaced that it is almost impossible to isolate the several structural elements. The inner surface of this muscular



coat is lined with a mucous membrane, which consists of connective tissue containing undeveloped nuclei and fibre-cells. In the body of the womb, the mucous membrane contains numerous minute glands, the utricular glands, which open with small orifices into the cavity of the uterus; while in the neck of the womb we find mucous follicles, which secrete viscid crystalline mucus, and, when dilated, pour out the products of leucorrhœa. The uterus is kept in its proper position chiefly by the broad ligaments, which extend from each side of the organ to the side of the pelvis, and which contain a continuation of the same muscular fibres which are found in the womb. The chief morbid changes which occur in the tissue of the uterus and broad ligaments consist of a diminution of the contractile fibres, with effusions, and relative or absolute increase of connective tissue; and Faradisation acts beneficially by inducing contractions of the muscular fibres and strengthening their tone, while at the same time it promotes the absorption of effusions, and checks the undue formation of connective tissue.

I shall now consider separately, with special reference to this point, chronic inflammation and enlargement of the womb, anteversion and anteflexion, retroversion and retroflexion, and prolapsus of the uterus; after which I shall make a few remarks on irritability of the uterus, amenorrhœa and menorrhagia.

### *Chronic Inflammation and Enlargement of the Womb.*

Chronic inflammation occurs frequently after childbirth, repeated miscarriages, and mechanical injury to the parts, but it also arises from disturbances of the abdominal circulation, in consequence of cold, mental emotions, sedentary habits, habitual constipation, or excessive sexual indulgence. The chief anatomical feature consists, according to Scanzoni,

of an excessive growth of connective tissue, which is formed by the organisation of the lymph effused between the muscular fibres of the womb. When this hypertrophy of cellular tissue is uniform in the totality of the organ, it causes compression or even obliteration of the blood-vessels; and in these cases we find as a natural sequence that the monthly period is either very much diminished or even entirely lost. In other cases the hypertrophy of the connective tissue is only partial, and in that portion of the womb which has remained free from it, the blood-vessels become dilated, and burst when there is any increase in the pressure of the blood-current, thus giving rise to more or less considerable hæmorrhage.

Enlargement of the uterus without actual inflammation occurs most frequently after child-birth, in consequence of defective involution of that organ. The uterus does not contract properly after delivery, and remains large, flabby and congested. The symptoms of this condition are very similar to those which are due to true chronic inflammation.

The severity of the sufferings of patients of this class, varies considerably according to the extent of the pathological lesion, and according to the constitution of the nervous system of the patient. This latter circumstance explains why country and servant-girls will often be able to do heavy work while affected with this disorder, and why on the other hand delicate ladies should frequently be completely incapacitated for the most ordinary duties of life, although the actual pathological condition may be the same in both classes, or perhaps even worse in the former.

The chief complaints of such patients are of weight, fulness, and a dragging sensation about the pelvis. Standing and walking are shunned, and if a little more exercise than usual is taken there may be severe pain in the hypogastrium,



the inguinal and sacral regions. The catamenia are mostly scanty, irregular, and painful (dysmenorrhœa); in some cases they are entirely lost (amenorrhœa), while again in others they are too frequent and too abundant, and exhaust the patient by the loss of blood. A leucorrhœal discharge is sometimes permanently present, or it may occur only a few days previous to the period. Digestion is tardy and imperfect; there is frequently sickness, and habitual constipation. Sometimes the patient is troubled with tenesmus about the bladder and the rectum, owing to the mechanical pressure of the enlarged womb upon these organs. Anæmia is the usual consequence of the defective assimilation and want of exercise, and symptoms pointing to a weak and irritable condition of the nervous system are rife. The final result of this state of the uterus is sterility, conception being prevented either by the chronic catarrh of the mucous membrane, or by occlusion of the cervical canal, from hypertrophy of the vaginal portion.

The following is a case of chronic inflammation of the womb, which was successfully treated by Faradisation:—

Case XXII.—A married lady, aged 36, had three children very quickly after one another. She had her last confinement four years ago, and directly after that began to feel very ill. Her medical attendant told her that she would most likely have no more children, as there had been inflammation of the womb after the confinement. She lost all her energy, and felt unable to superintend her household. Even writing and reading were very troublesome to her. The period was regular, but pale and scanty. Her digestion was tedious, and the bowels habitually costive. Walking and standing were so painful that she passed her life chiefly in bed and on the sofa. Whenever she attempted to walk, she had a bearing-down sensation, as if the womb were going to be expelled. She habitually suffered from fulness and heaviness in the pelvis, and also from chills along her back, which came on every evening. These latter were so constant that she had been treated for ague, and taken quinine and arsenic, without any effect. She had, however, never had real ague. She had been subjected to a variety of

local treatment, but nothing had seemed to have any beneficial influence on her condition.

The lips of the os were indurated and enlarged, the size of the os itself increased, and the body of the womb nearly twice its normal size. A somewhat copious secretion took place from the cervical canal, but there was no ulceration. Faradisation was now had recourse to, in June last, and the very first application of it did good, as the patient felt less heaviness and fulness in the pelvis, and could walk and stand without being so much troubled by bearing-down sensations. After six applications, the patient could walk a mile with comparative comfort. The uterus had then already considerably contracted, and the lips of the os had become softer and smaller. The period came on after the sixth application. It was of a better character, and not nearly so painful as before. The patient had fourteen more applications, and I then discontinued the treatment, as she had conceived, and further applications might possibly have led to abortion. The patient is now advanced in pregnancy, and has all the time been able to take active exercise. Her general health is very much better, and she has never been obliged to have recourse to opening medicines, since Faradisation was first used.

### *Displacements of the Womb.*

The usual treatment of displacements of the womb by the introduction of the uterine sound is unsatisfactory, as the sound cannot always remain in the organ, and the moment it is withdrawn the body of the uterus falls back into its old position. The plan of introducing pessaries for rectifying the position of the uterus, was a considerable improvement, as they not merely give mechanical support, but also tend to alter the tissue of the womb, so as to make it contract. Yet it may be doubted whether not more harm has been done by the use of pessaries than benefit bestowed. They have frequently given rise to violent irritation and inflammation, with even fatal results. This is chiefly due to the immense difficulty experienced in adapting a really well-fitting pessary to the individual case, and to the mischief which is inevitable if the pessary does not fit. Moreover, the annoyance and inconvenience caused to the patient by wearing a pessary



should be considered, and the length of time which is necessary to ensure results which are after all in most cases inadequate. By Faradisation we obtain far more striking effects, in a much shorter time, and with much less inconvenience to the patient.

### *Anteversion and Anteflexion.*

Anteversion and anteflexion of the uterus are only different stages or degrees of the same affection, and will therefore be considered together. In anteversion the body of the womb is turned forwards, and if this is associated with a bending of the cervix between the external and internal os, we speak of anteflexion. Its causes are generally prolonged congestion, or the presence of a tumour, and we frequently find it connected with engorgement or hypertrophy of the anterior wall of the uterus. It is a very frequent cause of sterility, for in 250 cases of sterility observed by a recent author on this subject, no less than 103 patients had anteversion of the uterus. We find this condition more frequently in the unmarried, and in those married women who have never borne children, than in those who have borne children, and whose sterility is not natural, but acquired. The symptoms are, on the whole, very similar to those of chronic inflammation of the womb; but as there is much pressure of the uterus on the bladder, the desire to micturate, especially when standing, is a prominent symptom.

Case XXIII.—An unmarried lady, aged 36, consulted me in June, 1867, for "general debility." She was so weak in her legs that she was entirely unable to take any active exercise, and spent her life in bed, on the sofa, or in a Bath chair. She complained of a wearing pain in the back, the shoulders, and the pelvis. The slightest exertion rendered her sufferings so acute as to be almost unbearable. She was also troubled with occasional crampy pains in the right side. The appetite was almost gone; digestion was tedious, and constipation

habitual. She was in the habit of taking purgative medicines, but whenever she had an abundant evacuation in consequence, she felt an increase of pain in the stomach, and more weakness than usual. There was throughout a feeling of heat, fulness and tenderness in the rectum, and a powerless feeling in the bowels. Menstruation was excessive and very irregular, and the bladder often irritable. The patient had been under the care of several obstetric physicians, who had found that she suffered from hypertrophy and anteflexion of the womb, and had treated her with injections and pessaries, but without benefit. This condition of the uterus was still present when she came under my care.

As the patient was very much averse to any further local treatment, and wished me to do something "for her nerves," I prescribed nitrate of silver, and an aperient pill of nux vomica, aloes, and myrrh, to be taken occasionally. After having used these remedies for about a month, she felt decidedly stronger in her nerves, and a little more power over the bowels, but she was still a confirmed invalid. I now proposed to her Faradisation of the pelvis. The patient consenting, I first applied this remedy on July 6th, and repeated it on alternate days for a month. At the end of that time the womb had contracted to its proper size, and the anteflexion was very nearly gone. The patient, although still delicate, was able to stand and walk, and gaining ground daily. I saw her again in October last, when she was so changed that I should scarcely have recognised her, as she walked briskly into my room. She was then not yet quite well, as she still suffered occasionally from a few of her old symptoms, although in an infinitely milder form. She now remained three weeks longer under my care, and was, when I last heard of her, in excellent health.

### *Retroversion and Retroflexion of the Womb.*

This condition occurs chiefly after labour or miscarriages, when the uterus is large and lax, and its ligaments longer than usual, and it is, therefore, easily twisted and displaced.

If, under such circumstances, the patient moves about too early, or is subjected to a strain or blow, the uterus falls backwards, retroverted and retroflexed. The fundus then lies against the hollow of the sacrum, and the organ is bent at that part where the cervix joins the fundus. If this condition is not at once rectified, it continually gets worse,



because the bearing-down pains increase the mischief. It may also occur where the menstruation has been unusually profuse, and the womb enlarged and congested from other causes. This affection is likewise curable by Faradisation.

### *Prolapsus.*

Descent of the womb below its natural level in the pelvis is almost always due to want of tone in the uterus itself, the round and broad ligaments, the relaxed vaginal walls, and the perinæum. Pessaries scarcely ever do good, while the surgical operations which have been proposed for its cure are very severe and dangerous. I have not yet had the opportunity of treating a case of prolapsus by Faradisation, but am inclined, from analogy, to consider it the most effectual remedy for it, as it would certainly be the safest and the most agreeable.

### *Irritable Uterus.*

The irritable or neuralgic condition of the uterus occurs without displacement or inflammation, and is generally considered incurable. Patients of this kind live on their sofa for years, being compelled to assume the horizontal position by a constant pain in the uterus, which becomes worse on sitting or walking. From what I have seen of Faradisation in neuralgia generally, and considering the remarkable changes it produces in the nutrition of the uterus in other diseases of that organ, I am inclined to believe that the irritable uterus may be relieved or cured by that remedy; but I have not hitherto had an opportunity of testing its efficacy in practice.

### *Menorrhagia.*

There is no remedy more effectual in arresting hæmorrhage

from the uterus than Faradisation, because nothing can contract the organ so rapidly and thoroughly. The ultimate effect must, of course, depend upon the cause of the disease, which has to be treated according to the exigencies of each individual case.

*Amenorrhœa.*

Where menstruation is scanty or absent, in consequence of engorgement and inflammation, or where the function has not been established, in young women, owing to a torpid state of the vasomotor nerves of the ovaries and uterus, or where it has been stopped in consequence of shock, mental anxiety, and similar causes, Faradisation is one of the best remedies for regulating this important function.

III.—Surgical Diseases.

In many surgical diseases the electrolytic effects of the continuous galvanic current may be used with considerable advantage. With electrolysis we may produce a mechanical disintegration of the tissues, by the nascent hydrogen; a chemical destruction by free alkalies (potash, soda, and lime), which are evolved at the negative pole of the battery; and lastly, we may modify the nutrition of the tissues through the dynamic influence of the current on the vasomotor nerves of the parts brought under its influence.

The following are the advantages of this method over other surgical proceedings:—It causes no bleeding during or after the operation, if this is properly performed. There is no shock to the system. No bandaging whatever is required, except for open wounds and ulcers. No inflammation, suppuration, or sloughing, are apt to follow, and the patients may, as a rule, during the progress of the treatment, pursue their usual avocations, not being obliged to



stay in bed or even in doors. If the electrolytic treatment is not as quick as the knife, it is, on the other hand, exempt from the dangers which may follow all cutting operations; and is, on this account, preferable in many cases where the knife is inapplicable or objected to, where less safe proceedings have hitherto been employed, and where the delay of a few days or weeks appears to be of little consequence.

The only part of the electrolytic operation which is unpleasant to the patient is the introduction of the needle through the skin. I therefore always use the ether spray, in order to render the skin insensible to pain, previous to the introduction of the needle. The galvanism itself is almost or even entirely painless, if properly applied. The length of the application varies according to the nature of the case. For small tumours two or three minutes are frequently sufficient; for large ones fifteen to thirty minutes or more are preferable. Small tumours may be removed by one application; for large tumours a more or less considerable number of them is required.

The following are the chief pathological conditions in which the electrolytic treatment has been or may be expected to prove serviceable:—

1st. Tumours.
2nd. Certain diseases of the blood-vessels.
3rd. Serous effusions.
4th. Wounds and ulcers.

*Tumours.*

Cases of nævus, goitre, sebaceous tumours, cysts, and swollen glands, yield readily to electrolysis, unless the tumours are very large, in which case the treatment must be persevered in for some time; but no case of the kind mentioned can resist the electrolytic application, if perseveringly used.

### *Nævus.*

Although nævus is not commonly dangerous to the patient affected with it, yet it entails a good deal of trouble and annoyance, and being most frequently seated on the scalp and face, gives rise to great disfigurement. Nævus is also liable to be inflamed by disease or injury, and ulceration may ensue, exposing part of its substance, and forming irritable and often bleeding sores, which rarely heal soundly. It is, therefore, always desirable to have a nævus removed.

The chief objections to the usual operations are that they are attended with considerable hæmorrhage, which is a serious matter in the case of young children; and they are often followed by tedious sloughing and suppuration, and even by phlebitis and pyæmia, with fatal results. Nothing of this kind is to be feared from the electrolytic treatment.

Case XXIV.—In July, 1866, Mr. White Cooper requested me to see with him a lady, aged 28, who had a congenital nævus of the right lower eyelid, of the size of a small pea, which it was thought desirable to remove. I expressed the opinion that this might be safely done by electrolysis, without hæmorrhage, and without subsequent inflammation, suppuration, or sloughing; we therefore met on July 23rd, in order to perform the operation. As the patient was of a highly sensitive constitution, chloroform was administered by Dr. Allan, the ordinary medical attendant of the lady. As soon as she was fairly under the influence of it, Mr. White Cooper introduced a needle connected with the negative pole of ten cells of the battery into the right half of the tumour, and I closed the circuit by placing a moistened electrode connected with the positive pole to the skin of the neck. The current was then allowed to pass for two minutes, after which the needle was withdrawn. Not a drop of blood was lost during or after the operation. The patient recovered well from the chloroform, and said that she felt no pain in the part that had been operated upon, but merely a slight stiffness. The right half of the tumour appeared shrunk and shrivelled up, while the left half had not been altered in any way. This was an interesting circumstance, as it showed that even in so small a tumour as the one described, the action of the current could be exactly limited to that portion of it which was in contact



with the needle. We met again on July 26, when the same operation was performed on the other half of the tumour; but this time the patient objected to the use of chloroform, and bore the galvanism extremely well without it. I have not seen the patient since; but received, on October 13th, a note from Dr. Allan, in which he expressed himself as follows:—"Mrs. —— is in the country, but last time I heard from her, she said that the nævus had disappeared. A dozen years ago I wished it to be removed, but no one would do it; and the able and esteemed oculist whom she then consulted deprecated all interference. At length I persuaded her to have another opinion (that of Mr. White Cooper). The result was your employment of galvanism, with the happy effect of complete obliteration of the evil."

All cases of nævus, wherever they may be seated, and whatever may be their size, are suitable for the electrolytic treatment; and even where they are so vascular as to make it appear that any interference with them must needs give rise to copious hæmorrhage, not a drop of blood is lost, if the operation is judiciously performed. I have operated on babies only three months old, and who yet bore the galvanism perfectly well. On the whole, I recommend the operation as early as possible, as nævi often grow extremely fast, and if allowed to develop, require a much longer time for their cure than when they are treated at an early period of their existence.

### *Goître.*

For goître (bronchocele, Derbyshire neck) the electrolytic treatment is also most valuable, because any other surgical interference with such tumours is so dangerous to life that few surgeons are willing to operate. In most of the cases which have been under my care, Mr. Prescott Hewett, Mr. Paget, Sir William Fergusson, Mr. Cæsar Hawkins, and other eminent surgeons, had been previously consulted, and pronounced any of the ordinary operations to be inadmissible. Most of these cases were of very large

size, and on that account required a long continuance of the treatment; but I believe that all cases of bronchocele, however large, and not merely the cystic, but also the solid variety, may be cured by electrolysis, if the treatment be persevered in for a sufficient time.

Case XXV.—A lady, aged 35, had a solid goître, of the size of a fowl's egg, in front of her throat. She had already used every imaginable form of iodine, both externally and internally, and many other remedies, without any benefit. She consulted me in April, 1867, and had ten electrolytic applications within a month. The goître was then diminished to about one-third of its previous size. The patient resumed the treatment in the beginning of June, and after sixteen more applications the tumour had entirely disappeared.

### *Sebaceous Tumours.*

As these tumours never attain to any considerable size, they may be rapidly removed, as shown by the following instance:—

Case XXVI.—A young lady, of considerable personal attractions, was sent to me by Mr. White Cooper, in April, 1867, for a sebaceous tumour, which she had on the right side of the nose, near the eye, and which had existed for the last three years. The tumour did not give rise to any inconvenience, but spoilt her appearance, and she was therefore anxious to have it removed. A gentle current was used four times within ten days, after which the tumour had disappeared. I saw this lady again in October last, when not the slightest scar, or even redness of the skin, was perceptible on the place where the galvanism had been applied.

### *Warts, and Hypertrophy of the Skin generally.*

Case XXVII.—A gentleman, aged 59, consulted me in April, 1867, for two little tumours of this kind, which he had had on both eyelids for the last two years. They were not painful, but annoyed him by their presence, and he therefore wished to have them removed. The smaller one of the two was removed by the first application, the larger one required two such, after which it fell off.

Case XXVIII.—A physician, aged 45, had a similar but larger growth on the nape of the neck, which he wished to get rid of. I applied the current to the base of the tumour on two several occasions, after which it came away.



Case XXIX.—A lady, aged 38, had a hairy wart on the upper lip, which was a great eyesore. Two electrolytic applications removed the growth completely, without leaving a scar.

### *Cysts.*

Case XXX.—A gentleman, aged 53, was sent to me by Dr. Giles, of Lewisham, in June, 1867. He had a cystic tumour on the lower lip which had grown there during the last two or three months. He was not aware of any cause which could have brought it on. The fluid escaped during the first application, and the cyst did not refill. The walls of the cyst required seven more applications, after which every trace of it had disappeared.

### *Ganglion.*

Case XXXI.—A lady, aged 35, consulted me in March, 1867, for a ganglion on the right wrist, over the extensor tendons of the fingers. It was as large as a filbert, and occasioned much weakness in the joint. After six applications, it was entirely removed.

### *Cancer.*

In malignant disease, the results of electrolysis are not so favourable. Wherever the cancer is of considerable size, and growing rapidly, the pain may be generally relieved, and the further growth of the tumour be considerably checked, by the electrolytic treatment; but I have not hitherto obtained a cure of such patients. In two cases of scirrhus of the breast, where the constitution was apparently not suffering, and where the tumour was only of the size in one of a filbert, and the other of a nutmeg, the swelling has entirely disappeared. In cases of cancer, however, I always prescribe a constitutional treatment by medicines at the same time, in order to combat the cancerous diathesis.

*Diseases of Blood-vessels.*

For *aneurism*, *varicose veins*, *varicocele*, and *piles*, I believe the electrolytic treatment eminently suited. An aneurismal pouch may be consolidated with absolute certainty, and in a few minutes, by this method, which I believe will eventually supersede all other modes of treatment which are at present in use, and which are less effective, less safe, and infinitely more tedious. Varicose veins may be completely destroyed, and, as it appears, without any risk of inflammation or other untoward complications supervening, which is, in my opinion, due to the perfect ease with which we can regulate and localise the action of the current, at all the different stages of the application. The same considerations apply to varicocele and piles.

*Serous Effusions.*

For *hydrocele*, *pleuritic effusions*, and *empyema*, and serous effusions in the *joints*, the electrolytic treatment is likewise well adapted, on account of its simplicity, safety, and efficacy.

*Wounds and Ulcers.*

In *wounds* and *ulcers* which are slow to heal, and where the secretion is of an unsatisfactory character, the application of the negative pole is usually followed by excellent results. I have in several instances seen a rapid improvement in the aspect, and a kind healing of ulcers, which had existed for a long time, and where gangrene had already supervened, follow a few applications of the current. An additional advantage in such cases is, that scars which are developed under the influence of the negative pole, have little or no



tendency to contract, and in course of time merge into healthy skin, so as to leave no trace of the original injury.

*Ozæna.*

In *ozæna*, whether it may be of specific or scrofulous origin, a combination of electrolysis with Faradisation is the most successful treatment. By electrolysis the clots of congealed mucus which plug up the nostrils, are melted and removed, while Faradisation affords a healthy stimulus to the mucous membrane, and enables it to return to its normal condition. In such cases, however, a constitutional treatment should likewise be employed, in order to eradicate the diathesis which engendered the affection.

18, Bryanston Street,
Portman Square.

Wertheimer, Lea and Co., Printers, Circus Place.

# INDEX.



# BRIEF NOTES

ON THE

# LAST EPIDEMIC OF CHOLERA IN TURKEY:

## With Observations as to Prevention and Treatment.

BEING A REPORT SUBMITTED TO THE COMMITTEE OF THE SEAMEN'S HOSPITAL SOCIETY.

WITH ADDENDA.


BY

HARRY LEACH,

RESIDENT MEDICAL OFFICER, HOSPITAL SHIP DREADNOUGHT;
AND LATE MEDICAL INSPECTOR TO THE KUSTENDJIE AND OTHER TURKISH RAILWAYS.



PRINTED BY PERMISSION OF THE SEAMEN'S HOSPITAL SOCIETY.

LONDON:
JOHN CHURCHILL & SONS, NEW BURLINGTON STREET.
1866.

LONDON:
SAVILL AND EDWARDS, PRINTERS, CHANDOS STREET,
COVENT GARDEN.

# PREFACE.

It is sadly probable, that, before this paper appears in print, cholera will be again present among us, and though I can lay no claim to the authorship of any scientific writings on this subject, it is plainly the duty of every man, as far as in him lies, to give all possible publicity to facts and experiences bearing on this superlatively important question. The results of the Conference now sitting at Constantinople will reach us in due course, and will contain a far more complete account of the last epidemic than I have been able to furnish. But if any jot or tittle of really useful information is given in this small pamphlet, I shall be glad to think that, though a brief and somewhat meagre production, it has not been published in vain.

H. L.

Hospital Ship Dreadnought, S.E.
*May*, 1866.

# A REPORT

OF THE

# EPIDEMIC OF CHOLERA IN 1865,

AS IT APPEARED IN CONSTANTINOPLE AND OTHER CITIES AND TOWNS IN TURKEY.*

---

The history of the last epidemic of cholera in Europe should be divided into three parts:—

1. Its cause, origin, and nature as compared with other epidemics, with proofs as to its contagious and infectious nature.

2. Its progress and decline.

3. The various modes of treatment adopted, and experiences gleaned as to preventive measures for the future.

I. The Cholera was fairly traced from Alexandria to Constantinople in this manner:—

On the 28th June in this year, the Imperial steam ship *Moukbir Sourrour* arrived in the Darda-

* I am indebted for many of these particulars to Dr. Savas, Vice-President of the Sanitary Commission of the Porte, and to Dr. Stampa, whose local report was sent in to that Commission, and who kindly gave me a copy of the same. I received from both these gentlemen much courtesy and assistance.

nelles from Alexandria, and the Turkish officers, general and medical, having declared that no illness had existed on board during the voyage, the ship was immediately admitted to *pratique*. On the same night twelve cases of cholerine (so called) were sent from this ship to the Marine Hospital at Cassim Pascha. A strict investigation having been made, it was found that several cases of cholerine had appeared among the crew during the time that the vessel was at Alexandria, and that many cases of diarrhœa had existed on board during the passage.

The patients disembarked were isolated as much as possible, but the disease began to spread very soon after their arrival in the following manner:—

(1.) A patient admitted into another hospital (from barracks situate next to that at Cassim Pascha, and where he had performed duty subsequently to the arrival of the first cholera patients) became the subject of cholera soon after his admission, and caused the spread of cholera in that district, though the military depôts around were emptied as soon as possible, and the soldiers placed under canvas.

(2.) A carpenter, working at the hospital of Cassim Pascha, went on the 5th July to the village Yenikuei, on the Bosphorus, to see a friend, and the latter was within a few hours attacked with



cholera, conveying a fresh focus of the disease, which soon spread up the Bosphorus.

(3.) The first case appeared in Pera on the 20th July, and its radiation from this focus was explained to me by Dr. Dickson, physician to the British embassy. He says: "I was called to a case of cholera in the middle of Pera, and on close inquiry found that the subject thereof was a relative of the nurse who had attended the first cholera patient in Pera, and that this nurse had occasionally come home to change her clothes, or to sleep for a short time. I was summoned three days after to attend a 'hammul' in a part of Galata, where the cholera had not up to that time appeared. After some investigation I found that this man had conveyed the linen of the original patient to the wash.

"In like manner it was brought to the district of Tatalva (where the subsequent mortality was very great) from Culele, by three families who migrated from the latter place, where they had lived close to a hospital in which cholera patients were lying, and close to an open sewer, leading directly from this hospital, and flowing under their windows."

"I observed, also," continued Dr. Dickson, "that at the commencement of the epidemic of 1848, which began during the feast of the Ramazan, very few Mussulmans were attacked, as, at

that time they go abroad very little indeed, and eat during the night; but that, when this feast came to an end, and the women went to the bazaars to buy fruit for the 'Biram,' the disease appeared and spread quickly among them."

These observations all go to prove the infectious nature of the disease, for the focus of disease in each district appears to have been very clearly traced, and the medical officers appointed to this duty had shown much acumen in the performance thereof.

*Its Nature and Severity as compared with other Epidemics.*—All who have had experiences of former epidemics are agreed that the last has been decidedly of a milder nature than those preceding it; that in the vast majority of cases it commenced with very mild diarrhœa, perfectly controllable if at once attended to, and that the cases of sudden attack and collapse were very rare indeed.

Medical men, when called to an advanced case, almost invariably gleaned a history of perfectly preventible diarrhœa.

*Age.*—The majority of cases occurred in persons from twenty to forty years of age.

*Sex.*—Men were more frequently attacked than women.

*Habits of Life* naturally influenced the results



considerably. Thus drunkards, those living chiefly on fruits, those badly clothed or subject to other diseases, were the most frequent victims. The mortality among young children was also very great.

## II. Progress and Decline.

The epidemic at Constantinople, Kustendjie, and most other places in Turkey, commenced at first very insidiously, but as "foci" of the disease increased, its intensity increased in direct proportion, and it ended not by a gradual decline, but, to use the Italian adjective, *fulminante*. Panic undoubtedly increased its intensity in many instances, and brought cases of simple diarrhœa into the grip of cholera very speedily indeed.

## III. Treatment.

I omit a detailed description of various general astringents, very efficacious, and perfectly sufficient in the stage of premonitory diarrhœa, and which have been used in this and all other hospitals in Great Britain under the general title of "astringent mixture." I am glad to be able to mention two remedies, which have not, as far as I know, been tried in England at all, or, if so, to a very limited extent. Quinine rubbings and quinine injections

have been certainly used with great success by many doctors in Constantinople, and they all agree that these prove, in an advanced stage of the attack, to be the most efficacious remedies. The process (as to the first-named plan) is as follows—One hand of the manipulator is wetted with a strong solution of quinine, and the solution is also poured drop by drop over the body and limbs of the patient. Each limb, and also the trunk, is then violently rubbed by the operator for some minutes, and a relay of active hands must be arranged for the purpose, care being taken to expose the patient as little as possible. By this means a large quantity of quinine can be introduced into the system in a short space of time, without that risk of interference with the stomach which sometimes proves an obstacle to the speedy exhibition of this and many other remedies.

The injecting of quinine is performed by means of a very small syringe, containing a solution of the drug, the nozzle of which is introduced under the skin at various points. In strong adults, it has been used with success equal to that following the quinine rubbings. This process of injecting fluids under the skin has been known and practised in England for several years in cases of neuralgia and other affections, so that the *modus operandi* is perfectly familiar to most medical practitioners in this country.



Quassia rubbings and injections, in like manner, have met with some success, but I am inclined to put much greater faith in the quinine treatment, and hope that we shall be able to add a valuable aid to our present meagre list of remedies.

A cautionary motto, and one that all, lay or medical, can remember, enjoin, and practise, is well worthy of notice:—"Abstain from cold water during the attack, whether the latter be simple or severe, but take diluent drinks, as barley-water, &c., to any amount."*

I had a long interview with Dr. Hamlin, of Bebek on the Bosphorus (who, though not now connected with the medical profession, has treated a very large number of cases of cholera), in the course of which he said—"I have seen three visitations of cholera in this country, those of 1848, 1852, and 1865, and have during that time attended many hundreds of cases. All that were allowed to take cold water did badly, and of those who were recovering and indulged in it, all relapsed."

As a summary of treatment, I should adopt, at the commencement, a mixture consisting of—

* I am aware that this statement will meet with grave dissent from most medical men who have had large experiences of cholera. I transcribe it not as the result of my own experience, but that of a gentleman who emphasized the above very strongly indeed, and who has probably seen as many, if not more, cases of cholera, during the last three epidemics, than any one in Constantinople.

| | |
|---|---|
| Tincture of opium . . . . . | 1 part. |
| Spirits of camphor . . . . . | 1 „ |
| Compound tincture of rhubarb . | 2 „ |

Such a mixture will, in the majority of cases, arrest the diarrhœa at its outset.

If the patient be seen in the stage of cramps and vomiting, the quinine rubbings in cases of children, quinine injections (hypodermal) and rubbings in cases of adults, should be immediately commenced, and continued vigorously, with a dose of the mixture after each fit of vomiting, giving beef tea and milk as drinks in very small and oft-repeated doses.

*Experiences gleaned as to Preventive Measures for the Future.*—On this head I am persuaded that, by vigorous measures, watchfully carried out, much good may be done, for there is no doubt that, as in continued fevers, our powers of prevention are much greater than our powers of cure. If, as the above has led me to conclude, cholera be contagious and infectious, it is necessary that, if possible, complete isolation from all other cases should be provided, and that in the early stage of the disease.

Should cholera come to us next year, separate buildings should be opened for the reception of these patients, for (if the "infection theory" be correct) the spread of this disease is very greatly



increased by the introduction of such patients into a general hospital.

It is, however, by getting still more closely at the beginning of the disease that the most good can be done. Universal testimony as to the epidemic of this year in the East declares that mild premonitory diarrhœa occurred in the vast majority of cases. Individual neglect (in many instances so glaring as to be almost incomprehensible) was therefore in these cases the sole cause of unhappy results, arising from carelessness akin to that of the miner with his naked candle, and of the housekeeper with a fever-breeding cesspool overflowing close to his door-step.

We should be prepared, should cholera threaten, to open depôts in all the districts of London, where "simple astringent mixtures" can be obtained at any hour of day or night, free of cost; and notices to this effect should be posted in every street of each district.

The diarrhœa of children from the ages of four to twelve is so often totally neglected among the poorer classes, that a warning to mothers on this head should be added to the notice. The poor would thus have a knowledge of the danger to be avoided, and the means of averting that danger always close at hand.

In the matter of sanitary precautions, the health

officers of each district will, as they clear out the nests of fever, clear out at the same time the haunts of cholera.

I am sure that a great deal of good may be effected by the above measures; for if England be threatened with cholera, nothing short of vigorous quarantine will prevent a severe scourge to this country, unless some such measures of the kind above indicated be adopted.

(Signed) HARRY LEACH.

*December*, 1865.

# ADDENDA.

KUSTENDJIE, now one of the largest ports for grain on the European coast of the Black Sea, has a small colony of English, located there in connexion with the works of the Danube and Black Sea Railway Company, and with those of the harbour, which latter are now rapidly approaching completion. This colony was very severely attacked by cholera in the autumn of last year, and though the epidemic lasted but from three to four weeks, 17 per cent. of the inhabitants died. It is tolerably certain that the disorder was imported directly from Constantinople by the shipping; and it is clear that the system of quarantine was here, as in most other towns, of so imperfect a description, as to afford little or no opportunity for a fair trial of its merits. The lazarette was situated immediately under the cliff on which the houses of the English are built, and in tolerably close proximity to the railway works. A low post and rail enclosed the wooden huts of the lazarette; and I saw, more than once,

workmen stopping on their road to the shops, and holding free and close converse with the sojourners on the other side of the palings. This is an all-sufficient proof of the utter inutility of quarantine as established in the East; and, as thus carried on, it cannot but be held up to ridicule and contempt. Unless the infection theory be admitted, it is very difficult indeed to account for the origin of the disease in this English colony. The houses are healthily situated on a cliff close to the sea, in a situation similar to that of the Spa Cliff at Scarborough, or to the high ground immediately above Hastings. The drainage is therefore natural and good, and one hundred feet of soil exists before the solid rock is reached. There is no marshy ground near, and no trees for some miles. The general arrangements of the hotel, where one fatal case occurred, are remarkably good, the rooms being large and airy, and many of them were at this time unoccupied.

The progress of the disease, and the history of each and (with one exception) every case gave very clear indications of premonitory diarrhœa, continuing for several days before the stage of collapse set in. Several were in this stage treated successfully with ordinary astringent mixtures, and relapsed fatally from eating soon after convalescence a quantity of melon, pork, fruit, &c.



No new remedies were used in the treatment of any of these cases, and it is superfluous in this place to dilate upon the comparative value of opium, creasote, æther, chloroform, sulphate of copper, and turpentine, all of which were used without success.

Dr. Cullen, medical officer to the Kustendjie Railway, to whom I am indebted for many of these particulars, has specially emphasized the fact, that all those who came under his care neglected to apply for remedies until diarrhœa had continued for at least two or three days. And as, owing to the indefatigable exertions of that gentleman, instant means were taken to provide preventive mixtures in the shops and elsewhere, it is the more lamentable that this fatal carelessness prevailed.

A great many fatal cases occurred in the native town, but no accurate information can be obtained on this head, or indeed in any Turkish town. After visiting the homes, haunts, and holes, in which these people dwelt, it is difficult to conceive how cholera, when introduced, can fail to decimate entirely so insanitary a population.

The immigration of the Circassians into Bulgaria, doubtless tended greatly to enhance the evils of cholera at Kustendjie and other places, and thereby assisted to swell the roll of misery debited against this unhappy race.

The town of Varna, some 130 miles south of Kustendjie, was conspicuous last year among the ports of the Black Sea by the entire absence of cholera. No other port escaped, and it is at the same time to be observed, that no other port was so directly in the line of march that the disease appears to have taken. Having visited many towns in Bulgaria I certainly class Varna and Burgas, as by far the dirtiest of them all. The former is situated close to the sea, with a marshy lake immediately beyond its walls. As no kind of artificial drainage exists, that part of the town which abuts on the roadstead, is in a constant state of putrid moisture, on account of liquid exhalations from the upper district. The few khans or inns frequented by workmen and travellers, are in a wretched condition of filth. The constant presence of ague among all classes, and its debilitating effects, render them specially amenable to the attacks of any other malady.

The locality of the lazarette is worthy of notice. On the outbreak of cholera it was formed on the south side of the bay of Varna, opposite to the town, and at least two miles from its nearest gate. Bell tents, badly raised and furnished, were considered sufficient for the wretched inhabitants of this lazarette, but the complaints were so loud and long, that they eventually succeeded in raising



the Pasha to action in the matter, and the lazarette was removed to an old monastery beyond the vineyards of Varna, and about six miles to the north of that town.

This monastery is most healthily situated on a cliff promontory, and entirely isolated from all other human habitations. As far as could be learned from personal observation, the system of quarantine was here well enforced, and I have no doubt that, in this way, the communication of the disease to Varna was arrested from the sea-board. But travellers, though very few in number, were at this time coming in from Kustendjie, Rustchuk, and Schumla, as no attempt was, I believe, made to stop inland intercourse. It may be argued by some that the length of journey from any of these towns gave time for disinfection of clothes and person, and this no doubt is a question worthy of consideration. His Excellency the Pasha of Varna attributes the healthy condition of that town to the excessive activity of the scavengers under his command, but I was sorry, from nasal and ocular demonstration, not to be able to endorse the opinion of so high an authority.

Having visited Schumla after the epidemic had passed from Bulgaria, I learned from tolerably accurate sources, that strict supervision had been established about that strong inland fortress. Schumla

is entirely exceptional as to the system of quarantine, for being a very large military station and much isolated as to natural situation, a severance of all intercourse with other towns was by no means a difficult matter. There is besides some degree of energy exhibited here, due, I believe, to the activity of Ali Pasha, one of the military chiefs in command of the garrison. It is undoubtedly a fact that no case of cholera appeared there. The town is, comparatively speaking, clean and healthily situated, and the sanitary condition of the large garrison satisfactory.

Rustchuk, one of the chief towns of Bulgaria on the banks of the Danube, suffered greatly from the epidemic. There is good evidence that it was imported from Kustendjie by workmen who fled from the latter town during the panic of cholera, left several cases at Tchernavoda on their way, and afterwards established the disease at Rustchuk. The attempt to enforce quarantine here was very feeble indeed. This town is by no means so dirty as many in Bulgaria, and it contains a small colony of English, in connexion with the works of the Varna and Rustchuk railway. Two cases only occurred among them, one of which was fatal, but one hundred and seventy-one deaths are recorded among the native population, and this is probably an understatement of mortality. The epidemic lasted three weeks,



and no precise history of premonitory symptoms could be gleaned from the Bulgarians attacked, so that data as to the progress of the disease were unreliable.

When visiting Burgas, *en route* to Constantinople, I called upon the only medical man in that eminently wretched town. He is an Italian, and performed the duties of health officer. In answer to queries he said that cholera had not visited Burgas at all, but that many had recently died from ague or its effects.

Burgas possesses the best natural harbour on the west coast of the Black Sea, is really the port of Adrianople, and exports a large quantity of corn, brought from the districts around. Ague is hardly so frequent a cause of death as to account for the mortality at Burgas at that time, and as it is frequently the interest of all Government officials in Turkey to hide or understate the truth to a most glaring extent, I am fain to believe that fatal cases of cholera had occurred at this town.

The conclusions to which I arrived from observations made at the above towns, as well as at Constantinople (*vide* Report), were, that cholera is infectious, and probably contagious. This opinion was greatly confirmed by the unanimous opinion of all medical men (English, Greek, Armenian, and others), in the latter city. Among these were Dr. Dickson,

physician to the British Embassy; Dr. Savas, vice-president of the Sanitary Commission then sitting at Constantinople; Drs. Stampa and Mühlig, to all of whom I am greatly indebted for much considerate attention and kind assistance.

A further argument in favour of this conclusion was furnished by Mr. John Green, our distinguished Consul-General at Bucharest, who informed me that, during the last three epidemics of cholera in Europe, no case had occurred in the kingdom of Greece, or in any one of its islands. Each of the latter has a jurisdiction of its own, and the quarantine system is carried to a most severe, and sometimes almost barbarous extent. I was personally cognisant of this fact when we touched at Syra, in the Austrian Lloyd's mail-boat, on the way to Trieste, in December last. The captain, having sufficiently interdicted communication with the shore by hoisting the yellow flag, a boat appeared for the purpose of conveying two wretched beings (natives of Syra) to the quarantine island. This boat was pushed alongside by men in another small craft, and having embarked its objectionable freight, was towed away by the quarantine men. The island on which the lazarette was situated, is some eight or ten miles from Syra, uninhabited, except by those performing sanitary penance, who are furnished with a bare allowance of three weeks' pro-



visions for the period of isolation. The huts are of a most wretched description, and the unhappy inmates eventually reach their homes affected more or less with rheumatism, bronchitis, and other attendant ills. This is, I believe, a fair specimen of the system practised by the local authorities throughout the Grecian Archipelago, and an almost complete cessation of commerce and personal inter-communication is naturally the result. But the inhabitants are thereby free from the scourge of cholera, and though commercial Great Britain will tell us that the remedy is infinitely worse than the disease, it is a duty, as viewing this question in its medical aspect, to suggest that some plan of isolation be adopted in our country. There is no doubt that the remedy (if it be one) is, as to Great Britain, well-nigh impracticable; but at the same time it is a terrible state of things, that in the cause of commerce *versus* life, the latter should be compelled to give way to the former.

Quarantine, as practised by nearly all countries in Europe, is utterly a mockery and a delusion, and we may point to the lazarettes at Marseilles, Trieste, and Kustendjie, as evidence in proof of this assertion. By endeavouring to found a non-infection theory on the uselessness of quarantine, we are renouncing a question that has never been satisfactorily determined, and by so doing may

nullify all efforts, however good, to mitigate the effects of this fatal malady.

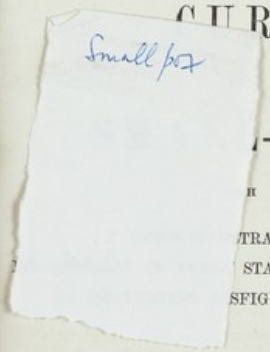
The history of cases that have reached us indirectly during the last few days, all point to Rotterdam as the place from which the disease has come. The law of quarantine, as at present constituted, is powerless to exclude in any sort of way patients arriving in this country with cholera; but it is surely far better to adopt at once stringent measures of precaution, than continue to ignore a theory, which, with recent past experiences, cannot be altogether chimerical. The case is not yet proven as against infection or contagion, and until such be the case, we are far safer in acting on the affirmative of the proposition. Is it absolutely impossible to establish a lazarette on one of the Channel Islands, Scilly, or the Isle of Man? The conference now sitting at Constantinople will most assuredly report favourably as to a rigid system of quarantine, but long before that report arrives and is reduced to practice, the cholera may be among us, and the conference with its results will avail us nothing. It will then be utterly useless to talk of prevention. We shall have to essay the far more difficult task of cure, with, it is to be hoped, happier success than that achieved in former epidemics.

THE END.

A

# SAFE, SPEEDY, AND CERTAIN

# CURE




# -POX:

H

TRATIVE OF

STAGE OF THE DISEASE,

SFIGUREMENT, &c. &c.

"Facts are stubborn things."



HERTFORD:
JOHN ROSE, FORE STREET.
LONDON:
KENT & Co., PATERNOSTER ROW.
1863.

nullify all efforts, however good, to mitigate the effects of this fatal malady.

The history of cases that have reached us indirectly during the last few days, all point to Rotterdam as the place from which the disease has come. The law of quarantine, as at present constituted, is powerless to exclude in any sort of way patients arriving in this country with cholera; but it is surely far better to adopt at once stringent measures of precaution, than continue to ignore a theory, which, with recent past experiences, cannot be altogether chimerical. The case is not yet proven as against infection or contagion, and until such be the case, we are far safer in acting on the affirmative of the proposition. Is it absolutely impossible to establish a lazarette on one of the Channel Islands, Scilly, or the Isle of Man? The conference now sitting at Constantinople will most assuredly report favourably as to a rigid system of quarantine, but long before that report arrives and is reduced to practice, the cholera may be among us, and the conference with its results will avail us nothing. It will then be utterly useless to talk of prevention. We shall have to essay the far more difficult task of cure, with, it is to be hoped, happier success than that achieved in former epidemics.

THE END.

A

# SAFE, SPEEDY, AND CERTAIN

# CURE

FOR

# SMALL-POX:

WITH

CASES ILLUSTRATIVE OF
ITS EFFICACY IN EVERY STAGE OF THE DISEASE,
IN PREVENTING DISFIGUREMENT, &c. &c.

"Facts are stubborn things."



HERTFORD:
JOHN ROSE, FORE STREET.
LONDON:
KENT & Co., PATERNOSTER ROW.
1863.

# PREFACE.

The world's history has been one of discovery. Age after age has revealed some secret before undivulged; some fact before unknown. A trivial incident has disclosed an economy hitherto undreamt of; a mere accident a mine of wealth hidden for ages. The falling of an apple discovered the law of gravitation; the exhalation from a kettle suggested the steam engine. The gold-fields of Australia and California, trodden over for centuries by rude Aborigines, have not till lately enriched the world with their treasures. Science, with all its enterprise, delving below and peering above, has revealed but a tithe of the world's wonders. The discoveries of future generations might prove as startling to those who live now, as those of our day would be to our ancestors—not the least surprising, perhaps, the new-found uses of familiar things. What has already happened may happen again. Gas, steam, electricity—as old as the earth—were each elementarily known to our forefathers. It required, however, an ingenious mind to decry their scientific appropriation; and a skilful hand to apply them to lighting, to locomotion, and to telegraphy.

What is true of science in general, is equally so of medicine in particular. The herb by the wayside, the chemical in the laboratory, the mineral beneath our feet, may yet be found to possess a remedial virtue now unthought of. Diseases, at present regarded as hopelessly remediless, may, by the brighter light of discovery, be easily curable. The order and beneficence pervading Creation; the Providential laws, preserving and rectifying, everywhere in operation; point to such a conclusion.

The cooling fruits of Summer, while illustrating a wise and kind economy, indicate also the refrigerant uses of acids: hence their remedial employment in fever. In addition to this febrifugal property, they possess, as is well known, an antidotal one also. Every intelligent housewife is aware that vinegar, a vegetable acid, neutralizes the taint of meat—an incipient animal poison. Infectious fevers—not excepting the variolous or small-pox—are not unfrequently attributable to fetid or ammoniacal exhalations,* or, as some imagine, to a miasm having an affinity to, and residing in, these exhalations. Experience has shown, that sometimes in typhus fever, an ammoniacal effluvium from the patient is scarcely endurable. Is it unreasonable therefore to suppose, that an acid, or acids, may exist, specifically antidotal to the miasm producing these infectious febrile diseases? If it be not, the inference will hardly be an illogical one, that a timely administration of the antidote—as in the case of palpable poisons—might intercept the effect of a deleterious cause. It is surely not beyond the range of probability either, that, an antidote to the poison, might prove remedial also to the diseased condition resulting from it.

Considerations such as these, demand at least, a respectful attention to the remedy treated of in this pamphlet: a remedy hitherto regarded perhaps, as the offspring of empiricism, but possibly, after all, perfectly harmonious with science.

May not the infrequency of small-pox in the interior of France be attributable to the large amount of tartaric acid in French wines? Judging from the success attending a limited number of experiments with the remedy referred to, as a preventive of small-pox, it would appear so.

Whether the theory suggested be a correct one or not, the cases hereafter detailed, conclusively show that a remedy exists, specifical to the fever of small-pox in all its stages; and that in ordinary cases, an appropriate administration of the medicine, and a judicious treatment alone are needed, surely and speedily, to effect a cure.

* A number of workmen, in Southwark, were recently employed near a sewer, five of them failed immediately after with small-pox.



Ample details relative to the remedy and treatment will be found in the letter addressed to the Medical Officers of the Small-pox, Hospital. Further particulars may be gleaned from the cases described.

It may be asked perhaps, why a discovery so inestimably valuable was not long ago made public. The correspondence on the subject hereafter inserted, will furnish a reply. A perusal of it will suggest the difficulty of obtaining even a hearing for a non-professional discovery. Whatever its merits or importance, these, it would appear, in the estimation of some, are far outweighed by other considerations. The value of a discovery however, does not depend on its professional origin, or its official recognition. Let it be judged, as it ought, by its intrinsic worth, and its public utility. Medical science has received, ere now, no mean gifts from non-professional hands: it may do so again.

A discovery so important to humanity—a remedy so efficacious in so loathsome and fatal a disease—will doubtless command a generous reception, and an attentive consideration from the philanthropic and conscientious medical practitioner.

The advice of friends to patent the remedy has not been adopted. A course more conducive to the general good has been pursued. It has heretofore been offered to Government, to Parliament, to Hospital; it is now published—"A BLESSING TO THE WORLD."

CHARLES ROSE.

*Dorking,*

*July*, 1863.

A

# SAFE, SPEEDY, AND CERTAIN

# CURE

FOR

# SMALL-POX.

---

The Small-pox has for ages been the pest and dread of nations. At what precise period this loathsome disease first appeared is involved in doubt. Some profess to trace its existence in China and India, long before the time of Hippocrates. It seems clear, however, that in the sixth century it had visited Egypt, and in the tenth our own country. For generations its ravages were appalling. In Europe alone, hundreds of thousands were annually victims to its malignancy; and at one period, a fourth of the human race is thought to have borne, in suffering and disfigurement, the effects of its virulence. The treatment of the disease, adopted even in the seventeenth century, must have frightfully increased its fatality. A biographer of Sydenham thus describes it:—"The usual mode of dealing with this then fearfully virulent disorder, as with eruptive fevers generally, was as opposite as could well be imagined, to the dictates of either nature or common sense. The unhappy patient was loaded with bed-clothes lest one refreshing breeze should fan his burning frame; the curtains were drawn closely round; whilst under the notion of the existence of a putrescency in the blood, he was all the time plied with a round of stimulants and cordials, to say nothing of the perhaps less potent, but more disgusting ingredients, with which good care was taken that he should be sufficiently charged, described altogether by a nearly contemporary physician, as Venice treacle, Virginian snake-root, zeodary, saffron, volatile salt of hartshorn, powder of viper's flesh, and the like."

Fatal though the small-pox was during the seventeenth and eighteenth centuries, the following statistics show a considerable variation in its virulence :—

MARSHALL'S MORTALITY OF METROPOLIS AND BILLS OF MORTALITY, IN BRITISH MUSEUM.

| Ten years. | Average small-pox deaths per 1000. | Ten years. | Average small-pox deaths per 1000. |
|---|---|---|---|
| 1650—1660 .. .. | 48 | 1730—1740 .. .. | 76 |
| 1660—1670 .. .. | 36 | 1740—1750 .. .. | 77 |
| 1670—1680 .. .. | 71 | 1750—1760 .. .. | 100 |
| 1680—1690 .. .. | 73 | 1760—1770 .. .. | 108 |
| 1690—1700 .. .. | 45 | 1770—1780 .. .. | 98 |
| 1700—1710 .. .. | 53 | 1780—1790 .. .. | 87 |
| 1710—1720 .. .. | 81 | 1790—1800 .. .. | 86 |
| 1720—1730 .. .. | 82 | | |

The introduction of inoculation into England took place early in the eighteenth century. High anticipations were raised respecting it. The operation, it is true, was usually advantageous in mitigating personal suffering, and the mortality among those who submitted to it was greatly lessened. Its value to society, however, may be seriously questioned; the mortality from small-pox being in the aggregate—as a reference to the foregoing statistics will show—by no means diminished. The dissemination of the disease and the danger of contamination, counterbalanced in disadvantage the benefit of modification.

The discovery of Vaccination was hailed with delight. Its discoverer alleged that it was "attended with the singularly beneficial effect of rendering the person so inoculated, perfectly secure from the infection of small-pox."

The brightest hopes were cherished that henceforth the fell destroyer of the human race would exist no more. Parliament in gratitude for so hopeful a boon voted to Dr. Jenner, in 1802, £10,000, and in 1807, £20,000 more. The high expectations once entertained respecting vaccination have failed however to be realized. More than half a century has passed away since its introduction, yet the greatest diversity of opinion still prevails respecting it. Its nature;* the day of its maturity; the eligibility of its directness from the cow; its deterioration by transmission; the extent and duration of its protective power; the propriety of its re-performance; the question as to its possessing a prophylactic virtue at all;† its effect upon the

* *Equine lymph*, or in less fine and more homely phrase "the grease" from horses' heels, is said to be similar in nature to vaccine. The employment of the former is recommended in the Report of the Committee of the Medical Association, for 1859.

† The Registrar General's returns for the weeks ending June 20th, June 27th, July 4th, July 11th, and July 18th, report in the aggregate, the occurence of 42 deaths from small-pox, after vaccination.



general health; the transmission of other diseases by the operation† are each and all subjects of keen discussion. While theorists contend, facts reveal the truth. The Registrar General's *Weekly Return*, January 10th, 1863, reports that "a boy, aged one year, died of Scrofula, caused by impure vaccination." The excellent Sir Culling Eardley has since fallen a victim to re-vaccination. The *Medical Times* of May 30th last, records the decease of a lady from the same cause.‡ The great increase of infant mortality, amounting in the aggregate to 254,000 deaths in the seven years immediately succeeding the passing of the Compulsory Vaccination Act, is ominously suggestive. The fact is equally so, that this mortality is to a considerable extent proportionate to the vaccinations performed.§ "Does Vaccination prevent Small-pox?" asks "C.T.P.," a medical practitioner, in a letter to the *Daily Telegraph* of May 18th, 1863. "As at present performed it appears doubtful, seeing that 81 per cent. of the Small-pox Hospital patients, recently admitted, were found to have been vaccinated; and already, in the first three months of the present year, between forty and fifty have died who had been vaccinated." "These facts," continues the same writer,

† Referring to this question, M. Ricord, a high medical authority, in a lecture recently delivered by him at the Hotel Dieu, Paris, said, "If ever the transmission of disease with vaccine lymph is clearly demonstrated, *Vaccination must be altogether discontinued*, for, in the present state of science, we are in possession of no criterion which may permit the conscientious practitioner to assert, that the lymph he vaccinates with is perfectly free from admixture with tainted blood."

‡ This lady was re-vaccinated on the 14th of May, from "good matter from the vesicle of a healthy child." "On the following morning very singular symptoms had set in; the arm was much swollen, and had a dark purplish hue, much resembling bullock's liver, the punctures nearly invisible, and the whole region of the operation presenting the appearance of having been bitten by some venomous reptile. Remedies were applied, but the patient rapidly grew worse; other professional advice was necessary, and Dr. Bridge, of Argyll-place, Mr. Tatum, of St. George's Hospital, and Dr. MacKenna, of Great Marlborough-street, attended; but the symptoms entirely baffled their skill and experience, and the patient died at midnight of the 18th, of (as agreed by the gentlemen named) phlegmonous [inflammatory] erysipelas."—*Letter of Mr. J. W. Wells, Assistant-Surgeon, of many years' practice.*

§ On March 7th, 1859, Lord Granville, the President of the Privy Council, stated to the House of Lords, that the vaccinations performed bore certain proportions to the births in a series of years. The Right Hon. R. Lowe, in his speech to the House of Commons, on the 10th of July, 1861, gave the Statistics of Infant Mortality, for eight years. The following is a tabular result of such statements :—

| Date. | Proportion of Vaccinations to Births. | Deaths from all causes under one year. |
|---|---|---|
| 1853* .. .. | 33 per cent. .. .. | 318,000 |
| 1854 .. .. | 65 ,, .. .. | 408,000 |
| 1855 .. .. | 56 ,, .. .. | 354,000 |
| 1856 .. .. | 54 ,, .. .. | 350,000 |
| 1857 .. .. | 52 ,, .. .. | 338,000 |
| 1858 .. .. | — ,, .. .. | 341,000 |
| 1859 .. .. | — ,, .. .. | 335,000 |
| 1860 .. .. | — ,, .. .. | 354,000 |

* Compulsory Vaccination Act passed, 20th of August.

"are serious, and there is no wonder that the public—rich and poor alike—are ever asking the question, 'What's the use of vaccination?' and thousands are disinclined to run the risk of being impregnated with diseases which may be conveyed into their system by vaccine lymph."*

Small-pox, notwithstanding the general prevalence of vaccination—more general perhaps than at any previous period—notwithstanding the enforcement of vaccination by an un-English law, and an annual expenditure in England and Wales alone, from private sources and public funds, of probably £200,000 or £250,000 for its performance,—notwithstanding the great improvement in the treatment of small-pox, and the attention of late years to sanitary reform†—notwithstanding this despotic legislation—this vast expenditure—this amelioration in treatment, small-pox still yearly slays its hundreds and its thousands. Of this, the following statistics, courteously furnished by the Registrar General, are lamentably illustrative :—

DEATHS FROM SMALL-POX IN ENGLAND AND WALES, 1851-61, (INCLUDING LONDON).

| | |
|---|---|
| 1851 .. .. .. | 6997 |
| 1852 .. .. .. | 7320 |
| 1853 .. .. .. | 3151 |
| 1854 .. .. .. | 2803 |
| 1855 .. .. .. | 2525 |
| 1856 .. .. .. | 2277 |
| 1857 .. .. .. | 3936 |
| 1858 .. .. .. | 6460 |
| 1859 .. .. .. | 3848 |
| 1860 .. .. .. | 2749 |
| 1861 .. .. .. | 1320 |
| 1862 not at present known | |
| Mortality in 11 years .. .. | 43,391 |

* The concluding portion of this gentleman's letter is too interesting and important not to be given :—"The people are taxed, and so far from small-pox being prevented, there is not the slightest doubt that filthy diseases have been conveyed from child to child, while the vaccine lymph has been held in abeyance. Jenner maintained that vaccination was preventive for life. Now, seeing that vaccination is a failure, septennial vaccination is proposed. That which you call 'stupid mistrust' on the part of the public, is well-founded doubt, I have had considerable experience, in my professional capacity, of small-pox, and have just attended a lady, who had been vaccinated, for confluent small-pox in its most severe form. There is no doubt, sir, that public faith in vaccination is shaken, and the remedy is, not to enforce it upon an unwilling people, but to appoint a Royal Commission to inquire into the whole subject. In the meantime, let there be provision for the reception of small-pox cases, in an hospital, in the South of London, and another at the East-end of London, near those foul and fetid hovels where, as you properly remark, small-pox is generated. Did your space permit a longer letter, I could produce much startling evidence to show that small-pox has never been diminished by vaccination. As you say, 'In the present century, we have so long enjoyed a comparative immunity, that we have reposed in fancied security.' Small-pox as a direful malady, had faded away in this country before vaccination was fashionable. Statistics which I could furnish prove this fact."

† Both means highly contributory to a diminution of the fatality of small-pox, but appropriated to the enhancement of vaccination.



DEATHS FROM SMALL-POX IN ENGLAND AND WALES IN 1861, (INCLUDING LONDON).

| | |
|---|---|
| All ages .. .. .. .. | 1320 |
| Under 1 year .. .. .. | 530 |
| 1 year .. .. .. .. | 153 |
| 2 ,, .. .. .. .. | 98 |
| 3 ,, .. .. .. .. | 73 |
| 4 ,, .. .. .. .. | 69 |
| Under 5 years .. .. | 723 |
| 5 years .. .. .. .. | 140 |
| 10 ,, .. .. .. .. | 60 |
| 15 ,, .. .. .. .. | 72 |
| 20 ,, .. .. .. .. | 89 |
| 25 ,, .. .. .. .. | 100 |
| 35 ,, .. .. .. .. | 62 |
| 45 ,, .. .. .. .. | 51 |
| 55 ,, .. .. .. .. | 17 |
| 65 ,, .. .. .. .. | 3 |
| 75 ,, .. .. .. .. | 1 |
| 85 ,, .. .. .. .. | 2 |
| 95 and upwards .. .. | — |

DEATHS FROM SMALL-POX IN LONDON FROM 1850 TO 1862 (BOTH INCLUSIVE).

| | |
|---|---|
| 1850 .. .. .. | 498 |
| 1851 .. .. .. | 1066 |
| 1852 .. .. .. | 1166 |
| 1853 .. .. .. | 217 |
| 1854 .. .. .. | 676 |
| 1855 .. .. .. | 1024 |
| 1856 .. .. .. | 422 |
| 1857 .. .. .. | 154 |
| 1858 .. .. .. | 247 |
| 1859 .. .. .. | 1156 |
| 1860 .. .. .. | 877 |
| 1861 .. .. .. | 215 |
| 1862 .. .. .. | 345 |
| Mortality in 13 years .. | 8163 |

DEATHS IN THE SMALL-POX HOSPITAL, REGISTERED IN THE FIFTY-TWO WEEKS ENDING SATURDAY, 27TH DECEMBER, 1862.

| | |
|---|---|
| Males .. .. .. | 36 |
| Females .. .. .. | 20 |
| Total .. .. .. | 56 |

DEATHS FROM SMALL-POX, IN LONDON, IN THE QUARTER ENDING—

| April 2, 1859. | Mar. 31, 1860. | Mar. 30, 1861. | Mar. 29, 1862. | March 28, 1863. | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Under 20 years. | 20 and under 40. | 40 and under 60 | 60 and upwards. | Total. |
| | | | | 296 | 103 | 23 | None. | |
| 201 | 464 | 73 | 37 | | | | | 422 |

DEATHS FROM SMALL-POX, IN LONDON, REGISTERED IN THE EIGHTEENTH WEEK OF EACH OF THE FOLLOWING YEARS :—

| May 7, 1853. | May 6, 1854. | May 5, 1855. | May 3, 1856. | May 9, 1857. | May 8, 1858. | May 7, 1859. | May 5, 1860. | May 4, 1861. | May 3, 1862. | May 2, 1863. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 12 | 15 | 8 | 2 | 3 | 26 | 18 | 8 | 2 | 68 |

DEATHS FROM SMALL-POX, IN LONDON, REGISTERED IN THE WEEKS ENDING RESPECTIVELY—

| 1863.–Deaths. | 1863.–Deaths. | 1863.–Deaths. | 1863.–Deaths. | 1863.–Deaths. | 1863.–Deaths. |
|---|---|---|---|---|---|
| Jan. 3 .. 35 | Feb. 7 .. 28 | Mar. 7 .. 42 | Apr. 4 .. 45 | May 2 .. 68 | June 6 .. 56 |
| „ 10 .. 24 | „ 14 .. 23 | „ 14 .. 47 | „ 11 .. 68 | „ 9 .. 71 | „ 13 .. 43 |
| „ 17 .. 21 | „ 21 .. 25 | „ 21 .. 45 | „ 18 .. 62 | „ 16 .. 61 | „ 20 .. 64 |
| „ 24 .. 17 | „ 28 .. 42 | „ 28 .. 34 | „ 25 .. 65 | „ 23 .. 68 | „ 27 .. 49 |
| „ 31 .. 39 | .. .. | .. .. | .. .. | „ 30 .. 68 | .. .. |

Total number of deaths returned during the present year, to June 27th, 1210.

It will thus be seen that no fewer than 43,391 persons were victims to small-pox in England and Wales in eleven years; that of those who died from the disease in 1861, more than half were under five years of age.* And that during the portion of the present year already expired, more than 1200 have died of it in London alone.

Humanity, groaning and writhing under so loathsome a disease—Affection, with tears, mourning her bereavements—Philanthropy, wistfully gazing heavenward for relief, each imploringly ask, Is there nought in Creation to alleviate this suffering, and to avert this

* The Compulsory Vaccination Act requires, with certain special exceptions, under a penalty not exceeding twenty shillings, the Vaccination, within four months after its birth, of every child born in England and Wales since August 1st, 1853.



mortality? There is. In the Providence of GOD a remedy has been discovered, a remedy so simple as to be perfectly innocuous, and so efficacious, as in any stage of this dreaded disease to be uniformly effectual. THREE THOUSAND CASES of small-pox cured by the Bi-tartrate of Potash—Cream of Tartar—attest its virtues. Taken at the first stage of the disease, it at once arrests the fever and restores the patient. Administered when the sufferer, burning, swollen, livid, delirious, apparently ready to die, it has given relief and effected a cure.

The discovery of the specifical virtues of cream of tartar in small-pox, was made by the writer's father, the late Mr. T. Rose, of Dorking, in 1826. "Thinking"—to use his own words—"Cream of Tartar a good thing for fever," he applied it to the cure of small-pox. The experiment was highly successful. Shortly after this discovery, Mr. Rose tested the virtues of the specific in the cases of 1000 persons, inoculated by himself. Legal proceedings were thereupon instituted against him. A trial at Kingston, towards the close of 1827, terminated however in his favour, and a popular demonstration, in January, 1828, took place in consequence. During the 20 years succeeding this period, the opportunities for still further trying the efficacy of the remedy were both frequent and numerous. In August, 1848, Mr. Rose, by the advice of the late W. J. Denison, Esq., long the parliamentary representative of the county, and afterwards of the Western division of Surrey, addressed a letter, respecting his discovery, to Sir George Grey, Her Majesty's Secretary of State for the Home Department. It was thought, and not unreasonably perhaps, that a boon so invaluable to the nation, deserved a nation's reward. An offer was made, therefore, to disclose the discovery, on a guarantee of remuneration. Mr. Denison, who had an intimate acquaintance with the success of the remedy, not only allowed the use of his name as a referee, but kindly exercised his good offices also, in forwarding the communication.

The following is the letter referred to :—

"Sir, "*August*, 1848.

"I am induced at the repeated solicitation of friends to acquaint you, that I am in possession of an effectual remedy for the Small-pox, which I now offer to make public on a satisfactory remuneration being given to me.

"I have used the remedy referred to, for the last 20 years, in the cases of patients of various ages, in every stage of the disease, and under the most desperate circumstances; sometimes after being given up by members of the medical profession, at whose request I have subsequently attended the patient, and have found it perfectly efficacious, not only in the prevention of death, but in so destroying the virulent character of the disease, as to render it comparatively harmless, even to the prevention of disfigurement from its effects.

"The cases of more than 3000 persons, in and around this neighbourhood, have during the time named been treated with perfect success, solely by the means I have

employed. Out of the large number who have been under my care, but one fatal case has occurred, that of a child, whose death (as its medical attendant is willing to certify) was not caused by one, but by a complication of diseases. I feel it right to state, that about 1000 of the number specified were inoculated by myself previous to the passing of the law for its prohibition. I beg to express my willingness to demonstrate the efficacious nature of the remedy employed, by its effects on a reasonable number of patients in any part of the kingdom, on receiving a guarantee of remuneration on satisfactory success.

"I have been an inhabitant of this town the last 40 years, and long known to W. J. Denison, Esq., M.P., who has kindly consented to give his attestation to the respectability of my character. If requisite, I can also refer you with confidence to other gentlemen of the neighbourhood.

"I shall be honoured by your favouring me with an interview, when I should be able to explain the matter more fully, and I trust to your satisfaction.

"Waiting your reply,

"I have the honour to be, Sir,

"Your most obedient and humble servant,

"THOMAS ROSE.

"*To Sir George Grey, Bart.,*
"*Secretary of State for the*
"*Home Department.*"

A reply to this communication, from the Home Secretary, dated the 19th of the same month, briefly informed Mr. Denison that Mr. Rose's letter had been transmitted to the Council Office, as the subject belonged to that department. Nothing further, however, was heard of the matter.

The appointment of Sir Benjamin Hall to the General Board of Health presidency was regarded with hope. The subjoined letter was therefore addressed to him:—

"*Dorking,*
"*June 14th,* 1854.

"Sir,

"I beg most respectfully to enclose for your perusal, a copy of a letter addressed some time since to Sir George Grey, Bart., together with his reply to the late W. J. Denison, Esq.

"Permit me also to submit the same subject to your considerate attention.

"Since the date of the enclosed letter, the efficacy of my remedy for small-pox has been repeatedly and uniformly demonstrated, in some instances as recently as the last few weeks.

"I deem it right at once and frankly to state that I am not a member of the medical profession.

"I am willing, as far as my present health will permit, to adhere to the conditions proposed in my letter to Sir George Grey, and should be happy in giving a fuller explanation by an interview.

"Awaiting your reply,

"I am, Sir,

"Your most obedient servant,

"THOMAS ROSE.

"*To Sir Benjamin Hall, Bart.,*
"*President of the General*
"*Board of Health.*"

The letter from Sir G. Grey to Mr. Denison was enclosed with this communication, but the receipt of the latter was not even acknowledged, and the former never returned.

All hope of attention in the official quarters applied to thus being gone, Mr. Rose, in the following spring, addressed a petition to



Parliament. In this petition the secret of the discovery was disclosed. This step was taken on the recommendation of the late T. S. Duncombe, Esq., the representative of Finsbury.

The petition was presented to the House of Commons on the 31st of March. The following is a copy:—

"*To the Honourable the Commons of Great Britain and Ireland, in Parliament assembled. The humble Petition of* THOMAS ROSE, of West Street, Dorking, in the county of Surrey, *Sheweth*:—

"That your Petitioner, in the year 1826, discovered Cream of Tartar to be a specific for the fever of Small-pox, and has since found the remedial action of the same to be assisted by Rhubarb.

"That your Petitioner, from the said year to the present time, has tested the virtue of his discovery in the cases of considerably more than 3000 persons, about 1000 of whom were inoculated by your Petitioner before its legal prohibition, and the remainder having imbibed small-pox by infection.

"That your petitioner has proved the uniform efficacy of his remedy in every stage of small-pox; in many instances when those under its influence had been given over by their medical attendant.

"That of the vast number of those who have been under the treatment of your Petitioner, but one—a child suffering from Whooping Cough at the same time—has fallen a victim to small-pox, and that, therefore, your Petitioner has the strongest reason to believe that, the fatality which too frequently results from small-pox, might by the employment of his remedy be averted.

"That by administering the said specific on the first development of small-pox, and the adoption of a mode of treatment which your Petitioner is about to publish, he has invariably found that the fever is speedily allayed, the patient soon restored to health, and disfigurement prevented.

"That your Petitioner respectfully submits, that by the prompt administration of his specific, and the adoption of his mode of treatment, they become thereby not only the means of cure, but of prevention also, inasmuch as the probability of infection to others is greatly diminished, if not entirely removed.

"That your petitioner has not employed his remedy professionally, nor for any fee, and hereby makes it known to your Honourable House for the general good, believing, as he does, that its publication will prove a blessing to the world.

"Wherefore your Petitioner humbly prays your Honourable House to take such steps as in its wisdom it may see fit, to test and to publish the virtue of the said remedy; and specially, that this his petition may be printed with the Votes of your Honourable House.

"And your Petitioner, as in duty bound, will ever pray.

(Signed) "THOMAS ROSE."

The hopes raised by the presentation of this important petition were doomed to disappointment. Its prayer was not complied with. The following notice of it, however, was given in the Eighteenth Report of the Select Committee on Public Petitions (31st March, 1856):—

"SMALL-POX.—For inquiry as to Invention. 6716. March 31. THOMAS ROSE, of West Street, Dorking, in the county of Surrey, *(Mr. Henry Drummond)*.... 1.

"The Petitioner states, that in 1826, he discovered Cream of Tartar to be a specific for the fever of Small-pox, and has since found the remedial action of the same to

be assisted by Rhubarb; he has tested his remedy unprofessionally, and without fee, in upwards of 3000 cases, and proved its efficacy in every stage of that disease, only one person of all those cases, a child suffering from Whooping-cough, having fallen a victim; he considers that the publication of such remedy would prove a general blessing; and prays the House to adopt measures for testing and publishing the same, and also that his Petition may be printed with the Votes."

A second reference to the remedy, as follows, is to be found in the Forty-sixth Report of the Select Committee on Public Petitions (16-19th June, 1856):—

"VACCINATION.—For inquiry 12,775. June 19. Edward and Hannah Batchelor, inhabitants of Dorking, in the county of Surrey,* *(Dr. Michell)*....2.

"The Petitioners state that they are convinced that Vaccination is not a preventive of Small-pox; that pernicious effects sometimes result from Vaccination; and that Cream of Tartar, assisted by Rhubarb, is a specific for that disease; and they pray the House not to sanction an Extension of Compulsory Vaccination, but to direct an investigation into the said remedy."

The decease of Mr. Rose occurred in July, 1858, and in the following year the writer obtained insertion of a paragraph relative to the remedy, in the *West Surrey Times*. A copy of this paragraph was forwarded to the leading metropolitan and provincial journals. Editorial—perhaps Esculapian—censorship; consigned it however, in the great majority of instances, to the waste basket.

The severe small-pox epidemic in the metropolis, during the present year (1863), called again for action.

A petition was therefore addressed by the writer to the House of Commons. The statements as to the discovery and success of the specific, contained in the late Mr. Rose's petition, were recapitulated, and the prayer repeated, that the House would "take such steps as in its wisdom it might see fit, to test and publish the virtues of the said remedy." The petition was presented on the 4th of May, by J. I. Briscoe, Esq., M.P. for West Surrey. Some technical objection to its being printed existing, Mr. Briscoe vainly attempted to obtain for it a place with the votes of the House. The *West Surrey Times* of May 2nd anticipated its presentation by inserting the petition *in extenso*, and by a leading article upon it. Referring to the supposed remedy for small-pox, the *Sarracenia Purpurea*,† the article referred to went on to remark—"This vegetable product may, for ought we know, possess all the remedial virtue ascribed to it; but why, it may be asked, travel so far distant for a little known remedy, when one familiar to us all exists at home? If what is stated in a petition, which we print under our Dorking heading, be authentic, the pure Bi-tartrate of Potash, popularly known as Cream of

* Some of the petitioners' children were afflicted with eruptions through vaccination, and caught the small-pox shortly after the operation. They were speedily cured by Mr. Rose's remedy. Hence the petition.

† It has been since stated that the *Sarracenia* "has failed entirely to do any good."



Tartar, equals, if not surpasses, in its antidotal efficacy, any other remedy for small-pox. As will be seen by a perusal of the petition referred to, the discoverer of this alleged specific—Mr. T. ROSE, of Dorking—some two or three years before his decease, communicated his discovery to Parliament. No notice however, was taken of his petition, and he went to his grave with the simple reward of having performed a duty. The fearful mortality from small-pox now prevailing is surely enough to incite attention to what is alleged to be so efficacious a remedy. If in the hands of its unprofessional discoverer its success was so remarkable, what might it not be made to effect by the application of medical science and skill? The public health and safety, menaced by the presence of a fatal epidemic, demand for it, at least, a respectful consideration and an impartial trial."

Two days only were allowed to elapse before a copy of the article alluded to, and of the writer's petition, were enclosed to the Privy Council. The subjoined letter was at the same time addressed to their Lordships:—

"*Dorking*,
"*May 4th*, 1863.

"My Lords,

"I beg leave most respectfully to solicit your attention to the specific for Small-pox, referred to in the petition and article enclosed.

"Permit me, my Lords, to express my willingness, freely and unconditionally, to lay before your Lordships all the details in my possession relative to the remedy referred to, and to the mode of treatment so successfully adopted by my late father, for the cure of small-pox.

"Allow me, my Lords, to indulge the hope that, at the present time when the prevalence of Small-pox in the metropolis is so extensive, and the mortality from it so lamentably great, a remedy so simple, so harmless, so efficacious, and so universally applicable, may receive your Lordships' prompt and favourable consideration.

"Awaiting your Lordships' commands,

"I beg to subscribe myself,

"*To the Right Honourable*
"*The Lords of Her Majesty's*
"*Privy Council.*"

"Your Lordships' obedient servant,
"CHARLES ROSE.

The following reply to this communication was afterwards received:—

"*Medical Department of the*
"*Privy Council Office*,
"*May 11th*, 1863.

"Sir,

"I am directed by the Lords of Her Majesty's Council to acknowledge the receipt of your letter of May 4th, informing their Lordships that you believe yourself to be possessed of a specific for the successful treatment of Small-pox, and enclosing (as an extract from the *West Surrey Times*) the copy of a petition, which you have addressed to the House of Commons, as well as some printed remarks on the same subject. And I am to state to you that their Lordships (according to their usual method of dealing with such communications) have transmitted your enclosure to the Small-pox Hospital.

"I am, Sir,

"*Charles Rose, Esq.*,
"*Dorking.*"

"Your obedient servant,
"JOHN SIMON.

A letter, as follows, detailing the remedy and treatment, was then addressed to the Small-pox Hospital :—

"Gentlemen, "*Dorking, May* 13*th*, 1863.

"I beg to inform you that my late father having discovered the purified Bi-tartrate of Potash to be a specific for the Variolous Fever, and having successfully tested the efficacy of his discovery in 3000 cases of Small-pox, I felt it a duty, specially during the prevalence of the present epidemic in the metropolis, to communicate this information to the Lords of Her Majesty's Privy Council.

"As in a reply to my communication, received yesterday, it is stated that their Lordships (according to their usual method of dealing with such communications) have transmitted my enclosure to the Small-pox Hospital; permit me to lay before you the details relative to the remedy referred to, and to the treatment of Small-pox, so successfully adopted.

"Shortly after the discovery alluded to was made, its uniform efficacy was proved in the cases of more than 1000 persons, inoculated by my late father. Many cases of natural Small-pox were treated contemporaneously, with unvarying success. Some of these cases were of a most desperate character, and had been given over as hopeless, by the medical attendant. In every instance however, soon after the administration of the specific, an improvement was perceptible, and a cure happily effected. A few years afterwards an unsuccessful case occurred, that of a child, who suffered from Whooping-cough simultaneously with the Small-pox. In the course of my father's great experience in the treatment of Small-pox, and his numerous opportunities of observation, he resolved on trying the efficacy of his remedy in the earliest stage of the eruption. The experiment resulted in the most gratifying success. It was uniformly discovered that by administering it at this stage of the disease, the fever was at once subdued, the eruption arrested, and suppuration prevented. It was no less gratifying to find, that no injurious result was observable from thus promptly checking the disease. The experience of years, in the cases of persons thus treated, has only served to confirm this statement.

"In the earlier years of his treatment of Small-pox, my father gave simply the Cream of Tartar dissolved in water, and administered cold. In cases were the patient was too ill to swallow, a draught of it was given with a feather applied to the lips. Rhubarb was however afterwards administered in conjunction.

"The following are the proportions :—

"Cream of Tartar—½ oz.
"Rhubarb—12 grains.
"Water—1 pint.

"Half a pint of the medicine was given to an adult, in the early-stage cases, on the first appearance of the eruption, and the same quantity repeated as a dose, in three or four hours afterwards. It is worthy of remark however, that in recent instances, only one of the doses indicated, or the same quantity (half a pint) administered in two doses, has been given with equal benefit.* The uniform result from administering the medicine at any subsequent stage of the disease has been the speedy subjugation of the fever, and a remarkably rapid cure of the patient. The time occupied however, in perfecting recovery is to some extent dependent on the severity of the case, and the stage attained by the disease. In cases characterized by delirium, great benefit has been obtained by applying a bottle of hot water to the feet. Particular attention has been paid to the ventilation of the patient's apartment; to administering all beverages cold; and to his abstaining from everything promotive of fever. Pastry has been prohibited. Meat also, except in cases when excessive suppuration has so exhausted the patient as to render nutriment of that nature indispensable. These restrictions, however, refer chiefly to the more advanced cases. In the earlier ones they have been found unnecessary. The later-stage patient has been directed to get up, and have his clothes put on as soon as possible. An out-door airing at the earliest period practicable has been invariably recommended. But little pitting has resulted, even in the severe cases, under this treatment; and as will be readily imagined, none in those promptly attended to. In a

* Subsequent experience has shown that, in severe cases especially, a half-pint dose should be administered.



considerable number of cases, some of the worst character, the patients had been previously vaccinated.

"The great importance of arresting the disease at the earliest stage, and thus, in a great degree, preventing its propagation, must be apparent.

"I have thus endeavoured, gentlemen, to give you the details both as to my father's remedy and treatment. Should you desire further information, and I be able to give it, it will give me pleasure to furnish it.

"I have thought it desirable to note down a few of the cases for publication, some of these were treated by my father, others have come under my own observation; they extend over a period of seven years, the most recent occurring during the present week.

"It has given me satisfaction to receive lately the testimony of two members of the medical profession, in this locality, to the efficacy of the specific referred to.

"At the request of my brother-in-law, the late G. Tranter, Esq., for many years Superintendent Surgeon of the Malwa Contingent, Mehidpoor, Central India, the remedy and treatment herein detailed were forwarded to him. His lamentable death however, a few weeks after its receipt, prevented the realization of his intention to test them.

"I need scarcely state, that after the lengthened experience of my father in the success of his discovery, combined with the professional testimony alluded to, and my own observation, I have the strongest confidence in its remedial virtues.

"It is now more than fourteen years since it was first submitted to the attention of Government, and, judging from the oft-repeated proofs of its efficacy, both previously and subsequently, there is every reason to believe, that had it been then adopted, the frightful mortality from Small-pox, which has since occurred, might have been almost entirely, if not wholly averted.

"It would be ungenerous, not to say unjust, to suppose, seeing, it has now been transmitted to you by Her Majesty's Privy Council, that it will not receive from you an immediate and impartial trial. I shall await with interest, and confidence, to hear the result.

"Reserving the right of publishing with other correspondence in my possession, this communication, and any other I may receive from or make to you on this subject.

"I beg to subscribe myself, Gentlemen,
"Yours most respectfully,
"CHARLES ROSE.

"*The Medical Officers of the*
"*Small-pox Hospital.*"

"P.S.—Since writing the above I have heard, with the highest gratification, of the demonstrated efficacy of the specific at a period prior to the appearance of the eruption. The important question now arises whether, if administered to individuals exposed to small-pox, it might not prove an invaluable prophylactic.—This is being tested."

The receipt of this communication was acknowledged by the following letter :—

"*Small Pox and Vaccination Hospital,*
"*Highgate-hill, Upper Holloway, N.,*
"*London, May* 18*th*, 1863.

"Sir,

"I beg to acknowledge the receipt of your communication respecting the use of Cream of Tartar in Small-pox.

"It shall have an impartial trial. I shall test it as I did lately the *Sarracenia*, by selecting the severe cases admitted in the early stage, that have never been vaccinated.

"I will inform you of the result of the trial.

"I remain, Sir,
"Your obedient servant,
"J. F. MARSON,
"*Surgeon.*

"*Charles Rose, Esq.*"

The contents of the subjoined letter will explain the reasons for its communication :—

"My Lords, "*Dorking, May 26th*, 1863.

"I beg most respectfully to acknowledge the receipt of a letter from the Medical Officer of your Most Honourable Council, in reply to my communication to your Lordships relative to my late father's specific for small-pox.

"I have the honour to state also that, being informed your Lordships had transmitted my communication to the Small-pox Hospital, I addressed a letter on the 13th instant, to the medical officers of that institution, fully detailing the remedy referred to, and the treatment adopted in conjunction with its administration. In a reply to this letter, from the Resident Surgeon of the hospital, I am apprised that an impartial trial shall be given to the specific, and the result communicated.

"Permit me, my Lords, to acquaint you that, since addressing my former communication to your Most Honourable Council, I have ascertained the interesting fact that, in a case of small-pox occurring some time since, the remedy alluded to was efficaciously administered, before the manifestation of febrile symptoms. This circumstance seems to indicate that Cream of Tartar is an antidote to the variolous virus. The accuracy of this supposition appears to be confirmed by its speedy and extraordinary efficacy in cases where the poison has exerted a terrible influence throughout the system. Considerations of a scientific character point to the same conclusion. Should the supposition be a correct one, the important question would then arise, whether Cream of Tartar administered to persons exposed to small-pox infection might not prove an invaluable prophylactic. An incident indicative of this, is to be found in the remarkable exemption from small-pox in the wine-producing districts of France.

"Allow me, my Lords, most respectfully to beg your especial attention to the inestimable value of my late father's specific in the earlier stages of small-pox. When administered at this period, the fever is in two or three hours subdued, the eruption arrested, and suppuration intercepted. Your Lordships will at once perceive the great importance of thus, in a great degree, if not entirely, preventing the propagation of the disease, and wholly avoiding disfigurement. The details of a number of cases, illustrative of the truth of these assertions, are in my possession, and should your Lordships desire me to do so, I will transmit them to your Most Honourable Council, with the names and addresses of the parties.

"I have much pleasure in enclosing for your Lordships' perusal, a certificate as to his observation of my late father's remedy, given by T. Napper, Esquire, a member of the medical profession, and long a resident in this town.

"I respectfully beg that your Most Honourable Council would be pleased to order an investigation to be made, as to the prophylactic virtues of Cream of Tartar in regard to small-pox infection, and that the efficacy of this remedial agent may be thoroughly tested, antecedently to, and at the commencement of the eruptive stage of the variolous disease.

"Most respectfully soliciting your Lordships' acquiescence in the publication of the correspondence on this subject,

"I beg to subscribe myself,
"Your Lordships' obedient servant,
"CHARLES ROSE.

"*The Right Honourable*
"*The Lords of Her Majesty's*
"*Privy Council.*

The following is the certificate generously and disinterestedly given by Mr. Napper :—

"*Dorking, May 12st*, 1863.

"I hereby certify that, while many years one of the medical officers of the Dorking Union, I had numerous opportunities of observing the very remarkable efficacy of the late Mr. Thomas Rose's remedy for small-pox. Particularly amongst the poor the remedy was a most popular one, but at the time referred to, I was not acquainted with its nature, though astonished at its extraordinary success.

"THOMAS NAPPER, M.R.C.S., &c."

---

A communication, as follows, was received from the Medical Officer of the Privy Council, in reply to that addressed to their Lordships on the 26th of May :—

"*Medical Department of the Privy Council Office*,
"Sir, "*May 29th*, 1863.

"I am directed by the Lords of Her Majesty's Council to acknowledge the receipt of your letter of May 20th, and to say that their Lordships will deal with this letter as they dealt with your communication of May 4th.

"With regard to your publishing the correspondence which you have had with their Lordships, my Lords have no opinion to express.

"I am, Sir,
"Your obedient servant,
"JOHN SIMON.

"*Charles Rose, Esq.*,
"*Dorking.*"

Other correspondence with the resident Surgeon of the Small-pox Hospital has since taken place. The publication of it is postponed, at least, for the present.

---

On the 8th of June, the writer, acting on the advice of a medical gentleman, long engaged in professional duties in India, addressed a letter to Sir Charles Wood, Bart., Her Majesty's Secretary of State for that Dependency.

In this communication a reference was made to "the inestimable value of so efficacious and innocuous a remedy, to a country suffering from small-pox so much as India; a remedy not opposed to the predilections of caste, nor affected by the temperature of climate." An allusion was made, in the letter referred to, to the probable preventive properties of the bi-tartrate, and a request preferred, in conclusion, that Sir C. Wood might, "direct the transmission of this invaluable remedy to India, and that its curative and prophylactic virtues may be there tested."

A reply to this communication, dated July 4th, acknowledged its receipt, and informed the writer "that as the remedy in question

does not appear to have undergone the test of any extended trial by public authorities in this country, Sir Charles Wood must decline to comply with your request."

---

It will hardly be irrelevant to add that, during the Sheep Small-pox epidemic, prevailing some months ago, the attention of three or four large flock-masters in the West of England was directed to the bi-tartrate as a probable remedy. If, as some writers maintain, ovine variola is identical in nature with human, there is every reason to believe that, the specific for small-pox in man, would be equally remedial for the disease among sheep. The question is the more pressing just now, seeing that by a recent Government announcement, the practice of sheep inoculation increases the mortality from the disease, and that the experiments lately made with vaccination have proved "very unsatisfactory." The subject is surely one of sufficient importance to justify a trial of the bi-tartrate, both as a cure and a preventive. Should it be unsuccessful, little harm will result from the experiment, but if successful a great advantage would be gained for the grazier and the country.

---

"Facts," says an old, but true proverb, "are stubborn things." Living proofs of the efficacy of a remedy are the best evidences of its virtues. Theory may be good, as an incentive to experiment, but fact, as a proof of its correctness, is better. More than thirty years have elapsed since the large majority of the multitudinous cases referred to occurred. Comparatively few of late years have been treated by the specific, enough however to show that, while the dreaded and loathsome disease remains the same, the remedy, "safe, speedy, and certain" is equally efficacious to prevent its development, and to cure it in its most virulent form. The great value of the specific in at once arresting the progress of the disease, and the importance of its early administration, cannot be too emphatically insisted upon. Small-pox has its gradations of development. To stay its progress in the earliest stage possible, is the dictate of wisdom. If the virus can be antidoted before producing its mischievous effects, so much the better. To adopt effectual remedial



measures in the fever stage, is to intercept the eruption. To pursue the same course at the commencement of the eruptive, prevents suppuration.

In most of the cases about to be detailed, Rhubarb was administered in conjunction with Cream of Tartar; in others, the bi-tartrate alone. The names and addresses of the patients whose initials only are given, are in the possession of the writer.

The case of Mrs. Batchelor, of Stone Bridge, Dorking, is a remarkable one:—

In May, 1856, three of her children (whose cases will be presently detailed) had been suffering from small-pox, a fourth was failing, and a neighbour's family was then under the influence of the disease. Mrs. Batchelor herself was seized with the premonitory symptoms of small-pox, aching of the head and bones, general languor, and discomfort. The fever stage however, had not yet set in, for, to use her own words, she "had no eruption, no redness of skin, was not hot, but felt very unwell, in fact, quite ill." The late Mr. Rose saw her, when in this condition, and with his great experience in variola, at once pronounced the case to be one of small-pox. Mrs. Batchelor took one dose only of the remedy, was speedily better, and in a few hours after was perfectly well. Her infant, who was also evidently failing at the same time, was cured by the medicine taken by its mother.

Mrs. Batchelor had been three times vaccinated; in infancy, and when seven, and twelve years of age.

The following cases are illustrative of the efficacy of the remedy in the febrile stage:—

Wallace Batchelor, about eight years old, son of the last-named patient, was suffering from small-pox simultaneously with his mother. "Had great redness of skin, but no pimples." Took a quarter of a pint of the medicine at ten in the morning, was relieved in about two hours, and played about the house. "The redness of skin had all disappeared by the evening, and the next day he was out at play, as if nothing had been the matter." The patient had been vaccinated.

Michael Croly, a lodger's child, residing in the same house, was similarly attacked, and took the remedy at the same time as the previous patient. Was also "relieved in about two hours, and played about in-doors in the afternoon." The next day, was out of doors, apparently as well as usual. Had been vaccinated about two months before.

The subjoined recent cases, show the effect of the remedy in smaller doses:—

Mr. King, a basket-maker, residing at Leslie Park road, Croydon Common, had a severe attack of small-pox, in April last, and was professionally treated.

On Saturday, May 9th, a daughter, in her seventh year, was evidently failing with the disease. On that day and the following, the usual symptoms were developed. On Monday the eruption appeared, and toward the evening of the same day, had assumed a pustular form. Half a wine-glassful of the remedy was administered at 8 p.m., and

a quarter of a wine-glassful only, three hours afterwards. The diminished dose was continuously repeated. The fever had evidently abated after the third dose—or when a wine-glassful of the medicine had been taken. The eruption, the following morning, had considerably increased, but a marked difference was observable in that appearing after the fourth dose. The modified eruption was "weaker and watery." On Wednesday, the eruption generally was dying away. The administration of the medicine was discontinued on Saturday, when the child was "quite well." She had been vaccinated in infancy. An interesting and highly important feature in connection with this case is, that *the modified eruption had completely gone, within a week after its first appearance.* The *pustular eruption still remained, but was then "fading fast."* It is equally worthy of remark that, a slight pitting has resulted from the primary eruption. The facts of this case, and the experience in others, plainly indicate the necessity of a larger dose. Had this been given, it is more than probable that, the modified eruption would have never appeared. The interesting result however, has amply justified the experiment.

Two more cases afterwards occurred in the same family:—

On the following Monday (May 18th), a son, ten years of age was attacked. A wine-glassful of the remedy was administered at 9 a.m., and the fever abated in two hours. A second dose was given six hours afterwards, when "the fever quite left him." "Three red spots, of a hard substance, not watery," afterwards came out. On Wednesday, he was "busily at play, as though nothing had been the matter with him." The eruption was "clean gone within a week." The patient had been vaccinated.

In this case, had the dose been repeated in three, instead of six hours, or had a larger quantity—as in a previously reported case*—been given, even a papular eruption might have been prevented.

Another daughter, in her sixth year, was attacked simultaneously with her brother. Half a wine-glassful of the remedy was given at 4 p.m., on the same day, and repeated in six hours. The eruption in this case was of the same character as in the preceding one, but more copious. On Wednesday, the fever had quite left her. As in the previous case, the eruption had entirely disappeared in a week. This patient had not been vaccinated.

The necessity of a larger dose, or a more frequent repetition, in this case, as in the others, is evident. The escape from an attack, by other members of the family, is attributed to taking the bi-tartrate as a preventive.

A married daughter of Mr. King's, and her child, afterwards failed with small-pox. "took the medicine," and had the disease "very light." "They are neither of them pitted, for they had scarce any spots."

The three following cases are those of other children of a patient already referred to. They occurred a few days previous to her's:—

Alfred Batchelor, five years of age, was taken as with a bilious attack, was very hot, head swollen. He continued in this state for two or three days, during which he was in bed. About the third day an eruption appeared on his face. A quarter of a pint dose of the remedy was administered, and in little more than two hours an improvement had taken place. The fever had diminished, and the patient "looked brighter." In the afternoon of the same day he played about in-doors with the other children, and on the following day, was out at play as usual. The eruption, excepting on that side of the head which had lain on the pillow, had quite disappeared in two or three days. This child, remarkably enough, had been vaccinated about a week. "The arm rose more

* Case of Wallace Batchelor.



after the eruption came out. He had a very fine arm. *He got well of the small-pox before he did of the cow-pox!*"*

Lydia Batchelor, aged 13, failed a few days after the last-named patient. Swollen head; was very feverish and delirious. Medicine given at noon. At this time the eruption appeared "very thick under the skin, and some pimples were out." About three o'clock, the patient came downstairs perfectly sensible, and in the evening was so far recovered as to engage in play. The next day was out of doors, and helped her mother in household duties. Had been twice vaccinated.

William Batchelor, aged 11, was attacked simultaneously with his sister. With the exception of delirium, symptoms similar to those of last case. The remedy administered at the same time. Relief obtained in two hours, the patient at play in the afternoon. Next day appeared as well as usual. In two or three days the eruption had quite gone. Had been vaccinated. It is almost needless to add that neither this patient, nor any other member of his family, is pitted.

It is worthy of note, that a young man who played with the last two patients, on the day the specific was administered, failed with small-pox a fortnight afterwards, at Red Hill, (and not taking the remedy), had it very severely, and is badly pitted.

The subjoined case is remarkably illustrative of the efficacy of the specific in an early stage. It occurred in the Spring of 1856:—

Thomas Redford, aged 23, a carman, then and now residing at Dorking, was seized with the premonitory symptoms of small-pox. He was very unwell for two days, and on he third day the eruption appeared on the forehead, where his hat had pressed. Half a pint of the remedy was taken at 8 p.m. No more was administered afterwards. On the following morning, so great was the improvement in the patient, that he arose to breakfast and ate heartily of it. A copious eruption in its incipient stage, was plainly visible, on the hands of the patient and other parts of the body, "killed,"—to use his own expression—by the action of the medicine. An aperient was taken in the course of the morning. In the afternoon, the patient employed himself at digging in a garden, and the next day followed his avocation of carter, as usual. He has enjoyed good health ever since. As a proof that the complaint from which the patient was suffering was really small-pox, it may be mentioned that he contracted the disorder from sleeping with his brother, who suffered severely from the disease. It is equally certain that the case was not one "modified by vaccination," for, when about 13 years of age, 16 punctures on the right arm and 12 on the left, were made, "without effect," by the vaccine lancet. This patient's wife and child, and other members of his family residing at Kingsfold, near Warnham, Sussex, were also cured by the remedy.

W.R., aged 19, residing at Dorking, failed with small-pox in the spring of 1856. The attack was so severe that the disease became confluent, and the sufferer delirious. The patient had been confined to his bed some days when the specific was first taken. A bottle of hot water was applied to the feet, in conjunction with the administration of the remedy. The patient became sensible in little more than an hour, and his improvement was so rapid that in a few days after he walked a distance of several miles. He is but little pitted. He had been vaccinated in childhood; three cicatrices perfect.

* The question has been appropriately asked:—"If vaccination cannot neutralize a present virus, how can it neutralize at a far distant date, one which the system has not yet imbibed?"—To this interrogation the following may be added:—What semblance of argument for vaccination still remains, when by the use of a remedy, a patient recovers, more quickly and with less suffering, from small-pox—the disease sought to be prevented—than from cow-pox—the disease inflicted as a prophylactic?

Mrs. Worsfold, aged about 55, of the Surrey Yeoman Inn, Dorking, an aunt of the preceding patient, failed with the small-pox nearly at the same time. The remedy was taken soon after the eruption appeared, and the patient was speedily relieved.

A friend residing in one of the home counties wrote, after describing a case of small-pox, in March last :—

"Our third little boy had the same symptoms, followed in three or four days by a considerable eruption. The doctor pronounced it a case of small-pox. With some difficulty the cream of tartar was given. We could only administer about half a wine-glassful at the time, but its effects were apparent in removing the angry appearance of the pustules, and in preventing suffering. The doctor told me he should have regarded it as a case modified by vaccination. The little fellow has never been vaccinated."

The same correspondent, in a subsequent letter, wrote :—

"Our servant has also had the disease. Her's was a remarkable case. Two half-pint doses of the remedy were administered, and she had not the least trace of the eruption a week after it appeared."

He wrote also, in another letter :—

"Our minister called on Monday evening, saying, his two little boys after being poorly, had an eruption, similar to our boy. I gave him the remedy, and it was taken. The next day they were much better, and the following, nearly all traces had disappeared."

The subjoined cases demonstrate the remedial virtues of the specific, at a more advanced stage :—

John Ayliffe,* of Effingham, near Dorking, failed with small-pox, in March, 1855. The eruption appeared after the usual premonitory symptoms. It was not till two days had elapsed that the remedy was administered. A half-pint dose was given between six and seven in the evening, the patient being then in bed. He felt better in three quarters of an hour, got up and kept about till his usual bed-time. On the following day, the patient had still further improved, and on the day succeeding this, the eruption began to die away. Two or three almost imperceptible "pits" on the face, are all the traces of the disease now remaining.

T.R., aged 25, residing in a village near Dorking, was vaccinated in May, 1860, and a week afterwards failed with small-pox. The eruption had been pustular some days when the medicine was given. A half-pint dose of the medicine was taken by the patient one evening. The next day he was considerably better, and able to get out of doors. He got well rapidly from that time, without more medicine.

H.R., aged 18, was vaccinated at the same time as his brother, and failed with small-pox a day earlier. Had the disease very bad. "Was unable to turn in bed without help." Took a half-pint dose of the remedy, the same evening as the previous patient. The next day "was able to walk out in the garden." Took another dose only, in the afternoon of that day, and continued to improve rapidly, till well.

A young man, a neighbour of the last two patients, failed with small-pox about the same time, and was cured by taking a half-pint dose of the medicine when the eruption was coming out.

* The terribly severe case of this patient's brother is described in a letter, on p. 28.



Peter Hamshere, aged 33, residing at West Horsley, near Guildford, has been very recently cured by the remedy. Early in the present month (July), he was seized with the premonitory symptoms of small-pox—aching of the bones, and cold shivers. These symptoms continued several days. On Friday, the 10th, the eruption appeared, and on Sunday, the 12th, had become pustular. A half-pint dose was administered about noon, on the last-named day, and a second dose at five o'clock. He was considerably better in the evening, and the next morning felt able to work, and on the following resumed his usual employment.

Enough cases have been already detailed to show the specifical properties of the bi-tartrate in the earlier stages of small-pox. Others of a more severe and hopeless nature remain to be given. Many cases of this description, treated by the late Mr. Rose, in the years immediately succeeding his discovery, might be narrated. A preference of selection however, has been given to more recent cases, not because the remote ones were less illustrative of the remedial efficacy of the specific, but from the fact that the recent generally possess greater interest, and may be more easily confirmed or refuted.

---

The case of George Baker,* a little boy, residing at West-street, Dorking, was an extremely desperate one. Seized with small-pox, about Michaelmas 1847, the disease progressed till all hope had gone. The patient was blind and insensible, and lay utterly prostrate and apparently lifeless. It was thought at one time, indeed, that he was dead. While in this state as much of the remedy was given as could be. An hour and a half after its first administration the patient moved an eye. He gradually improved from that time till he perfectly recovered. The mother, and a brother of this patient, who severely suffered from the disease, and three other members of the family, were also cured by the medicine. One poor child had already died before the remedy was resorted to.

The case of Joseph Peters,† a young man, was a severe and well-nigh hopeless one. The disease had become confluent, and the patient delirious. He was sensible about two hours after the administration of the medicine, and got better from that time. This patient had been vaccinated, without effect, in childhood. He attributes his escape from death, solely to taking the remedy. The case occurred in 1850. A child of the patient's, and other relatives, were cured about the same time.

G.C., a carpenter, of middle age. A very bad case of confluent small-pox; occurring in 1849. The patient delirious, livid, "given over." Relieved in about two hours by a half pint dose of the remedy, and ultimately got well.

Mrs. Kempshall,‡ Edward-street, Kingsland-road, London, failed with the small-pox in the spring of 1846. She grew continually worse, till the disease had become confluent. Her head was much swollen. She was blind and delirious. A friend of the patient's, at Dorking, hearing of her dangerous condition, obtained the remedy, and visited her. A half-pint dose was administered between 9 and 10 p.m. The patient soon became sensible, and by four o'clock the next morning, could see. She got better from that time.

* The father of this patient, who recently narrated the case to the writer, is now living at Cape-place, Dorking.
† This patient now resides at Cotmandene, Dorking.
‡ Mrs. Kempshall has since died of consumption.

Another female, and her three children, residing in the same house as the last-mentioned patient, were attacked with the disease, took the remedy early, and were soon well.

Mr. Philip Muggeridge, of Manor Farm, Abinger, near Dorking, in a letter, dated June 12th last, relative to his being cured of small-pox by the remedy, writes :—

"My friends thought I should never recover, and, hearing of Mr. Rose, sent for him. He came, and gave me some of his medicine. I drank about one quart. My head was very much swollen, and I was very full of the pock all over. I was at a burning heat, and very thirsty. I was in bed: he made me get up, and come down stairs; and in one hour after I had taken his mixture,* the fever had left me. I was in no pain after, and got about directly. You can make use of my name if you like to do so. I am sure everyone ought to know such a valuable medicine."

The following letter, from a mechanic, conclusively attests the beneficial effect of the specific, in a desperately hopeless case. The patient had been vaccinated: —

"Sir, "*Deptford, June 14th*, 1868.

"I received your letter this week, and I feel a pleasure in answering it, respecting the cure of myself. When I was taken ill with the small-pox was on March 6th, 1855. When the eruption came out I was taken to bed, and a doctor sent for. He attended me six days. The seventh day he came, he gave no hope of my ever recovering. He told my friends it was impossible for me to live the night through. My head was swollen to twice the size it ought to have been, and my tongue swollen out of my mouth. I was totally blind for three weeks, and thought I should never see the blessed light again; but, thank God, I can see as well now as ever I could. The same evening that the doctor reported that it was impossible for me to live the night through, one of my neighbours, at Effingham,† saw my sister, and said, 'Why not go to Mr. Rose, at Dorking? he has done wonderful cures in small-pox,' and my friends sent to your father, and he sent two doses for me—one to take that evening. Then there was another trial—my friends thought me too far gone to take the medicine, and I believe my nurse gave it to me with a feather. Anyone would hardly believe how very much better I was the next day. Nearly all the fever gone from my throat, and I was able to swallow the second dose with pleasure. My throat was so very much better that I could take some gruel from that time. In the course of two or three days my nurse got me up, and into the next apartment, and in less than a week I could get there myself, although I was still totally blind. I continued to get better until my health was quite restored again; and, thank God, I am not very much pitted.

I should feel most happy, sir, to tell anyone who may please to enquire of me about my case, and I do most sincerely hope that you will be successful in your undertak ng. If anyone should wish to see me, I shall be at Leatherhead on Monday. I think, most likely, I shall be there for two or three months.

"I am, Sir,
"Yours very respectfully,
"*To Mr. C. Rose.* "William Aylieff.

"P.S.—If you should please to send anyone to see me, or write, my address will be :—'at Mr. Lipscombe's, Builder, Leatherhead, Surrey.' "‡

* In this case and the succeeding one, rhubarb was administered in conjunction with the bi-tartrate. In most of the very recent cases, subsequently reported, cream of tartar only was taken.

† A village, near Dorking, where the case occurred.

‡ The brother of the patient states, that the latter was totally insensible, and that his incoherent expressions were uttered in a whisper. The brother avers also, that the patient became sensible the same evening the specific was taken.



The following case is remarkably illustrative of the importance of proportioning the administration of the remedy to the severity, or otherwise, of the attack, and of combining a judicious treatment :—

On Friday evening, the 19th of June last, a young married lady residing in Surrey, was attacked with the premonitory symptoms of small-pox; pains in the back and head, weakness and weariness; so general was the prostration, indeed, that the patient felt almost unable to move. On the next day (Saturday), the fever had unmistakeably set in. Various cooling drinks were given without beneficial effect. The fever had increased on the succeeding day, and in the evening a few pimples were observable on one of the hands. On the following morning, the eruption had considerably increased, and was now apparent on the face and other parts of the body. A teacupful of the remedy* was taken at one o'clock. The fever abated, and by half-past four the pulse had fallen from 100 or 110 to 80. The same dose was repeated in the course of the evening, and a change in the eruption was perceptible on the following morning (Tuesday). A mistake was now committed.† Some porter was taken by the patient, and the fever slightly returned. Another dose of the remedy was administered in the evening, and on the following morning the febrile symptoms were completely gone. The return of the fever caused a slight increase of the eruption; this, however, was of a modified character, and soon disappeared. The patient's general health, preceding the attack, had not been strong. The continued presence of the fever doubtless, still farther reduced her strength. The administration of the remedy was postponed, two days, at least, too long. The delay arose however, from an uncertainty as to the nature of the ailment. Notwithstanding the unfavourable circumstances referred to, the patient continued to improve from the period when the secondary fever was subdued, and had so far regained her strength on the Saturday following, as then to attend to her domestic duties, and go out of doors. That the attack was one of small-pox is evident from the nature of the premonitory symptoms, from the depression which was observable in the centre of the three or four pustules arriving partially at maturity, and from a slight pitting resulting from them. Another circumstance contributory to such a conclusion was the prevalence of small-pox, to a considerable extent, in the neighbourhood. The patient had not been vaccinated. It ought not to be omitted to be stated that a youthful relative, residing in the same house, was seized with symptoms indicative of small-pox, and was speedily relieved by the remedy.

A letter received on the 10th instant (July), from Wick, near Littlehampton, gives the following interesting details :—

A young woman, named Eliza Baker, failed with small-pox. She was very unwell for two or three days. "Was coming out quite full" when the remedy was taken. She found great relief from it, and the eruption "quite went away." "The patient began taking the medicine on the 9th of June, and in two or three days was able to do her work."

Louisa Matthews, about 12 years of age, also failed. She took the remedy on the 21st of June. The eruption "was coming out very full on the face. She took nine wineglassfuls from Saturday night to Sunday night, and found great relief from it directly she took it." The disease had been very bad in the house.

"Eliza Carpenter, age about 38, felt very ill, took two wine-glassfuls of the remedy and found relief directly. The next day, as she was very thirsty, she took eight wineglassfuls more, and in a day or two was quite well."

* The following were the proportions :—Bi-tartrate of Potash, ½ oz., Rhubarb, 3 grs. (this quantity was substituted by mistake for 12 grs.), water, 1 pint.

† Since writing the above, it has been ascertained that a stimulant was taken on the two preceding days.

confirmed by a multitude of others, conclusively demonstrate that, for the fever of small-pox, the Bi-tartrate of Potash is an invaluable specific, and that, in all stages of the disease, its remedial virtues are uniformly efficacious. Should anyone, especially any member of the profession, be still sceptical, let him test the remedy on the first opportunity, and for the sake of humanity announce the result.

A perusal of the cases reported will have suggested that, judgment as to the administration of the remedy, and the treatment of the patient, must at all times be exercised. The severity of the attack, the age, mode of life, and constitution of the patient should each be considered. Under ordinary circumstances, and particularly in the earliest stage, the information conveyed in this pamphlet will be found amply sufficient. It is possible however, that cases of a complicated and difficult nature may arise—as they have arisen—demanding all the skill and experience obtainable. Amateur practice would then be unwise, and, might be disastrous.

The great importance of an early administration has been already insisted upon. The discovery that, by promptly adopting remedial measures, the progress of the disease is effectually stayed, is scarcely second in value to that of the specific itself.

Unlike many other medicinal agents, the cure for small-pox is neither dangerous nor injurious. Its very simplicity—a recommendation rather than otherwise—has been, in fact, the greatest obstacle to its adoption; its household familiarity the cause of its depreciation.

Doubtless, were the specific a novel product of distant shores, discovered by one eminent in science, or high in social position, a different reception, than that hitherto awarded, would have awaited it. The origin of a discovery however, does not affect its value, nor its treatment its importance. Prejudice may spurn, at first, a gift so common; interest, vested and selfish, may denounce it, yet these, strong though they be, must yield to truth. Resistance to fact is as futile as it is foolish. Opposition to good is more—it is criminal.

Whether welcomed or despised, the truth is now patent to the world, that "A SAFE, SPEEDY, AND CERTAIN CURE" FOR SMALL-POX HAS BEEN DISCOVERED, AND THAT THIS HITHERTO DREADED, DISFIGURING, AND FATAL DISEASE, BY THE BLESSING OF HEAVEN, NEED BE SO NO LONGER.

John Rose, Printer, Fore Street, Hertford.

# CANCER,

AND

# THE NEW MODE OF TREATING IT:

## WITH ILLUSTRATIVE CASES.

BY

C. H. MARSTON, M.D,

*Licentiate Royal College of Physicians, Edinburgh; Member Royal College of Surgeons, England; Physician to the North Wilts Dispensary, Devizes;*

AND

R. MACLIMONT, M.D.,

*Member Royal College of Surgeons, England, &c.; Physician to the Bath Homœopathic Hospital.*

[Reprinted from the BRITISH JOURNAL OF HOMŒOPATHY.]

LONDON:

TURNER AND CO., 77, FLEET STREET,
AND 106, NEW BOND STREET;
GROOMBRIDGE AND SONS, 5, PATERNOSTER ROW.
BATH: E. CAPPER, 33, GAY STREET.
DEVIZES: BULL; GILLMAN; RANDLE.

*Price One Shilling.*

LONDON:
PRINTED BY W. DAVY AND SON, GILBERT STREET, W.

# CANCER,

## AND THE NEW MODE OF TREATING IT:

### WITH ILLUSTRATIVE CASES.

---

The word Cancer, while suggesting to the mind one of the most fearful forms of human suffering, has unfortunately become equally suggestive of the grossest forms of quackery, and harpies, who would appear to regard the miseries of their fellow creatures as affording fair and legitimate scope for the exercise of their own fraud and avarice, have ever abounded in every community as the professed discoverers or possessors of some secret remedy or treatment, by the adoption of which they promise their too credulous dupes an easy and speedy riddance of their cruel enemy.

So intimate indeed has this supposed connection between quackery and Cancer become, that the respectable part of the profession have appeared unwilling to take any step whereby they might increase their knowledge of this disease, and have even looked suspiciously on the endeavours of those of their own body who have attempted to rescue the sufferers from the hands of ignorant and designing empirics. They appear to have come to the too hasty conclusion that Cancer is an incurable affection, and that the most that can be done is to alleviate somewhat the excruciating agonies which the disease entails on its unfortunate victims, especially in its latter stages.

Now we must confess our dissent from such views, and our want of sympathy with those who calmly consign the hapless sufferers to an inevitable, premature, and most painful death, and rather hold that just because the frequency of Cancer has been made the occasion of fraud by unprincipled charlatans, the profession ought to use every means to become better

acquainted with the nature of the disease, and to investigate new modes of treatment; and although we confess freely that past investigation and experiment have not yielded very satisfactory results, this ought but to stimulate us to further exertion, and to leave no means untried which might seem to hold out a reasonable hope of increasing our resources in the treatment of so dire a malady.

From these few introductory remarks our readers will see that we are not disposed to adopt the too sweeping conclusion to which the great bulk of the profession would seem to have come, that Cancer is *necessarily* an incurable disease. No doubt a great number of patients suffering from Cancer are incurably diseased, but we must never forget to draw the highly important distinction that exists between the essential incurability of a disease and the ability to restore a particular patient who may be suffering from such disease; for apart from the degree of malignancy which may attach to one or other form of Cancer, we must not forget to take into careful consideration—in judging of the suitability of a remedy to any given case—the history, symptoms, and duration of such case, as also the condition, age, hereditary tendency and habits of the patient. To expect to find a remedy which will infallibly cure *every* case of Cancer that may come before us is, we believe, a vain hope, which can never be realised so long as the laws of life and health are so powerfully influenced by the social condition and circumstances in which patients suffering from Cancer too often find themselves, and which we believe prepare them, as it were, for the influence of the direct causes of the disease.*

It is a matter of great importance to recognise the twofold domain of medicine and surgery which the treatment of Cancer must necessarily embrace; for although we regard it as remotely a disease of innervation affecting nutrition, still, as the result of the successive deposition of morbid products in the cellular structure of those organs which may happen to have a particular affinity for such deposition, we have a local heterologous formation, becoming itself a source of contamination through the poisoned blood to every portion of the body. And though we freely acknowledge that the great desideratum is to discover in the domain of medicine a remedy for the primary and remote abnormal condition in which the disease originates, still the aid of the surgeon will ever probably be required for the removal of the local mass of diseased cells; otherwise, as we have said, they would become so many *carriers* of disease, set afloat in the systemic circulation, and while this *source* of contamination exists, it is vain to hope that any internal remedies will suffice for the eradication of the disease; equally vain is it to suppose that the removal of the tumour is the removal of the disease while the dynamic condition in which it originated remains unaltered.

* Besides which we ever wish to acknowledge that the blessing which alone can make our best measures effectual must depend upon a higher hand than ours.



The treatment of Cancer, then, must be twofold—medical and surgical, and the more closely the two methods may be correlative to each other, the more scientific and complete our treatment, and the greater our prospect of success.

We propose briefly to hint at the points involved in the Pathology, Symptomatology, and Diagnosis of Cancer; still more briefly to discuss separately the various modes of Treatment now in vogue; then at greater length to describe the Treatment we adopt, Surgical and Medical; and, in conclusion, to insert an account of some Cases so treated by us.

## Pathology.

The pathological characteristics of Cancer are such as clearly to separate it from every other morbid growth. Tumours there are of various kinds which constitute disease only from the position in which they are found, their component elements being the same as those of the healthy tissues of the body; thus fat, cartilage, and bone, which, when occupying their proper places, are essential to the perfection of the animal system, may, by occupying a position in which they are out of place, form swellings which it may be absolutely

necessary to remove; but Cancer is a growth which has no counterpart in health, the very existence of its cells, wheresoever their location, at once sufficing to constitute disease; and more than this, while other growths simply interpose themselves among the proper tissues of the part in which they may be found, Cancer is distinguished by its power of converting such tissues into its own peculiar substance, and therefore of increasing at the expense of the healthy structures among which it is evolved, and which often diminish until they can no longer be recognised.

It is usual to divide Cancer into three leading varieties. The Scirrhous, the Encephaloid, and the Colloid, which again admit of subdivision. The first is the most frequent form of the disease, especially as it occurs in the breast. Its blood-vessels are but few, and its habit is to increase with less rapidity than the other; it does not usually attain a large size. But if this be the rule, the exceptions are various, one case which we have to record being of very large size, and having reached its full size in less than six months. Its physical characters we shall refer to when we consider the Symptoms and Diagnosis of Cancer.

The Encephaloid variety has an appearance resembling that of the substance of the brain. It usually increases with great rapidity, and frequently attains an enormous size. It more frequently affects the testicle or the bones, or appears amongst the muscles of the extremities.

The Colloid (or Jelly-like) variety so rarely appears externally, that we may omit its consideration in this paper, which chiefly relates to the surgical forms of the disease.

Differing thus, they all unite in the characteristics already pointed out; they each consist of a basis or stroma, and a contained fluid, in which variously shaped cells are found, most frequently spheroidal, but often very irregular, and presenting tail-like prolongations; they consist of an extremely fine cell wall, containing a clearly defined nucleus or nuclei* of a large size,

* "These poly-nucleated cells are held to be especially diagnostic."—*Laurence.*



with one or more large and bright vesicular nucleoli, and cell contents having a dotted appearance.

The cause of this disease has long been, and may still long be a matter of much earnest investigation. It has been attributed to animalcules, entozoa, and fungi, and again it has been considered to be a simple result of irritation and inflammation, especially in parts which from some cause or other have become preternaturally hardened. We do not feel that we can decide a question which for so long a period has divided the opinions of so many able pathologists, but shall content ourselves with the expression of the ideas which we hold upon some points bearing upon the subject. We divide the consideration of its origin and progress into three heads:—1. *Predisposition*; 2. *Local manifestation*; and 3. *Blood poisoning.*

That a predisposition to the disease exists in all cases prior to its development we fully believe, nor are we of opinion that any accidental cause will *induce* the disease unless there be such a predisposition. This predisposition we are disposed to trace to some dynamic condition of the ganglionic system of nerves, which one of us has elsewhere endeavoured to prove,* governs the whole process of nutrition. This condition it would seem may be often hereditarily transmitted. We confess that we do not attach the same importance to this mode of origin as many who have preceded us. We believe that an impartial study of the statistics bearing upon this question will indeed show that the tendency to the disease is capable of transmission, but the number of cases in which it arises *de novo* is so large as almost to drown, numerically speaking, those which may be traced to this cause. Very few of the patients who have been under our care were able to trace the disease in other members of their families; yet, on the other hand, we have known instances in which so many members of the same family, both ancestral and collateral, have been affected, as to compel us to acknow-

* Dr. Marston *On the Physiology and Pathology of the Ganglionic System of Nerves, &c. Annals of the British Homœopathic Society and of the London Homœopathic Hospital.* Vol. ii.

ledge the existence of hereditary influence. Our opinion is such that the existence of the disease in other members of a patient's family would be a matter that would materially *influence* our decision in a case of doubtful diagnosis, while the absence of such previous affection would weigh very little with us.

To return, we are not yet in a position to explain how this predisposition may be impressed upon the constitution; when decidedly hereditary, we should look upon it as transmitted in the same way as any other parental peculiarity, such as for instance the expression of the countenance, which we know, though we cannot explain, is usually transmitted to the offspring. Again, we can easily conceive that where the disease itself has not previously existed, such conditions may be conjoined as to result in stamping this diathesis upon the infant organism,* beyond which it is more than probable that from occult causes such a diathesis may be acquired as other diatheses, for instance, the gouty and the scrofulous, which under favourable circumstances result in the development of gout and scrofula. Our own ideas attach in these cases a greater influence to impressions made upon the nervous system than to an altered condition of the blood, which, as we shall instance as we proceed, we consider to be rather an *effect* of such an impression than *ab origine* the *cause* of the disease. We do not therefore endorse the opinion that Cancer cells are first formed in the blood, and from that fluid deposited in the first instance in the tissues; but rather, that the nerve force, under the influence of which the various tissues possess the power of electing to themselves the material of their own nutrition from the nutritive blastema supplied by the blood, is in some way altered. When we consider that from the same blastema or nutritive fluid the most different structures elect for themselves their own proper nutriment, as nerve, bone, muscle, cartilage,

* In illustration of this we could refer to instances in which the disease has occurred in the brothers and sisters of the same family, although the existence of the disease could not be traced in previous members of that family.



&c., it is not by any means necessary to conclude a change in the blood itself; the power by which each separates that which it needs for itself appears to reside in their respective cells, and is probably supplied through the nerve force conveyed to each from the sympathetic ganglia. We are aware that Cancer cells have been found in venous blood, but as we are not aware that they have been found where the disease has not already been developed, this admission does not touch the question under discussion, as we fully believe that such cells are capable of absorption (a matter we shall hereafter consider), although we are not prepared to admit that they are *formed* within the blood-vessels.

We have already almost entrenched upon our second head—*The local manifestation of the disease.* The predisposition existing, the history of a great number of cases would lead us to believe that some accidental cause is very frequently the means of calling into play that dynamic force upon which the actual existence of the disease depends; yet this must be taken *cum grano salis.* Few women, whether ever afflicted with Cancer or not, will fail to remember—if especial attention be directed to the circumstance—some period in their lives when they have received blows upon the breast, and we shall often find, in those who suffer from the disease, that the injury to which it is attributed had been but little noticed until the appearance of the tumour forcibly called their attention to the circumstance.* We can, however, easily believe that any injury, by exciting inflammation, by lowering the vitality of a part, or by otherwise deranging the nervous force in any locality, may determine the spot where the disease is to develop itself. Besides this, a reparative process may be required to replace injured tissue, but through the peculiar condition of the patient a new species of cell may be formed in place of that which is required for the repair of the injured structure.

Life is a continued process of decay and repair, and molecular

* In many cases it is probable that the receipt of an injury drawing attention to the part, an enlargement is discovered which in reality had previously existed, but having been unobserved, is attributed to that cause.

death is every moment taking place. An injury may increase the rapidity and amount of such molecular death. When the body is in health, destruction and repair keep pace—the one with the other, but we can readily conceive how that which throws the balance in favor of the disintegrative action may so lower the vital properties of the part as to increase the tendency to any degenerative process. But the disease of which we write is not dependent upon such accidental causes; it may, and perhaps most frequently does, arise *without any mechanical cause whatsoever*, and we conceive just in this way—that the natural effort at repair being foiled, a new species of cell is formed other than that which under ordinary conditions would compensate for the molecular death which is constantly occurring; hence the conversion of the normal textures into cancerous tissue,* which again possesses in itself the power of more rapid growth, combined with a lower degree of vitality, than the structures which it replaces.

It would appear that for some time after its formation the blood-vessels do not extend into the cancerous substance, although at a later period some forms of the disease, especially the Encephaloid, become highly vascular. The growth increases by the multiplication of the cells, the tail-like prolongations extend into fibres which form the stroma of the tumour, and the interstices are filled with the fluid before alluded to. We have already hinted at the low degree of vitality which the Cancer cell possesses, and from this cause arises the ulceration which in the more malignant forms of the disease so rapidly follows its development.

And *now* comes that *Blood poisoning* upon which the constitutional symptoms of the disease depend. It will have been already seen that we do not regard the existence of a poison in the blood as the *primary* but rather as the *final* step in the progress of the disease, and we are inclined to look upon the blood as being affected in two ways—first, it is poisoned; it

* Besides which the activity of a cancerous growth is such that it probably absorbs so much nutriment to itself as to rob the surrounding tissues of their necessary supply.



becomes unfitted for the ordinary purposes of nutrition, and as the result thereof that general condition of emaciation and malaise ensues which is described by the term *cachexia*, and this we look upon as a something distinct from the second mode in which the blood may be affected—viz., by the absorption of the cells themselves into the circulation. It is to this latter circumstance that we especially refer the formation of secondary Cancers (while we cannot ignore the probability that such may often arise precisely from the same causes as those which primarily induced the disease), and as we have already said in our introduction, the cancerous tumour thus becomes a *fons mali*, corrupting the vital fluid and scattering new seeds, which, conveyed by the circulating stream, may germinate afresh in any part of the body.

These latter considerations are of paramount importance as bearing upon our treatment. We have to keep in view the three points that we have already insisted upon. That dynamic condition which lays the foundation of the whole subsequent malady must be corrected; the mass of Cancer cells must be removed; and, if possible, the poison in the blood must be antidoted. Such appear to us to be the indications for rational treatment. How far we are able to meet these indications is another question, but where this threefold condition exists we cannot see any reasonable ground for anticipating a cure unless we can attain these objects.

And so we corroborate our former proposition, that the disease is one which equally enters the domain of the Physician and the Surgeon. We believe, however, that there are cases in which medicines alone may suffice. We have shown how at first blood-vessels scarcely enter these growths, and we conceive that it is in such a condition as this that internal remedies, capable of restoring proper dynamic action, may suffice for the removal of the entire disease, especially if such remedies be combined with any external application, if such there be, which being directly absorbed may possess a specific action upon the structure itself. Such cases, however, we believe to be comparatively rare, and only to be met with in those instances in which the disease is of very

recent date, or has been very tardy in its progress. When once the formation has become organised, its increase is, properly speaking, rather the result of physiological than of pathological action, that is to say, it continues to grow and increase just upon the same principles as the normal textures themselves; in other words, as the cells of muscular, nervous or osseous tissue attract to themselves the materials of their growth, so do the cells of Cancer. The axiom, "remove the cause and the effect will cease," would not be true here; but the effect having become a *cause*, it must itself be removed. In such a condition we confess that we would, on what we consider rational grounds, have very little confidence in any system of medicine whatsoever if employed alone; still less confidence should we have in the extirpation of the tumour while the causes which first contributed to its formation still remained in action; nay, we can well understand how the result of such operation, necessarily producing inflammation and lowering the vital energy of the part, should only tend to stimulate the diseased action to still greater activity.

We fear that few of those cases which have reached the condition embraced under our third division, viz. blood poisoning, will be amenable to any really curative treatment. We do not imply that in such cases the patient may not be greatly benefited and possibly restored to an appearance of health, but we must ever be full of apprehension that whatever method of treatment be adopted, the probability of a recurrence of the disease will be very great. The disease has then become, in the fullest sense of the term, a *blood* disease. What the influence of the treatment we have adopted may be in such cases, our career in its application has not been sufficiently long to decide, but we believe that if this condition is to be met by any known means, that treatment offers the greatest probabilities of success. Before, however, we come to discuss more minutely the question of treatment, it is needful that we devote some space to the Diagnosis and Symptoms of Cancer.

### Diagnosis and Symptomatology.

In considering this most important and practical part of our



subject, we shall especially refer to the signs and symptoms of Scirrhous as it occurs in the female breast, our experience of the peculiar treatment which it is the object of this paper to bring before our readers having been principally in connection with this form and situation of the disease.

The term *Scirrhous* (hard or stony) well expresses what is indeed characteristic of this form of malignant disease, and it is usually this *peculiar feel* in connection with the newly discovered tumour in the mammary region, which first arouses the patient's suspicion, and enables her, by intuition as it were, to come to a conclusion regarding the nature of her malady, which in very many instances turns out to be but too correct.

The cancerous tumour is generally first noticed by the patient in an early stage of its growth—when it is about the size of a hazel-nut, moveable and nearly painless. At this period it may be regarded as an enlarged gland or as an indurated lacteal tube, which rest and poulticing will suffice to remove. Time, however, only develops it, and that sometimes very rapidly. The patient soon begins to experience *pain* in the breast, such pain being usually described as if a hot dart were thrust swiftly through the bosom, or right through the chest—pain startling with a sudden pang, and then seeming to vibrate till it fades out slowly; or sometimes more abiding pain, likened to the burning and scalding of boiling water or molten lead.

With such resemblances as these do patients strive to describe agonies which are indeed beyond description, the pangs of child-birth itself supplying no parallel of that which is endured, the imagination alone suggesting the things with which it can be compared.*

But it is usually only in the advanced stages of the disease that patients suffer such excruciating agonies, and we have met with some cases in which little or no pain was experienced throughout the whole course of the disease, a circumstance in some instances perhaps to be regretted, as it might lull suspicion, and prevent the unhappy patient from having recourse to professional aid ere it is too late.

* See Paget's *Surgical Pathology*. Vol. ii. p. 340.

As a symptom of true Cancer, and as assisting to establish its diagnosis, let it be remembered that the pains experienced are of a *lancinating, sudden,* and *intermittent character,* there being intervals between the attacks in which the patient is either wholly free from pain, or experiences but a mere *sense of weight* in the part.

The true cancerous tumour will generally be found adherent to the subjacent tissue. The nipple is often retracted or puckered and discolored, whilst not unfrequently, even in a very early stage, there exudes therefrom a thin *bloody* fluid. This latter symptom, when it does occur, we regard as a never failing indication of true Cancer. In addition to these, and in connection with the constitutional effects of the malady, is a certain peculiar aspect seldom absent in such patients—an aspect difficult to describe, though it cannot readily be mistaken by one accustomed to study the physiognomy of the disease. This Cachexia, as it has been called, and which has already been alluded to under the head of *Pathology,* is seldom apparent in the *early* stages of the disease, so that it is not of much value in a diagnostic point of view, as by the time it is visible in the aspect, there are not wanting other confirmatory signs which enable the practitioner to form but too correct a diagnosis of the disorder.

The progress of a cancerous tumour is generally *rapid,* although we have met with not a few instances in which the disease has run a very chronic course, and we may just say that the *harder* the tumour the more likely is this to be the case; whilst the converse of this is still more true and highly valuable in a diagnostic point of view, *that the rapidity of growth of any mammary tumour is strong presumptive evidence of its malignancy.*

Loss of flesh, if in connection with a tumour in the breast, is a very suspicious indication, yet we have seen patients pretty far advanced in the disease anything but emaciated, and perfectly free from that leaden tinge of countenance so frequently met with in Cancer.

The age of the patient may be taken into account, and assist us in estimating the probability of her disease being Cancer;



for it is indisputable that the majority of cases of Scirrhus of the female breast occur between the ages of 40 and 50, although we have met with instances of true Cancer of the breast as early as 30, and as late as 70 years of age.*

The existence of *enlargement and induration of the glands in the arm-pit* is a sign of much import in connection with a mammary tumour, not only as evidence of the nature of the disease, but one that ought to weigh very seriously with the surgeon who may be contemplating any surgical proceeding.

Cancerous tumours exhibit a great tendency to *ulcerate,* such ulceration being caused by the disintegration of the Cancer cells in the centre of the tumour. The matter exuded from the ulcerated surface of a true Cancer, is generally a thin bloody discharge, usually attended with an offensive odour. The question of hereditary transmission, as also the anatomical and histological characters of Cancer, have already been discussed, so that we need but to refer to them as often affording valuable assistance in the diagnosis of certain doubtful cases; for although the Microscope may not always enable us to pronounce positively on the nature of a morbid product, still it will frequently lead to an absolute decision as to whether a suspected tumour be cancerous or otherwise.

We shall now briefly pass in review what it is important for the practitioner to bear in mind regarding the *differential diagnosis* of Cancer. Neuralgia of the breast frequently gives rise to great pain, and when a tumour co-exists therewith, the diagnosis may be difficult, but it may avail us to remember that the general health does not suffer in neuralgia; that there is no affection of the lymphatic glands; and lastly, that it almost always occurs in single *young* women of an hysterical temperament. Chronic abscess is often mistaken for Cancer. The absence of pain, of disease of the neighbouring glands, the *feel* of the tumour, often imparting to the *tactus eruditus* of the surgeon an indis-

* Age appears to influence the *seat* of the disease; in youth most frequently occurring in the cellular membrane, the lymphatics, the eye, and the brain; while the womb, breast, and internal organs rarely become affected before the 40th year. One of us lately saw a case of fungus hæmatodes of the eye in a babe six months old.

tinct feeling of fluctuation, and the general history of the case will usually settle the question; but if necessary, the *exploring needle* should be used.

Cystic and Sero-cystic diseases of the breast are occasionally though rarely met with. Fluctuation will sooner or later be felt in these affections, which, together with the absence of pain,* constitutional disturbance, and disease of the neighbouring glands, as also the *nature* of the discharge present in both affections—being *serous* in cystic disease and *bloody* in true Cancer—will generally clear away all doubt.

It is admitted that the difficulties of establishing a correct diagnosis in every case are very great, so much so that the most experienced surgeons are liable to err and have erred; still we think that by bearing in mind the symptoms and signs of the disease enumerated above, as also the various points involved in differential diagnosis, an opinion may be arrived at in the great majority of cases which will at once prove satisfactory to the patient and a guide to the practitioner.

## Usual Principles of Treatment.

In connection with the Surgical treatment of Cancer we shall first allude to a few of the external measures adopted for its removal. Preparations of Lead, Iodine, and various kinds of Caustics have from time to time, had their enthusiastic advocates; while Compression, Leeching, Freezing, and the Actual Cautery have in their turn been employed and discarded by those who have professed to treat this dread disease. Of the various outward applications used we would just say that they are generally productive of far more harm than good; for not only are they inert in themselves—possessing no specific influence over the disease—but the friction attendant on inunction

* We lately met together in consultation on a case presenting many of the physical signs of true Cancer—viz., rapidity of growth, considerable hardness and decided pain. We thought, however, we could detect a *very slight* amount of fluctuation; on inserting the exploring needle a few drops of *serum* came away: we immediately proceeded to remove the tumour, which proved to be of cystic origin, and contained one or two ounces of fluid. The patient has done well.



gives rise to most injurious effects on the local disease; so that we could wish to establish the following remark as a useful axiom —*Never irritate a cancerous tumour, or what may be suspected to be such, by any amount of friction thereupon.* While on this point we cannot too strongly warn those suffering from Cancer of the injurious effects of *poulticing* the part affected.

But the removal of Cancer by the knife has from time immemorial suggested itself to the minds of surgeons as the readiest and apparently the most rational means of treating Cancer, yet alas! experience has convinced us that it is not only a futile, but in very many cases an injurious measure. The following testimony on this point will weigh with our readers. Sir B. Brodie says: "In the large proportion of cases in which the operation is performed, the patient is not alive two years afterwards; and in a great many cases, instead of the operation stopping the disease, it actually seems to hasten its progress; moreover the operation itself is not free from danger."

Mr. Liston says: "Recourse may be had to the knife in some cases; but the circumstances must be very favourable indeed to induce a surgeon to recommend or warrant him in undertaking an operation for the removal of Cancer." Mr. Mayo's experience has led him to the conclusion that, "after amputation of a scirrhous breast *under the most favourable circumstances*—that is to say, when the operation is performed at the *earliest* period at which the structural character of the disease has declared itself in the gland—I believe that in *ninety-nine cases out of a hundred the disease returns* either in the cicatrix or in the neighbouring glands; the operation, therefore, cannot be performed with any reasonable prospect of saving the patient eventually from the disease." Dr. Macfarlane, of Glasgow, has "never seen a case, *even of the most favourable description, in which the disease did not return;*" and says that when "the operation was performed at an early period, and under the most auspicious circumstances . . . . in many cases no distinct indication of constitutional deterioration being present, yet *in all* the disease returned both externally and internally, and proved fatal." Mr. Syme writes: "It would be better, both for the interests of humanity and the credit of

surgery, if the operation were entirely abandoned." Mr. Lawrence thus expresses himself regarding the operation: "Even in an early stage it is unavailing."

Thus condemnatory of the operation by the knife is the united testimony of some of the greatest surgeons of the present century, and even in regard to the operation as a *palliative* measure with a view to prolong life or to relieve urgent symptoms, we find the same testimony as decidedly opposed to such a step. Dr. John Burns, of Glasgow, says: "When any portion of the morbid growth is left behind, the disease runs a materially more rapid course than if it had not been interfered with." Dr. Macfarlane "could adduce the cases of several patients who had laboured under cancer of the breast for ten, fifteen, and twenty years, and who [submitting themselves to a cutting operation] were cut off in three or four months afterwards."

Moreover the operation itself is attended in many cases with much danger to life. Sir B. Brodie says: "I have lost cases after the operation, and every surgeon has had the same misfortune." In eighty-five out of ninety-eight cases cited by Benedict, death took place *soon after* the operation, whilst in seven of these it immediately followed it.

We are aware that one or two eminent surgeons both in England and on the continent have regarded the removal of Cancer by the knife in a more favourable light, but we think the preponderance of evidence is in favour of those who regard the operation as unjustifiable.

### Treatment by Caustics.

The principal caustics hitherto employed in this disease have been Potassa Fusa, the Mineral Acids, Chloride of Zinc and Arsenic. The latter, which almost invariably forms the basis of the secret remedies used by quacks, has been pretty well abandoned by the profession on account of the dangers which attend its use, and which are due to the poisoning of the system by its absorption. Yet this most objectionable treatment is, we believe, very generally adopted at the London Cancer Hospital.

Still, it is evident to us, after the experience we have gained



of the injurious effect of cutting operations, that if any means are to be successful for the removal of cancerous tumours, we must look *in the direction of caustics*, the desiderata being—1st, to find the least painful mode of applying the caustic; 2ndly, to apply it so as to accomplish the entire removal of the disease; and 3rdly, to combine the agent with some substance which should possess a direct and specific influence upon the disease itself. These we think are embraced in the treatment we are now about to describe.

### The New Treatment.

It remains for us, in conclusion, to give a description of the treatment of Cancer which we adopt, and which so far we have found to answer our most sanguine expectations. In accordance with the views already expressed of the twofold character of the treatment which we think such cases demand, we shall consider the same under the several heads—Local and Constitutional.

I.—We may preface our remarks on the local treatment by saying, that in every case so treated, we thought it highly desirable to subject the patient to a little preparatory training, chiefly dietetic, for the purpose of giving her as much stamina as possible, so as to enable her to bear up against the somewhat debilitating effects of the enucleation process. Meat twice a-day, and a liberal allowance of the best Dublin stout, when well borne, fulfils this indication admirably.

The mode of procedure for the removal of a cancerous tumour should be varied according as the disease is in a state of ulceration or otherwise. When the skin is entire, the size and bearings of the tumour should be carefully ascertained and mapped out on the breast with Nitrate of Silver or vermilion pigment. A mixture of ice and salt is applied to the tumour so as to deaden the local sensibility; this effected, and the parts carefully dried, the skin over the tumour is destroyed by means of undiluted Nitric Acid, the action of which is kept up until the skin assumes a tawny and yellow aspect.* The part should now be well douched with cold water, and a piece of

* About 30 seconds will generally suffice to produce this condition.

lint applied to the surface spread with equal parts of a paste (composed of a strong decoction of Hydrastis root, powdered Hydrastis, Chloride of Zinc and flour) and Stramonium ointment. On removing this dressing at the end of twenty-four hours, a yellow, hard, and dry eschar will be found to have formed. The amount of pain following the application of the acid varies with the extent of surface to be destroyed, but the congelation of the parts very materially lessens this suffering, which might otherwise be rather severe. But we have always found that much after-suffering is saved by the endurance of a little temporary smarting caused by the acid, for when applied too timidly the skin is only partially destroyed, and the action of the paste thereon gives rise to some suffering.

On removing the dressing a slight amount of erythema is sometimes visible around the eschar, which, as we have already observed, presents a yellow, horny, and dry appearance.

Throughout the entire extent of this eschar vertical incisions are made with a sharp scalpel, to the depth of about 1-20th of an inch, care being taken not to draw blood. These incisions should be parallel to one another, at a distance of about half an inch apart, and into each is inserted a thin slip of calico smeared with the paste; over the whole a *light* compress should be applied, kept in its place by a strip of adhesive plaster. The incisions are deepened and the dressings renewed usually every day, and this is continued until the paste has percolated the entire mass of the tumour.

It is not easy to give precise directions for the various steps in this operation, on the right and skilful performance of which so much of its success depends; for instance, the *depth* to which the daily incisions are carried must depend upon the judgment of the operator. If the knife be used too freely, bleeding will embarrass and annoy both surgeon and patient, as well as materially increase the pain from exposure of the living tissues beneath to the action of the paste. On the other hand, a too timid use of the scalpel will prevent the paste penetrating into the cancerous mass, and so its action will be arrested and circumscribed. A difficulty may arise as to when the incisions have been carried deeply enough. Some guide may be



afforded by the *feel* as also the *appearance* of the tissues so cut through, the knife passing with difficulty through the scirrhous mass, hardened as it is by the action of the paste, whilst in appearance it is more condensed than the natural tissues.

We regard it as of importance to carry the strips of calico saturated with the paste to the *very bottom of the incisions*, and that they should include the *whole length of the diseased mass*; indeed, to make sure of this, we are in the habit of carrying them a quarter or half an inch beyond the limits of the tumour; and special care should be taken not to allow the paste to run down on the sound skin at the lower end of the incisions.

We need scarcely premise that a procedure of this kind demands a good amount of anatomical knowledge and surgical skill, and that while perfect safety is insured by these qualifications, no small risk of laying open the pleural cavity, wounding large arteries, or injuring important muscles, would be incurred by inexperienced operators.

In the process of enucleation it not unfrequently happens that a cavity containing disintegrated cancerous matter is opened; our practice in such cases is freely to expose the cavity, evacuate its contents, sponge it carefully out, and proceed with the incisions through the *floor* of the cavity in the manner already described.

The time required for the complete separation of the slough varies of course with the size of the tumour and the denseness of the mass to be acted upon. Generally speaking, about the end of a fortnight from the commencement of the treatment, a line of demarcation forms around the entire tumour, invariably commencing at its upper or least dependent portion; this deepens from day to day; the living and healthy tissues beneath granulate and rise, pushing the tumour out; so that at a period varying from four to seven weeks, the entire mass is thrown off, leaving a much smaller chasm than might be expected, judging from the size of the slough itself.

The wound immediately after the removal of the slough occasionally presents a somewhat unhealthy appearance, but a very few hours suffice to throw off the decomposed granules still adherent to its surface, when it takes on a clean and healthy aspect, and is remarkably free from the secretion even of laudable pus,

which invariably follows the removal of cancer by the knife. And not only is this source of danger (pyæmia) removed by this method of operating, but *all putridity* and *effluvium* are effectually counteracted by the antiseptic nature of the paste, so that large dead cancerous masses, weighing from twelve to sixteen or more ounces, have remained for *weeks* in contact with the living tissues without giving rise to any bad consequences, or any discomfort to the patient or attendants.

Nor does the constitution sympathize much with the local irritation; indeed in no case did this amount to anything more than a degree of feverishness, arising probably from the absorption of the chloride, and its toxicological effect on the gastric mucous membrane, whilst in the majority of the cases treated, even this slight disturbance did not occur, but patients on the contrary retained their appetite, strength and spirits, during the treatment, and were able to be out of bed, and even in the open air daily.

It is a matter of the utmost importance to ascertain whether the *whole* of the disease has come away with the slough, for if even the smallest portion be left, reproduction of the cancer sooner or later must be regarded as certain. We are in the habit, therefore, of removing all unhealthy-looking granulations, diseased glands, and other suspicious looking portions, by a subsequent application of the paste.

One very remarkable and valuable feature in this treatment is the effect which the paste has upon the entire cancerous mass, in not only causing that portion of it to shrink to which it is directly applied, but in giving rise to such an amount of *drawing* or *contraction* as to bring portions even somewhat deeply imbedded in the neighbouring tissues within reach of the paste. It occasionally happens that when the dead mass is ready to separate, it is merely connected with the living parts by a few small bands which are probably nerve fibres, for as often as these bands were put upon the stretch by pulling at the slough, very acute pain on the part of the patient induced us to desist. In such cases we generally divide these bands with the scalpel, and remove the dead mass, a measure which gives the patient instant relief.

The treatment of the sore after the removal of the slough



consists in the daily application of a piece of cotton wool spread with Stramonium ointment, as recommended by Dr. Fell; cicatrisation occurring in most cases very readily and rapidly.

Enucleation of Cancer by this method is applicable to those cases in which *adhesions* have already taken place, and in which no prudent surgeon would think of the knife. Further, it allows just so much of the breast being removed as the surgeon may deem necessary and *no more*, whereas it is usual to remove the whole breast when a cutting operation is had recourse to. This we regard as a most important recommendation in favor of the enucleation process. It is equally suited to cases of non-ulcerated as to ulcerated cancers; to those of recent formation and rapid growth as to those of a more chronic nature.

Enucleation is unsuited to the majority of cases in which the disease may have extended into the arm pit; to many in which the cancerous predisposition is very strongly marked; or where there is reason to believe it may have invaded internal organs, as the brain, womb, mesenteric glands, stomach, lungs, &c. It is further inapplicable to those cases in which the local disease may have spread to parts involving such anatomical difficulties and hazards in its removal, as to make any surgical interference unjustifiable.

II.—*Constitutional Treatment.*—It would seem almost a waste of time to dwell upon the various internal remedies which at one period or another have enjoyed a reputation in the treatment of Cancer; it will suffice that we notice those which have maintained to our own time any amount of that confidence which they have possessed in past days, and it is very worthy of note that these remedies are equally used by our own school and our allopathic colleagues. Thus Conium, Belladonna, and Arsenic are common to us both, and we think that in their homœopathicity to certain conditions of the disease, we can discover the reason that they have escaped the complete neglect which has fallen to the lot of the thousand and one other so-called specifics which at various times have been proposed.

The specific relationship of Conium, homœopathically considered, to old indurations, especially when resulting from a blow, and still more when occurring in old people, will fully

account for the fact of its having removed such indurations, bearing a close resemblance to scirrhus tumours, and of greatly relieving truly cancerous disease. We believe that we have here the limit of its usefulness, and attribute more of its influence in relieving the pain of Cancer to this homœopathic relationship than to its general sedative action. We have had many opportunities of administering this medicine in various potencies to patients suffering from Cancer, or at all events from very suspicious looking indurations attended with severe pain, and have frequently found relief result: and this result has been gained quite as readily with the medium potencies as with more material doses. And it is in such cases especially that we have seen decided benefit follow its use; the more advanced the disease, and the more decided the diagnosis, the less favourable has been the action of this medicine.

So again in regard to Belladonna; its influence upon glandular structures and its relationship to phlegmonous, erysipelatous and gangrenous inflammation, readily suggest its employment in the ulcerated and sub-inflammatory stages of Cancer.

Arsenic, on the other hand, though not so readily identifying itself with the earlier physical signs of the disease, is so strikingly pointed at by the cachexia which prevails in the advanced stages, that we should *à priori* be ready to anticipate for this remedy, even a greater value than experience unfortunately proves it to possess. Nevertheless we do attach value to it, but we conceive that to be of use, it must be given in doses somewhat larger than those usually administered by homœopathic practitioners. In the earlier stages it may do something to correct the dynamic condition upon which the predisposition to the disease depends, and then given in forms varying from the second to the third centesimal trituration it may be of service; but as a means of combating the cancerous cachexia, dependent upon a material poison in the blood, we believe that larger doses will be necessary if any real benefit is to be derived from its administration.

In addition to these there are two other remedies which we must not pass over without a brief notice. We refer to Gold



and Animal Carbon. Both these substances appear powerfully to influence the nutritive processes, and to possess a pathogenetic power of inducing a dyscrasia somewhat similar to that belonging to the cancerous diathesis.

Walshe relates, from Duportail, a case in which a cancerous ulcer of the face, reaching to the bones, was healed under the use of preparations of Gold; but as this treatment was complicated with Hyoscyamus and Conium internally, and Laudanum, Cinchona, and Camphor, externally, it cannot be relied upon, although its homœopathicity to such a case is sufficiently evident to allow of the possibility of the cure.

The Carbo appears to be especially suited to those cases in which the ulcerative process is *indolent*, while the vital powers are *greatly depressed*. In the case of a lady suffering from cancer of the womb, in whom this condition existed, and who was under our care for several months preceding her death, great constitutional benefit was derived from this medicine administered in the third trituration. She rallied from a condition of almost death-like torpor, and we have no doubt that from its use some months were added to her life.

Valuable, however, as these remedies have proved, and may still prove, we cannot accord to them any specific influence over Cancer considered as a special disease. That they are homœopathic to many of the incidents of the malady is readily admitted, and this fact sufficiently accounts for the palliation of many of the symptoms which present themselves, and may render them able to retard for a while a fatal termination.

Dr. Fell, to whom belongs the credit of first introducing the plan of applying Caustics in the treatment of Cancer by means of gradually deepened incisions through the previously destroyed parts, brought into notice at the same time a new remedy—the Sanguinaria Canadensis; but as he never used this medicine excepting in combination with other powerful agents, he does not appear to have relied much upon it himself, while the surgeons of the Middlesex Hospital have reported their opinion of its *complete inertness*.

We are not sure who it was that *first* adopted and recommended the use of Hydrastis Canadensis, but have reason to

believe that this application of the root was first made in America.* However that may be, it is to this remedy that our attention has been especially directed. We have before stated our conviction that no medicine can suffice to remove a cancerous growth after a certain stage; once established as a fully organised growth, it increases by the natural processes of nutrition in the same way as the normal tissues themselves, and the cases have been few in which we have felt justified in omitting to combine the surgical measures we have detailed in this paper, with the internal use of the Hydrastis. The question, however, which has necessarily proposed itself to us is this—Does this substance possess any positive influence over the cancerous diathesis, and does it fulfil any of the indications we have marked out as essential to successful treatment?

We are not disposed to be too hasty in our verdict, or too sanguine in our anticipations, but we refer our readers to some of our recorded cases in which from varied circumstances it has been used alone, and would also direct attention to the cases reported in earlier numbers of this Journal by Dr. Bayes. The relief of pain in case I; the complete disappearance of a rapidly growing tumour, attended with all the dynamic and physical signs of cancer, as detailed in cases II, IX and X, and the still more striking effects of its use in the case of M. T., scarcely allow us to doubt that in some way which has yet to be explained, it does exercise a decided action upon this affection.

The Hydrastis Canadensis or Golden Seal belongs to the natural order *Ranunculaceæ*. It is found in the United States and Canada in considerable abundance, being indigenous to the northern part of the Western Hemisphere. The Rhizome or root is the part used. It has a strong narcotic odour, a taste not unlike that of Opium, and breaks with a light yellow crisp fracture.† These properties are much impaired by age, as also its medicinal virtues. It is generally spoken of by American

* It has been used for some time by Dr. Pattison in the treatment of Cancer.

† These characteristics should always be possessed. We have seen some specimens which had almost lost their odour, taste, and colour, and which were totally unfit for use.



physicians as possessing a marked action upon mucous surfaces, the liver, and the glandular system; and it is largely used by them with alleged success in leucorrhœa, cystitis, dyspepsia, hæmorrhoids, constipation, ophthalmia, otorrhœa and catarrh, and as an excellent tonic bitter.

It is much to be regretted that we have not yet succeeded in obtaining any very reliable *proving* of the Hydrastis. One of us has for upwards of a month at a time endeavoured, by experiment, to ascertain its pathogenesis, but he has been unable to elicit any very decided symptoms except upon the sensorium and the heart, which were affected for a very short time, by doses of half an ounce and upwards, smaller quantities appearing to pass off without any effect at all. We are, however, inclined to believe that it will be found capable of enriching the symptomatology and pathology of our Materia Medica, and we trust to be permitted to continue our investigations until we shall be in a condition to report with profit to our profession. That the drug acts favourably in disease in *very minute doses* we have proved, from whence we infer that its action is dynamic, and therefore most probably homœopathic.

This is the medicine upon which we chiefly rely in our treatment of Cancer; usually putting our patients under a course of it for a month or so before commencing the enucleation of the mass. Our doses vary from one or two drops of the pure tincture, to half a drop of the 6th dilution, the lower forms being used chiefly in those cases in which the cachectic condition is fully marked; and we must confess that we know of no medicine which has caused so great an improvement in the general health of our Cancer patients as has this, an improvement which has in most cases become visible, in the bettered expression of the countenance, to all who had previously known the patient. We continue the administration of the medicine—unless intercurrent symptoms render other medicines necessary—throughout the whole course of treatment, and for some weeks after its completion.

The intercurrent symptoms which demand attention may be an inflammatory condition of the part acted upon, general febrile excitement, pain and sleeplessness, dryness of the mouth and throat, loss of appetite, and general debility.

*Inflammation* has with us been most readily subdued by Aconite and Belladonna; the former of which also has never failed to allay *general feverishness*, unless such has been attended with *prostration*, when Arsenicum has answered the end. Of *pain* we confess we speak rather theoretically than otherwise. It has not been in our cases a formidable symptom, and the medicines of which we have spoken have answered our purpose; nevertheless, we would be prepared in cases in which the pain was severe, and did not yield to those remedies, to administer a decided narcotic, and this we hold without deviating in the least from the principles of homœopathy. Pain produced by dynamic causes can be removed by the dynamic action of medicines; but the pain in this case not being directly dependent upon such causes, we could not depend upon those actions to remove it. Homœopathic medicines relieve pain by removing the cause of pain; but as in these cases we are ourselves the cause of pain, we should feel it perfectly consistent with our homœopathic profession, to render a patient insensible to pain, if we considered the pain a greater evil than such insensibility. Except, however, in *one* case, we have never found it necessary to resort to these means; and in that case the sleeplessness which had become a serious source of exhaustion was produced, not so much by the treatment, as by certain insects which unfortunately infested the patient's lodgings, and which produced an irritation as little to be controlled by infinitesimal doses of medicine as the pain caused by ourselves.* Dryness of the mouth and throat, attended with loss of appetite and some amount of weakness, frequently occur during the process of enucleation; these symptoms are best met by Arsenicum. A general condition of debility without these symptoms, if not sufficiently counteracted by the Hydrastis, will require Carbo Vegetabilis or China; any other intercurrent conditions which arise may be met by the application of the general principles of homœopathic treatment.

* The points involved in this little digression, though treated with some appearance of levity, involve principles of such extensive application as to demand the grave consideration of every *rational* homœopathist.



We have thus run through the mode of treatment which we adopt, both Surgical and Medical, and as a general rule we hold them to be inseparable, the one from the other. Without, we trust, evincing an undue partiality for that which is novel we feel warranted in claiming for it a superiority over all other methods previously in vogue, as offering to the patient a safe means of riddance from the most distressing malady to which our common humanity is exposed, in the employment of which pain forms no very considerable item, and the terror which ever accompanies the dread of the knife, and which often prevents an application for relief until the time of help has passed away, is avoided.

The special constitutional treatment which is adopted, and the absorption of the Hydrastis into the parts immediately surrounding the seat of the disease, appears to us also to guard as much as is possible against the return of the tumour or the development of the malady in other parts; for, the surrounding and adjacent tissues connected with the tumours, are so thoroughly percolated by the paste, that any cancer cells deposited in such tissues, are thereby at once destroyed and rendered quite harmless. Time only can prove the justness of our anticipations, but our observations so far appear to us to confirm them. As has been already remarked, there will doubtless be cases in which the system has been so thoroughly poisoned by the presence of cancer cells in the blood that redevelopment will occur, but even with this fear before our eyes, we should feel warranted in applying our method, freed as it is from those objections which attend a cutting operation, while we anticipate that the removal of the dread which attends such operations will induce patients to apply for relief at an *earlier* period, when the probabilities of success are greatest; and the aversion which is properly felt by almost every surgeon to excision being put out of the way, he may hopefully proceed to relieve those who seek his aid, instead of leaving them to despair and to the ravages of a disease which, unchecked, must proceed to its terrible and certain termination.

Can anything be done in those cases in which a cure is not to be hoped for, or enucleation is inadmissible? As we have

already remarked, there are necessarily many circumstances which would preclude any surgical proceedings. We have very lately been consulted by a lady whose breast had been amputated for the removal of the disease, which has reappeared in the armpit of the previously affected side extending to a considerable depth, and leading to the impression that the lymphatic glands were implicated; the dangers of attempting to remove a mass though by no means large in a region so abounding with large blood vessels and important nerves prevented our advising an attempt at its enucleation, especially as the countenance gave evidence of a constitutional taint. She was therefore put upon the Hydrastis internally and externally, under the use of which the health has improved, the appearance of the countenance has become decidedly better, the condition of the part which had commenced to ulcerate has amended, and the pain (which by the bye was not previously great) has lessened. In some cases when we have had to deal with a large ulcerated mass, discharging great quantities of fœtid purulent matter, rendering the patient's life burdensome, much relief has been afforded by the enucleation of the fungoid *out-growths*, in which we have even succeeded in obtaining cicatrisation. We would remark that in these cases the treatment itself is an *actual relief*, the pain is lessened from its commencement, and the antiseptic action of the paste is such that the horrid stench which makes the sufferer feel as if an object of disgust to herself and to those about her, is at once removed.

In some cases, however, the ulceration has extended into such parts as to prevent much treatment by the application of the paste, and here we have obtained great good from the Hydrastis *lotion* combined with its internal administration; the pain decreases, the fœtor is diminished, the discharge is lessened, and the ulceration progresses less rapidly. We have a patient now under our care in the last stages of the disease, who again and again has most earnestly expressed her gratitude for the great relief which has been afforded her by these means. As we have before said, although we have seen decided benefit to the general health follow the use of the Hydrastis, there are other cases which have improved more decidedly when Arsenicum has been administered. Our experience on the whole seems to lead to the conclusion that for the most part the health (as connected with the disease) improves more rapidly under the Arsenicum than under the Hydrastis, while that on the other hand the local condition participates more decidedly in this amendment when Hydrastis is taken. There are exceptions, and a careful application of the principles upon which we usually select our medicines will decide which is to be used, the Arsenicum answering best when most homœopathically indicated; when these indications are not so decided, the Hydrastis will most probably best answer the purpose, while there are cases in which it will be advantageous to use both medicines in alternation.



### Case I.

Mrs. C—, a lady — years of age, had observed for some years a hard substance in her right breast, which for a few months before coming under treatment had rapidly increased in size and had become so painful as to prevent all rest by night. On examination a tumour of stony hardness and about the size of a duck's egg, was discovered in the upper portion of the right breast. It was nonadherent, but the skin was slightly puckered and the nipple retracted. A gentleman who had formerly been the lady's medical attendant but who has since retired from practice, met the writer in consultation and agreed with him in his opinion of the malignant nature of tumour. Hydrastis 6 was administered in drop doses. The pain was at once relieved. It was however decided in consultation with a physician of much experience in these cases to proceed to the enucleation of the tumour, which was effected partly by the writer and partly by the physician alluded to. The process was commenced early in May 1862, and by the end of June the tumour had been entirely separated and removed. The wound speedily cicatrised, and the patient remains perfectly free from disease.

### II.

Mrs. F——, had suffered for six months from a swelling in the left breast, for which she sought relief. The pain, which was compared to knives being thrust into the part, had become almost unbearable, and the patient was already beginning to

assume that worn appearance so characteristic of the cancerous diathesis. The tumour which had attained a considerable size was hard, heavy, and adherent to the skin, which was dark, mottled, and very much puckered, the nipple being also deeply retracted. The patient was at once advised to come into town in order to the enucleation of the tumour; this however her circumstances prevented, and without any expectation of affording much relief, a lotion of Hydrastis was ordered with the internal use of the same medicine. The pain almost immediately ceased, and the tumour so speedily decreased in size that at the end of two months it had altogether disappeared, leaving but the puckered skin, which had otherwise regained its natural appearance. When we last heard of this patient she continued perfectly well. It is needful to state that her health rapidly improved during the treatment, and that her countenance regained the aspect of health.

III.

Mrs. P——, 73 years of age, had observed a swelling in the left breast, which had been coming on for several years; she had suffered no pain, but was getting anxious from its increase of size. A semifluctuating sensation communicated to the finger suggested the possibility of the case being one of scrocystic disease; an exploring needle was accordingly introduced, which passing through a hard resisting wall entered a cyst, withdrawing a dark brown fluid, which under the microscope was found to contain cancer cells. The Hydrastis was prescribed externally and internally, and in a few weeks the patient reported a decided decrease in the size of the tumour. This amendment did not however continue, and six months afterwards the lady again shewing herself, the swelling was found to have largely increased; the skin covering it had become closely adherent and dark coloured, and the nipple was considerably retracted. Enucleation was immediately commenced in the usual way. On the fifth or sixth day a cavity was opened, from which flowed a large quantity of the fluid described above; it was carefully wiped out, and the cavity filled with linen saturated with the paste. By the next day it had very much contracted and the treatment went on as before. On another occasion there was a rather annoying hæmorrhage, as though some small artery had been opened. A small quantity of cotton wool well pressed down to the bottom of the incision at once stopped it, and



this we have ever found sufficient to stop any bleeding which has occurred in any of our patients. In five or six weeks the mass had separated, and the wound having rapidly healed the patient returned home in perfect health and spirits. This state of health, remarkable for a person of her age, has been maintained ever since.

IV.

The history of this case we take from a letter written to us by the patient herself, and although we cannot at present claim it as one in which ultimate success has already been obtained, we have much hope that we shall ere long have the satisfaction of seeing our object fully gained.

The disease dates from 1851, when the patient received a severe blow on the left breast. She was shortly after confined, and had several abscesses in that breast. The same thing occurred again in a subsequent and last confinement, and extending over a period of four months, so prostrated her that great fears were entertained respecting her. This was followed by a severe inflammation of the lachrymal sac and right eye, which made an operation necessary. A gentleman who during this time attended her for the inflammation of the eye gave his opinion that her system was affected by cancer.

In 1855, sharp darting pains began to be felt, which became more and more severe, and the nipple was already deeply retracted. She did not however obtain further advice until 1859, when the physician to whom she applied told her that there were tumours in each breast, that in the left being the more malignant, but not sufficiently advanced for a cutting operation. She found no relief from the treatment adopted; her pains still increased, and a sense of numbness affected the left arm and hand. Plasters were now applied and continued for nine months with internal remedies, with no other effect than of greatly impairing her general health. In 1862, Dr. C— of R. was consulted, who gave as his opinion that she had a cancerous tumour in each breast, and that the knife offered the only chance of removal, but strongly advised her rather to leave herself in the hands of God than submit to such an operation. He pronounced her case hopeless, but prescribed certain plaisters, lotions, and medicines for the palliation of the symptoms. She came under our observation early in the present year, both breasts presenting the characteristics peculiar to infiltrated scirrhus; the disease on the left side being however much more advanced and the appearance more

decidedly characteristic of cancer than on the right. The opinion we formed as to the ultimate result of the treatment was decidedly unfavourable—the countenance of the patient, which strikingly expressed the nature of her complaint, and the double tumour, caused us to be very apprehensive that it had taken too deep a hold of the constitution to be eradicated, while the low state of her general health made us apprehensive that it might prove inadequate to carry her through the treatment. Her own anxious desire and her evident trust in God overcame our own scruples and induced us to proceed with the case, though not without some anxious fears both for herself and our own reputation. We commenced with the left breast; all the former pain ceased with the first dressing, and her health and strength speedily improved and continued to progress during the whole time. In a few weeks the whole of the diseased portion had been removed from that side, and we are now proceeding with the remaining tumour. With regard to pain, we quote her own words: "The treatment I did not find nearly so painful as I had anticipated. On this subject I can speak with confidence, as during the whole time I never used any narcotic, and very rarely any stimulant. I do not wish it to be understood that there was *no* pain, but those who have suffered as I had previously done, would bear it thankfully with the hope of being freed from the disease; being much less than the pain caused by the disease itself, of which I felt nothing from the time of commencing the treatment."

V.

M. T—. 58 years of age, came under treatment in March last as a patient of the North Wilts Dispensary. Some time ago a cancer had been removed from the right breast, and a year or two since she found a similar growth forming in the other side, from which she has suffered agonising pain. She has also been affected with severe cutting pains in the back and lower part of the abdomen, shooting down the thighs, and attended with a dirty brown discharge. She said that there was often a feeling as though something were gathering in her body with horrible pain, which after a time was followed by a sudden gush of this dirty brown fluid, and immediate relief.*

* This symptom, described as a "gathering and breaking," we have frequently observed in Uterine Cancer, although it is still more diagnostic of Pelvic Cellulitis.



On examination a hard swelling was found in the breast, filling nearly the whole of the organ, but non-adherent, and neither affecting the skin nor the nipple. The neck of the womb was found greatly enlarged, hard, and nodulated, this hardness extending to the upper part of the vagina; there was also ulceration of this organ, fungoid growths growing up from the ulcerated surfaces. This latter condition precluded at once the idea of adopting any surgical treatment for the breast, even if the evidence of the malignant nature of the tumour had been more decided than it was, and all that was done was to prescribe Hydrastis internally, and as a lotion to the breast and an injection to the womb. The swelling has almost disappeared from the breast, the discharge has ceased, the pains are almost gone, and the ulcers have cleansed and appear to be cicatrizing.

VI.

Mrs. S—, aged 47, had about four months before coming under treatment observed a lump in her left breast, which so rapidly increased in size, and caused so much pain, that she became much alarmed. She first appeared as a patient at the North Wilts Dispensary, but her circumstances admitting of it she came under our care as a private patient. When first seen, we observed that the breasts were of an unusually large size, and in the lower part of the left mamma was a large hard tumour, above which we could discover lobulated masses of irregular hardness; the skin over the larger mass was adherent and much puckered, the nipple being slightly retracted, this retraction and puckering not having existed for more than a month. The lancinating character of the pain usual in cancer was well described, and having at once ordered Hydrastis as usual, we advised the patient to lose no time in coming under our more direct treatment for its removal. Ten days afterwards she came into the town, but on examining the breast we were both alarmed and surprised at the rapid progress which the disease had made; nearly the whole of the unusually large breast had become infiltrated, and it became at once evident that we had an undertaking of no ordinary difficulty on hand. A line was drawn with paint to include the indurated mass, which measured in its longest diameter nearly 8 inches. The acid was applied in the usual way, and the following day a plaster composed of $^1/_3$ paste and $^2/_3$ Stramonium ointment was applied; a good deal of irritation was set up, vesication occurred in two or three points, and there was

much inflammatory action. Under these circumstantes we desisted from local treatment for 24 hours, administered Aconite and Belladonna, and applied a lotion around the circumscribed parts. Under this treatment the inflammation subsided, so that on the fourth day we were enabled to proceed with the incisions, though not without some difficulty, owing to the effusion of serum in several places under the skin ; from this cause the paste occasionally came into direct contact with the denuded tissues, and although we used a more diluted paste than usual, more pain was occasioned than we had known in previous cases;* nevertheless good progress was made from day to day, notwithstanding which our fears were raised that the disease was extending beyond the line we had marked out. In three weeks our incisions, which reached more than 3 inches in depth, (in some parts 3½ inches) were completed. As the weight of this large mass became very burdensome, we cut down the portions between the incisions, which had become perfectly dead and of course destitute of feeling, and weighed together more than 5 ounces. In 14 days the remaining portions, weighing 7 ounces, came away, when we found that the fears expressed above were not groundless, as a large piece of cancerous substance projected into the upper part of the wound, while two or three nodules were seen scattered about in other places. And here we digress to point out one consideration of great value in this mode of treatment, viz., that the wound being completely open no portion of diseased tissue can escape observation. We are well acquainted with the difficulty when the knife is used of knowing that all has been removed, and the certainty of a recurrence of the disease if the smallest portion is left behind. In our treatment that difficulty with its attendant consequences is obviated. The Acid was again applied to the skin to some little distance beyond the upper part of the wound, and the incisions were continued for eight days, while the paste, at first diluted, afterwards pure, was applied to the diseased portions in other places, the latter were speedily removed, and in about a fortnight, during which time the wound had greatly decreased in size, the last portion, weighing about 5 ounces, came away, leaving the sore perfectly clean and healthy. When we consider that in this way upwards of 17 ounces of diseased tissue had been removed, we cannot but expect that some

* The patient told us that her skin was always very irritable, and that a very slight cause would produce a good deal of inflammatory action.



constitutional disturbance would arise—this had been much controlled by the administration of Arsenic and China, and no sooner was the separation complete, than the health again improved, and in less than three weeks the patient was sent home to all appearance fully recovered. When seen again some time after, she appeared in most robust health, and without the slightest vestige of disease.

As we have not previously alluded to it, we might here point out the great care which we deem to be necessary in carefully watching the healing of the wound. Not only do we immediately destroy any suspicious appearance that may present itself, but likewise by the application of Nitrate of Silver, or of paste diluted with the Stramonium ointment, any granulations which do not appear to us perfectly healthy, and to this we attribute the almost total absence of a very troublesome scaling and scabbing of the new skin which we have observed in many cases occurring in the hands of some other persons who have practised the system of enucleation. Excepting in the first case quoted this has not occurred, and that case not having been wholly under our own care, we had not an opportunity of watching it during the healing process. Something may be due to the composition of the paste which we use, but we are inclined to attribute more to the practice we have inculcated.

## VII.

J. M., a small spare woman aged 50, who had done a great deal of hard work in her day, was admitted into the *Bath Homœopathic Hospital* on the 23rd of last May. The history of the case as given by herself at the time is as follows :—Ten months ago discovered a small hard lump about the size of a walnut in the upper part of the left breast; about this time she began to experience decided pain in the tumour—pain occurring at irregular intervals, chiefly at night, and of a sharp *stabbing* nature. Three months after this the skin over part of the tumour broke and began to discharge very freely a thin and highly offensive fluid. The pain experienced now was frequent and severe, almost unfitting her for the performance of her arduous duties of a gate keeper; her general health too became so seriously affected by the rapid march of the disease, that she determined to take professional advice. She accordingly consulted a medical man at C———, who told her the disease was Cancer in its worst form, and recommended a tonic for her general health and poultices to the breast. The disease now began to make most

rapid progress, so much so, that when she first sought our help in May, at the North Wilts Dispensary, the tumour occupied nearly the whole of the breast, and was about the size of a large orange, irregularly nodulated, and puckered on its surface, the nipple retracted, and the whole mass firmly *adherent* to the subjacent tissues; but worse than all, the disease was fast creeping towards the armpit, producing cancerous infiltration of the integument and glands in the neighbourhood; this was the case to such an extent that the patient had almost lost the power of using her arm, on account of the lower edge of the *pectoralis major* muscle having become involved in the disease. The patient exhibited decided traces of the constitutional effects of Cancer, so that on this account, together with the fear lest the paste should not be able to overtake the local disease which was making such rapid strides towards a locality where it would prove invulnerable, we hesitated about the propriety of instituting any local measures for her relief; but, on consultation, it was determined to give her this chance, and accordingly the treatment was commenced forthwith, viz. on the 25th of May. The acid was applied to every part of the unbroken skin over the tumour, *carefully avoiding the ulcerated portions*. The paste, diluted with Stramonium ointment, was then applied to the whole surface, and allowed to remain in contact therewith for twenty-four hours. On removing the dressing next day, the paste was found to have done its work, and six incisions were now made in a vertical direction over the tumour, mere scratches at first, but daily deepened, into which strips of calico saturated with the paste were inserted. During the treatment two cavities were opened, which were treated in the way already described; slight hæmorrhage was controlled by pressure; some little amount of constitutional disturbance, caused by the absorption of the chloride, was met by the exhibition of *Aconite* and *Arsenicum;* and at the expiration of four weeks from the commencement of the local treatment, the incisions ($2\frac{1}{2}$ inches in depth) appeared to have penetrated the entire dead cancerous mass, and a line of separation having formed all around it, the eschar, weighing seven ounces, came away on Sunday, the 21st June. The amount of pain experienced by the patient during the process of enucleation was inconsiderable—nothing like those *cancer pangs* from which she had suffered previously, and which are of an altogether more insupportable nature than the *sense of smarting and weight* which sometimes accompanies the enucleatory treatment. On making a very careful exploration



of the wound we discovered that a very minute portion of cancerous tissue had been left behind; we therefore reapplied the paste, following this up by incisions in the hardened mass as before, and in the course of ten days an eschar, about the size of a hazel nut, separated and came away. The wound was now treated in the usual way, cicatrization rapidly took place, and the patient was discharged on the 25th August,* *free from all pain, and so much improved in health and spirits*, that she really did not look like the same individual. Since her discharge she has written a most grateful letter of thanks, and says there is no trace of the disease in the breast, and that she continues "perfectly free from pain and in excellent health." We may just add, that this patient is still taking the Hydrastis, and that it was steadily administered during the three months she was under our care.

## VIII.

Mary S———, æt. 48, sought our advice at the *Bath Homœopathic Hospital* about the beginning of last April. She stated that she had a cancer in her left breast of two years standing; that she had applied to Mr. ———, of this city, who advised its removal by the knife, but that unwilling to undergo the operation, she was recommended to apply to us with a view to the peculiar treatment we adopt, and which she was very desirous of trying, provided we thought it would prove successful. On examination we found a large moveable tumour occupying almost the whole of the left breast; blood freely exuded from the nipple, which, however, was not puckered, retracted, or discolored; the glands and integument in the armpit were not affected, but to counterbalance these favourable indications, this patient exhibited the cancerous aspect in so marked a degree as to lead us to fear that blood poisoning to a very great degree must already have taken place. We ought to mention that the tumour was increasing in size, and that the pain which hitherto had not been great, was now becoming worse and more frequent in its attacks; the debility and *malaise* consequent on the constitutional irritation produced by the disease were gaining ground, so that we deemed it prudent to have recourse to enucleation, at the

* She was in a condition to be discharged on the 29th of July, but as she came from a considerable distance, we retained her in the Hospital that we might have her under observation for some time longer.

same time putting her under the action of Hydrastis, administered in the 1st decimal dilution. The local treatment was commenced on the 27th of May, and continued in the usual way without interruption up to the 29th of June, when the slough, weighing eight ounces, came away, leaving a healthy wound, which cicatrised rapidly. She was discharged on the 29th of July, apparently as free from all disease as she was from all pain or uneasiness of any kind. Still, as this patient manifested indications of the system being *cancer poisoned*, we thought it advisable to continue the Hydrastis, with a view to antidote the poison and to prevent a recurrence of the disease.

## IX.

Mrs. ———, æt. 50, came to us as an out-patient at the *Bath Homœopathic Hospital* about the beginning of last June. She had lost her right eye, which had been removed about two years before by a deceased Bath surgeon for malignant disease of the orbit. She now complained of an irregular and painful swelling situated at the angle of the lower jaw of the right side. On examination, this tumour seemed to be connected with the soft parts, not involving the bone itself, but extending into the parotid region; it was moderately soft and somewhat painful to the touch; had lately increased rapidly in size, and from her own description of her sufferings, was apparently beginning to affect the tongue and the muscles of deglutition. We diagnosed the disease as a case of Encephaloid Cancer, and knowing that from its position it would be impossible to enucleate it, we almost despairingly prescribed Hydrastis internally, and a lotion of the same to be applied to the swelling. Under this treatment alone, the patient has improved remarkably in health, the pain is less, and the tumour has sensibly diminished, and is still diminishing. We hopefully contemplate a good result from further treatment.

## X.

Mrs. W———, æt. 50, consulted us about a year ago concerning a somewhat peculiar form of cancerous disease. On examination we found a large, irregularly shaped, fungoid growth springing from the superior part of the sternum, the upper border impinging on the trachea, and the lower on a level with the insertion of the fourth rib. This singular tumour presented somewhat the appearance and very much the size of a large cauliflower, and measured about six



inches in breadth and the same in length; it was raised some four inches above the surface of the breast; had a hard and gristly feel; exuded from its entire surface a profuse, glairy, and offensive secretion very similar to that which takes place in the form of Epithelial cancer called Cauliflower Excrescence of the Uterus.* The tumour had become so burdensome to the poor patient that she was unable to rise in bed or from her couch without assistance, and worse than all, her breathing was beginning to be much affected by the growth spreading in the direction of the windpipe. It was thought unadvisable to attempt the removal of the tumour by enucleation; we therefore contented ourselves with putting the patient on the internal administration of Hydrastis, endeavouring at the same time to curtail the outstanding fungoid growths. Under this treatment the general health greatly improved, and the growth diminished considerably, so that at the expiration of six weeks, it was almost flush with the surrounding healthy structures, giving rise to no inconvenience of any kind to the patient either on taking exercise or when at rest. She was discharged from the *Bath Homœopathic Hospital* at the expiration of two months, greatly benefited by the treatment, and enjoying a measure of comfort to which she had been a stranger for two years. We much regret that circumstances, which do not admit of explanation here, prevented our having recourse to the *paste* in the first instance, as we now think the local disease might have been entirely removed by it. As the case stands, it is reported chiefly to illustrate the beneficial effect produced on the general health by the Hydrastis, and which we believe still continues.

It may be thought, from the encouraging character of the cases reported, that we have purposely selected the most favourable ones, carefully omitting those in which our treatment has been unsuccessful. We beg to reply that we have had no unfavourable cases, and that we have purposely reported those which were the most unpromising. It is true that we have used some amount of caution in selecting the patients from whom we have enucleated cancerous tumours; indeed, in the very week in which we are writing we have refused to adopt

* See a very interesting case of this nature reported in the *Lancet*, by Dr. MacLimont, Vol. I., 1856, p. 368.

the treatment in three instances; nevertheless we feel sure that some of the cases we have reported could by no means have been regarded by any as promising ones. We dare not undertake to affirm that in none of them will the disease return, but, with the exception of cases IV and V, which are still under treatment, we consider our patients in decidedly as good a position as they were before it first appeared. Many cases which cannot be cured, as already stated, we believe to be capable of deriving *much relief* from this treatment.

Not being directly cases of Cancer, we do not detail three cases of Lupus which we have treated most successfully by this method, two of which had been treated ineffectually by other modes. The first of these cases passed out of our hands eighteen months ago, and remains perfectly well; the other two have been treated more recently, but give so far every evidence of a complete cure. We apply in the first instance a plaster composed of a mixture of the paste and Stramonium ointment, and then make incisions to such a depth as in our opinion shall undermine the diseased parts; the affected portion sloughs out, leaving a healthy sore which very speedily heals.

We would just add that by the term "incisions," so frequently made use of in this paper, we simply refer to the *scoring* as it were of the dead tissues, in order to allow the paste to percolate the entire diseased mass, and that *no pain* or inconvenience of any kind is produced by these incisions.

W. Davy & Son, Printers, 8, Gilbert street, W.

ON

# THE SUBCUTANEOUS TREATMENT

OF

# CARBUNCLE,

BY JOHN GEORGE FRENCH, F.R.C.S.

SURGEON TO THE INFIRMARY OF ST. JAMES', WESTMINSTER.

*Read at the Royal Medical and Chirurgical Society, June,* 1862.

I have occasionally, during many years, adopted a mode of treatment for boils and carbuncles which has been attended with great advantage to the patient, and which I will at once proceed to describe. The extent of the induration of the integument is first carefully examined, and then a tenotomy knife is passed horizontally underneath it, the blade turned upwards, and, the forefinger of the left hand serving as a guide upon the upper

surface of the tumour, the hardened structure is cut through, taking care not to wound the surface of the skin; it is, in fact, a subcutaneous division of the disease, and is carried to the utmost extremity of the induration.

The disease, previously spreading, is at once arrested in the direction of the knife, but it is necessary to make a second puncture at right angles with the first, and thus a crucial incision, or it will still spread in the opposite direction. The bleeding is sometimes considerable, sometimes trifling, and when this has ceased, the whole surface of the tumour should be covered with collodion.

Immediate relief is felt by the patient as the result of this proceeding, and he is able at once to pursue his ordinary avocations.

The inflammation speedily resolves, or if any suppuration whatever occurs it is in very small quantity and easily finds vent through one of the punctures.

The following cases will serve to illustrate the subject; but they only comprise a small portion of my experience of this mode of treatment:—

*Case* 1.—A lady, residing in the country, brought her daughter to London in May, 1848,



for the express purpose of going to some balls. On the day before the first party the young lady was attacked with a boil on her face; this, from previous experience, she well knew would render her wholly unfit to be seen at a ball. Being consulted as to the possibility of anything being done, I expressed a favourable opinion if the patient would submit to a painful remedy, which, being agreed to, a fine tenotomy knife was carried under the small round tumour, the hard structure cut through without wounding the skin externally except at the points of puncture, two incisions were made crucially, and, after the bleeding had subsided, the surface was smeared with a varnish consisting of a saturated solution of gum arabic. No inconvenience was felt the following day, all inflammation had subsided, two minute pieces of court plaster concealed the punctures, and she was able to go to the party with perfect comfort.

*Case* 2.—A merchant, in 1854, was terribly annoyed with a succession of large boils, which frequently interfered with his attention to business. Having been obliged to go to the city on urgent business with a large boil in the groin, it became so painful that he drove to my house in a cab on his return, with the hope of gaining im-

mediate relief. Although he resided on the opposite side of the street, he detained the cab feeling incapable of walking a single step. Here the longest tenotomy knife was insufficient to reach the extremity of the disease, and it was obliged to be introduced again at the opposite side to complete the section in its longitudinal direction. A crucial incision was also made. So complete was the relief afforded to the patient that he at once discharged the cab delighted that he could walk without pain. The wound rapidly healed.

*Case* 3.—A gentleman called on me on the 1st June, 1862, with a carbuncle on the back of his neck of two or three days' duration, the pain of which had prevented his sleeping the previous night. The subcutaneous division of the indurated structure was made by three incisions in the form of a star. He was at once relieved and could move his neck without pain. After the bleeding had ceased the whole surface of the disease was covered with collodion. A small quantity of pus was discharged through one of the punctures for three days, and in six days the skin was quite healed and sound. This gentleman was able to attend to his business during the whole period of treatment.



Since the reading of my paper, the following cases are amongst those which I have treated, and each has a point of interest.

*Case* 4.—23rd February, 1863. A gentleman called on me with a carbuncle on the face, near the chin, which was treated subcutaneously, and was cured on the 28th. He now informed me he had been treated for one previously on the opposite temple with a free crucial incision, through the skin, of which the cicatrices were very obvious. I asked him which mode of treatment he preferred, to which he answered there was no doubt the subcutaneous mode was preferable. In the former case he had to be confined to the house for a fortnight, which caused deterioration of his health, besides which, he had then used a poultice, a remedy peculiarly disagreeable to him. On the present occasion he had attended to his business as usual.

*Case* 5.—April, 25, 1863. The Hon. F. B., in his 79th year, of good constitution and active habits, called on me with a carbuncle similar to that spoken of in Case 3. Although he could not move his neck from the pain and tension of the swelling when I examined it, yet after the subcutaneous crucial incisions had been made he could move his neck

freely, and enquired if there were objections to his keeping a dinner engagement. I assured him that he might, in moderation, continue his usual habits, and afterwards learnt from him that he had not found any interruption to his usual pursuits.

This case is remarkable as occurring in a patient of advanced age, and I have the satisfaction of knowing that he now enjoys good health.

Since the publication of my paper I have had much more experience of this treatment, and have found that even in advanced and neglected cases the best results are obtained by dividing extensive induration subcutaneously, and have been frequently assured by other surgeons that they have been surprised at the results thus obtained.

An inquiry is often made by the patient whether the malady will return elsewhere if thus suddenly arrested? I do not find that a second boil or carbuncle occurs, when thus interrupted, so frequently as when the disease is left to take its course; on the contrary, where poultices are used a recurrence is frequent; indeed, this remedy, when used for other disorders, often seems to produce the disease.

With regard to larger and more neglected carbuncles, where the life of the patient is endangered by their extent, it is worth while making the remark that the disease can at any time be arrested by the knife *while it is still spreading*. But the *crucial* incision is often insufficient where the disease has acquired the size of a cheese plate. It will spread at the circumference between the longitudinal and lateral incisions at some point or other, and an incision made here at once still arrests its progress. A large carbuncle will, therefore, often require to be *starred* to arrest it completely.



What is called *opening* a carbuncle, that is, making a free incision simply or crucially in the centre, does not, so far as my observation goes, appear to do any good; and I think the doubt about the good effect of operative procedure, which exists in the minds of some surgeons, is due to the observation of this method alone.

41, Great Marlborough Street.

ON THE

# MERCURIAL & NON-MERCURIAL TREATMENT OF SYPHILIS.

BY

R. WILLIAM DUNN,

SURGEON TO THE FARRINGDON DISPENSARY; VACCINATOR TO KING'S COLLEGE HOSPITAL; ETC., ETC., ETC.

---

"It is surely of the first importance, in the treatment of disease, to be certain that, in attempting to drive one poison out of the system, we do not introduce another poison, more subtle and more baneful, in the place of that which we are seeking to eradicate."
DR. WILSON.

---

LONDON:
ROBERT HARDWICKE, 192, PICCADILLY.

1866.

# PREFACE.

A PORTION of this pamphlet having been read before the "Medical Society of London," some of my medical friends have induced me to enlarge the same. The object of it is to institute a slight comparison between the mercurial and non-mercurial treatment of Syphilis. I have written this in the hope that the authors I have quoted upon each mode of treatment may have their various opinions brought before my medical brethren in a more concise form than when the reader has to refer to so many different works on the same disease.

The mercurial treatment of Syphilis having met with so little success at the hands of so many distinguished medical men, I bring my own experience to bear upon this subject, which is certainly in favour of the non-mercurial mode of treatment.

I wish also most earnestly to draw the attention of the Profession to the great success that has followed this mode of treatment in hereditary Syphilis, as is shown by the results from the practice of my friends and myself.

R. W. D.

13, Surrey Street, Strand,
*May*, 1866.

ON THE

# Mercurial and Non-Mercurial Treatment

OF

# SYPHILIS.

---

The pathology and treatment of Syphilis have engaged the attention of many of the ablest and best minds in our profession ever since the disease has been known, and volume upon volume has been written upon the subject; but as regards treatment, we of the present day have not made much advance upon the past. At the present time the disease is treated by three methods, viz., the simple, or non-mercurial, the mercurial, and by syphilisation. The latter mode of treatment has not been studied in this country until very lately, and the results of the experiments carried on at the Lock Hospital by Professor Boeck have not yet been published, but the success following this mode of treatment in his own country has been greater than either the mercurial or non-mercurial. We find, if we refer to the authors who write on the subject in the sixteenth century, that there were two modes of treating this disease, viz., the mer-

curial and the non-mercurial, each method having its supporters.

In the year 1649, Ambrose Paré states as follows :—" Mainie sorts of remedies have been found out by mainie to oppugn and overcom this diseas, yet at this daie there are onely four which are principally used. The first is by a decoction of '*Guaicum*,' the second by unction, the third by emplasters, and the fourth by fumigation, all of them by '*Hydrargyrum*,' the first excepted; yet that is not sufficiently strong and powerful, for experience hath taught that the decoction of '*Guaicum*' hath not sufficient strength to extinguish the venom of the venereous virulencie, but onely to give it eas for a time, for because it heat's, attenuate's, provoke's sweat and urine, wast's the excrementitious humors by drying them, it seemeth to cure the diseas; for that thereupon, for some time, the pain and all other symptoms seem more remiss; but these endeavours are weak and deceitful, as whereby that onely which is more subtle in the humors in fault, is exhausted and dispersed by sweat. But '*Hydrargyrum*' is a certain higher power, contains therein all the power of *Guaicum*, yet much more excellent and efficacious; for besides that it heat's, attenuate's,



cut's, resolv's, and drie's, it provoke's sweat and urine, and, besides, it expel's noxious humors upwards and downwards by the mouth and stool, by which evacuations not onely the more subtle, but also the more gross and feculent excrements, wherein the seat of this diseas is properly fixed, are dispersed and evacuated, by which the physician may be bold to assure himself of certain victorie over the diseas. But after the use of the decoction of '*Guaicum*,' fresh pains and knots arise by the reliques of the more gross and viscous humors left in the cavities of the entrails, but '*Hydrargyrum*' leav's no reliques behinde it."

In the eighteenth century we also find that there is still as great a division in the treatment of this disease, Hensler, Cockburn, and others asserting, that specific treatment is not necessary, while John Hunter produced his theory, which was adopted by the partizans of a venereal virus and mercury.

John Hunter, in his treatise on the venereal disease, says, "Nothing can show more the ungrateful or unsettled mind of man than his treatment of this medicine. If there is such a thing as a specific, mercury is one for the venereal disease in two of its forms, yet mankind are in

pursuit of other specifics for the disease, as if specifics were more common than diseases, while at the same time they are too often contented with the common mode of treating many other diseases for which they have no specific, and these prejudices are supported by the public, who have in their minds a dread of this medicine, arising from the want of knowledge of our predecessors in administering it, and many of the present age, who are equally ignorant, take advantages of this weakness. Mercury in the constitution acts on all parts of the machine, cures those which are diseased, and affecting but little those that are sound."

In reference to Guaiacum, he says, "I found it had considerable specific power over the disease, consequently it may be of service in slight cases where it may be inconvenient and improper to give mercury, on account of some other disease. These cases, however, I have not yet ascertained, as it may be given in these cases when it is apprehended that the quantity of mercury necessary to subdue the disease would be too much for the constitution to bear; cases which sometimes occur. The sarsaparilla *appeared to* have no effect at all."

But it was at the commencement of the present century that the great crusade was made against



the specific mode of treatment, no doubt from the fact of seeing so many dreadful results arising from over-doses of this drug. The non-mercurial treatment of Syphilis in the earlier part of this century was supported by the Royal Council of Health of Sweden, Fricke, Duvergie Kayser, Rapatel, Desruelles brothers, Judd, Hennen, Guthrie, and many others.

From 1800 to 1835, according to the "British and Foreign Medical and Chirurgical Review," vol. 5, in an article on Syphilis, "We find the sum total of cases submitted to the above experiments amount to about 80,000; indeed, they might be fixed at a much higher number, and it appears that the proportion of relapses and secondaries, where the primary sore has been treated without mercury, is at the lowest estimate ten, and the highest twenty, in a hundred. We are perfectly willing to admit that the great irregularities which characterize Syphilis, and the very different conditions under which it appears, give less force to statistical evidence applied to its elucidation than to that of many other diseases. Yet, making every allowance for data thus collected, and taking into consideration the incompetence of many of the individuals to

observe accurately, and the party feeling of others, combined with the perplexities arising from the mal-administration of mercury, &c., &c., it cannot be denied that a sufficient mass of observations remain to establish the fact that a large majority of primary syphilitic affections get well like ulcers, under simple treatment, or even by the *unaided* powers of the constitution, and that of those cases of secondary disease which do occur, although perhaps subject to more frequent relapses, the greater number will ultimately wear out, or be overcome by the mere action of the secretory and excretory functions, thus leaving a small remainder of inveterate instances to be combated by other means."

Dr. Colles, in his work "Practical Observations on the Venereal Disease, and on the use of Mercury," says, "We must acknowledge that the profession is highly indebted to those who have lately introduced the non-mercurial plan of treatment, for we have now not only acquired a second line of treatment for venereal cases, but, what is of the highest value, we have been released from an inveterate and deep-rooted error, from an unfounded conviction that the venereal disease could not be cured by the innate powers of the system,



unless aided by mercury. I need not add that all the opinions and practices consequent on this prejudice have been subverted."

Dr. Graves, in his clinical lectures on the practice of medicine, 1844, says, "Who can read without shuddering the long detail of misery inflicted upon unfortunate venereal patients in the time of our predecessors,—the exhausting salivations, the inveterate nodes, the frightful caries and sloughing, the emaciations, the hectic, the rapid, lingering, but ever fatal phthisis,—hundreds of victims whose slight primary symptoms might have been successfully treated without a single grain of mercury have had their constitutions gradually broken down, until at length scrofula became fully developed, and was quickly followed by its attendant tubercular consumption."

The mercurial mode of treatment was equally strongly supported by Carmichael; even Desruelles admits the superior efficacy of mercury in the indurated form of chancre; Bené, Wallace, Dupuytren, Brodie, Evans, Abernethy, Osterlin, and many others. In the "Elements of Practical Medicine" by Franciscus Bené, M.D. 1833, he says, "Many cases are adduced by English, French, and German physicians, by which they

have endeavoured to prove mercury to be unnecessary in the treatment of syphilitic ulcers. We do not doubt the observations of celebrated men, but to us it appears in the highest degree probable that the ulcers which have been cured without mercury, and without any after consequences, were not syphilitic;" and he recommends the patient to be salivated, and the effect to be kept up for several weeks. His favourite remedy is by inunction causing ptyalism to the extent of three pints and upwards in the day, and continued at least four weeks.

In the works of all the authors above enumerated, we find that although their patients have been treated strictly according to the mercurial mode of treatment, they have secondary symptoms, even caries and necrosis of bones. Amongst the earlier non-mercurialists, we find also that their patients have secondary symptoms; but there is not a single case mentioned either of caries or necrosis of bones—the only difference in the evidence of the earlier writers of the present century relates to the point under which mode of treatment secondary symptoms are the most frequent.

From the report of the Army Board, dated



April 2nd, 1819, it appears that 1,940 cases of ulceration of the genitals occurred between 1816—19, and were treated without mercury; 96 cases of secondary symptoms occurred; 2,827 cases of ulceration of the genitals were treated with mercury, with only 51 cases of secondary symptoms.

Mr. Dease, of the York Hospital, says that in 60 cases of ulcers of the penis treated by simple means, secondaries occurred in 6 cases.

Mr. W. H. Judd treated 40 cases without mercury, 7 cases of secondaries occurred, all very slight; but out of the 40 cases treated by mercury, he had 10 cases of secondaries—one a case of exfoliation of the alveolar process of the jaw, and two cases of iritis.

Mr. Green, of Bristol, treated 100 cases without mercury, with only 9 cases of secondary symptoms.

Dr. Fricke, of Hamburg, treated 573 cases with mercury—165 had secondary symptoms. Dr. Fricke discovered, contrary to his expectations, that the disease was cured more rapidly without mercury, and that relapses were much less frequent and slighter.

Dr. Hennen treated 407 cases of primary sore without mercury—secondary symptoms followed in 46.

Prof. J. Thompson treated 155 cases without mercury—16 had secondary symptoms.

Dr. Kurris, of Philadelphia, treated 164 cases without mercury—only 3 cases of secondary symptoms.

Dr. Richond, of Paris, treated 1,442 cases by mercury—63 cases of secondary symptoms, and 947 cases without mercury, with 24 cases of secondary symptoms.

Thus we have 4,882 cases treated with mercury —289 cases of secondary symptoms occurred, that is, 1 case in 16; and 3,813 cases treated without mercury, with 207 cases of secondary symptoms, that is, 1 case in 18. Therefore, from these few statistics which I have been able to collect, we find that secondary symptoms occur more frequently under the mercurial than the non-mercurial. This fact is also shown to be the case in the present day from the observations of Professor Boeck, who states that 3,123 persons were treated for Syphilis by mercury—1,036 had returns of the disease, that is, 33 per cent.; 280 persons were treated without mercury—82 had returns of the disease, that is, 28 per cent.

From Dr. Fricke and W. H. Judd's experience, the secondary symptoms are much slighter under the non-mercurial than the mercurial treatment.



Samuel Cooper, in his work on the Practice of Surgery, 1826, states, "As to the general mildness and curability, without mercury, of the secondary symptoms, which take place in cases where that mineral has not been employed, reports of all the gentlemen who have entered into this investigation completely agree. They also concur about the rarity of affections of the bones;" but in his "Surgical Dictionary," 1825, he states that, "When I was an apprentice at St. Bartholomew's Hospital, most of the venereal patients in that establishment were seen with their ulcerated tongues hanging out of their mouths, their faces prodigiously swelled, and their saliva flowing out in streams. The wards were not sufficiently ventilated, and the stench was so great, that the places well deserved the appellation of *foul*. Yet, notwithstanding mercury was thus pushed (as the favourite expression was), it was then common to see many patients suffer the most dreadful of mutilations in consequence of sloughing ulcers of the penis; other patients, whose noses and palates were lost; others who were covered with nodes, and dreadful phagedænic sores."

Amongst the mercurialists of the present day,

we find most of the leading surgeons, viz., Ricord, Cazenave, Acton, Lee, Brodie, De Méric, Langston Parker, Erichsen, Hamilton, and many others. Ricord even asserts that the surgeon who omits the full mercurial course of treatment ought to be considered responsible for the constitutional symptoms that are almost sure to succeed the omission of mercury. M. Cullerier, in the "Mémoires de le Société de Chirurgié de Paris," tom I., 1847—9, states, in reference to Ricord's opinion as to the modifying influence of the mercurial treatment, that it is observed that out of 28 cases 6 had been treated for primary disease alone, 9 had undergone treatment for both primary and secondary, 13 had undergone treatment for the secondary symptoms, and in 4 of these tertiary symptoms had appeared during the treatment. It is a curious fact, that so many as 13 out of 28 cases should have undergone the mercurial treatment without arresting the progress of the disease. So, too, in observations derived from other sources, an enormous proportion of secondary symptoms will be found in which mercurial treatment was adopted for the primary. Thus, not to cite authors who confound all species of constitutional Syphilis under the name of secondary symptoms,



reference may be made to M. Martin's essay on syphilitic eruptions, that a majority of these patients had undergone mercurial treatment.*

Sir B. C. Brodie, Bart., in a lecture delivered at St. George's Hospital, on this subject, says:—"Experience proves to me, and I am sure it will prove to you also, that we have found no remedy having the same power to extinguish the venereal poison as mercury. But then it must be judiciously administered at the time, and in such cases only as are proper for it; and, without all this care, it may do great harm. In this there is nothing remarkable. With an exception, perhaps, of sarsaparilla, I do not know any medicine capable of doing great good, that may not, under certain circumstances, operate as a poison. A remedy that is strong enough to do good is almost invariably strong enough to do harm, if it is not properly used. You are not, then, to suppose that you are to administer mercury as a matter of course in all cases of Syphilis; but the general rule is, that it should be given, and it being so, I shall endeavour to point out briefly *not* the cases in which you may exhibit it, but those in which

* "British and Foreign Med. Chir. Review," vol. 10. New Series.

you either do not give it at all, or give it with special caution. There are persons of a certain delicate constitution, having what is called a 'scrofulous diathesis,' disposed to phthisis and other diseases of the same class, and here you should not administer mercury until you are quite sure that it is wanted. When, in these cases, it is absolutely necessary to exhibit mercury, it must be done with great care. The remedy must be given in moderate doses, and the patient must be well watched all the time that he is using it."

Mr. Henry Lee says that the system should be kept under the influence of mercury, not only until the ulcer is healed, but until the induration has disappeared. This, I believe, is the doctrine of all the mercurialists, some even asserting that the indurated sore cannot be treated without the aid of mercury. Mr. Lee, in a paper on the infecting sore, in the "British Medical Journal," states as follows, as regards the influence of mercury:—"The action of mercury has admittedly the power of putting off the appearance of secondary symptoms, if not preventing their appearance altogether. It consequently happens that comparatively few of the patients whose cases are mentioned in the table were affected with secondary symptoms during the time they remained



under observation. In some of these, however, the secondary symptoms appeared during the time that they were taking mercury, and it is more than probable that they showed themselves in a large proportion of the other cases after they left the hospital. It is impossible to get any accurate account of these, as far as the individual cases are concerned, but taking an equal period of time, viz., 12 months, 73 cases presented themselves in which the specific adhesive inflammation (the indurated sore) was known to have been followed by secondary symptoms."

I suppose that all these 73 cases had undergone mercurial treatment, without preventing the secondary disease.

Mr. Acton, in his work "On the Diseases of Urinary and Generative Organs in both Sexes," 1851, says "that if a sore gets well without mercury, and the patient does not suffer under secondary symptoms *within* six months, THEY NEVER WILL OCCUR. He has a perfect immunity, provided he contracts no second sore. *But* if the sore be treated with mercury, the patient may, *it is true*, remain free from secondary symptoms some *months*, yes, perhaps *years*. They may be so slight as to pass unnoticed; or, lastly, such a patient may escape secondary symptoms alto-

gether, and years will pass before the tertiary form will break out."

Yet Mr. Acton is a mercurialist. Now, as it seems by this statement that the only effect of the mercury is to retard the secondary symptoms, or to prevent their appearance, whilst yet the disease remains latent in the blood for months, or even years, and then tertiary disease will break out, would it not then be a great deal better to avoid the use of the mineral in the treatment, since evidently Mr. Acton does not think mercury can cure the disease?

Mr. J. Erichsen, in his "Science and Art of Surgery," states, "I cannot agree with the statement that secondary symptoms are less frequent after the simple than after the mercurial treatment of Syphilis. I have seen the non-mercurial plan of treatment very extensively employed at the University College Hospital; indeed, it was formerly almost invariably practised there, more particularly in the syphilitic cases occurring amongst the out-patients under the late Mr. Morton, who strongly advocated it; and I have had repeated occasion to observe the frequency with which it was followed by secondary symptoms. In private practice, also, I have had considerable opportunities of comparing the two methods, and



I can safely say that I have seen the simple treatment more frequently followed by secondary symptoms, than the mercurial plan has been when properly and judiciously employed. The supporters of the non-mercurial treatment, when obliged to admit the great frequency with which it is followed by secondary symptoms, argue that, if more frequent, they are less severe after the simple than after the mercurial plan; and they state somewhat dogmatically—and as it appears to me without much evidence to support this statement—'that mercury and Syphilis together form a poisonous compound in the system which produces the worst and most destructive forms of constitutional Syphilis. Some of the recent forms of constitutional Syphilis I have of late seen occurred in patients to whom no mercury had been administered, but in whom the syphilitic virus had been allowed to exercise its influence unchecked save by the so-called simple treatment. That mercury, in many cases, is antagonistic to the syphilitic poison, appears evident from the fact that in some instances chancre will not heal unless it be given internally, from its influence in infantile Syphilis, and that when properly administered to *healthy* constitutions, it may almost to a certainty be looked upon as a preventive to the

occurrence of constitutional Syphilis. When it fails, as it doubtless does in many cases, to prevent or eradicate the constitutional infection, the cause of the non-success may usually be traced either to want of care in its administration, or to the existence of an impaired state of the patient's health."

The evidence of Mr. Erichsen is very strongly in favour of the mercurial treatment, yet it is quite contrary to the evidence of Professor Boeck, of Christiania, on this point. His opinion is, that under the non-mercurial treatment, secondaries are less frequent and never so severe as under the mercurial.

J. Miller, F.R.S.E., in his Practice of Surgery, says:—"That mercury is a specific, indispensable as well as infallible, for the venereal disease in all forms, is a maxim which, happily for mankind, is falling into desuetude. It is now abundantly established that many forms of the disease, nay, the greater number of cases, are capable of perfect cure without the use of the mineral; that by simple means—that is, non-mercurial—the cure is shorter: the symptoms prove less grave, and immunity from future calamity connected with the attack, its progress, or its mode of cure, is much more certain. In other words, the system is



cleared quite effectually of the venereal poison, and it is saved from the pernicious effects of the mercurial poison, perhaps the more formidable of the two. There are certain cases, however, in which it has been shown, by experience, that a satisfactory issue cannot be obtained without recourse to mercury. And in those cases its judicious employment seldom leaves any deleterious impression on the system, there being then a decided tolerance of its administration."

M. Cazenave states that mercury is not a specific for Syphilis, and, however carefully administered, it will not prevent a relapse; the primary symptoms of the disease may disappear under the influence of an antiphlogistic treatment, but the mercurial is the most powerful means we possess for aiding a constitutional reaction against the syphilitic virus; he also gives preference to mercury above all other remedies in the treatment of venereal eruptions.

C. Muller, of Vienna, affirms that mercurial treatment is in no way prejudicial, but the contrary, even when carried on during pregnancy. In eleven cases recorded by the author, the children begotten after this treatment were healthy and remained so.

Sir C. Bell says, "Is there any experienced

senior of the profession, who, having a son of 18 or 20, and that son having a chancre, would treat him without mercury? No, there is no such unnatural person." We of the present day have found these unnatural persons in the names of Boeck, Bidenkap, Syme, Hermann, Weeden Cooke, Baerensprung, Marsden, Drysdale, and many others who do not trust to the mercurial treatment in either the primary or secondary form of the disease, but rely on simple remedies, and they assert that the more intractable forms of Syphilis are caused by the complication with the mercury which the patient may have taken. This also was the opinion of the earlier non-mercurialists.

Mr. H. Lee, in his observations of 160 cases of Syphilis, states that the papular and scaly eruptions are observed in greater relative proportion in those cases where the primary disease has been treated by local means, and that the pustular and tubercular eruptions are most common after the administration of mercury. This, I think, bears out strongly the views of the non-mercurialists; since they say that the secondary symptoms which follow their treatment are not nearly so severe as those which follow the mercurial.

The opinions of M. Cullerier, on the treatment of Syphilis, extracted from M. Lucas Championnierés



practical researches on the treatment of Syphilis, are—

1st. That relapses, after the employment of simple treatment regularly administered, are extremely rare, but that they occur at a very early period after the primitive affection.

2nd. That those, after primitive symptoms abandoned to themselves, or of which the cure has been accelerated by cauterization, are not rare, but in general they are not serious.

3rd. That relapses after incomplete mercurial treatment are very common, and that consecutive symptoms of all kinds, and of all degrees of severity, manifest themselves at any period.

4th. That relapses among individuals, who at every appearance of primitive symptoms have undergone a mercurial treatment in a most complete manner, amount to a fourth part of the sum total of those he has observed; that they are excessively severe, and almost always consist of affections of the fibrous and osseous symptoms, chronic tubercular affections of the skin, or extensive ulceration of the mucous cavities.

In the observations of Dr. Struntz, of the Charité Hospital, at Berlin, we find—"All cases of primary sore, including condylomata, were treated successfully without mercury. The number of patients dis-

charged cured were 733, and of these Dr. Struntz had not met with a single case of secondary Syphilis up to the period of publication. Both modes of treatment were followed at the Charité, but it was found that those patients who were treated with mercury could not be discharged for two, three, or even four weeks later than those who had not taken any mercurial preparation."

Mr. Guthrie treated about 100 cases of primary sores without mercury, and thinks it an established fact that every kind of ulcer of the genitals is curable without mercury. He, however, thinks that in some cases a gentle course will expedite the cure, but does not consider it a specific for the venereal disease.

In "Pirogoff's Surgical Annals," published in "Oppenheim's Journal," September, 1838, it appears that mercury is very seldom employed at Dorpat for the cure of the venereal disease. Yet Dorpat is remarkable for the number and severity of syphilitic cases. Pirogoff's general mode of treatment is non-mercurial; and he maintains that relapses are less frequent and less violent than when mercury is employed as the general means of cure.

Mr. Green, of Bristol, in the second volume of the "Transactions of the Provincial Medical and



Surgical Association," says, "That every form and stage of venereal disease, except iritis, can be cured completely, and better treated, without mercury than with it; that, in some cases, mercury not only fails altogether to cure, but aggravates, the disease, and, therefore, is not specific; and what have been considered to be as some of the worst cases of secondary Syphilis, result entirely from mercury itself—from the very means used to cure the disease."

Now, as regards iritis, Dr. Drysdale and myself have cured cases of *syphilitic iritis without mercury*.

Professor Baerensprung admits the rapidly curative action of mercury in almost all syphilitic symptoms, as one of the most striking therapeutic phenomena, but he has, nevertheless, abandoned the use of it. He avows that Syphilis can be cured *thoroughly* without mercury; while under its use the disease is often rendered *latent for months and years*, and its complete cure is delayed. Mercury *also deteriorates the constitution*, and favours the development of destructive local affections. The non-mercurial treatment, in short, is slower, but surer.

M. Diday states, in his work on the "Natural History of Syphilis," "Now, mercury, as is well known, since its effects have been better studied,

has been obliged to abandon the pretension of radically curing Syphilis, so as to render all relapse impossible. Its warmest advocates do not in the present day do more than claim for it the power of delaying the appearance of the first syphilitic manifestations, and of hastening the disappearance of certain of them. In fact, I possess, and shall produce, 57 observations, from which it clearly results, that mercury, given from the commencement of the primary lesion by the best specialists, and continued in full doses during a long or longer period of time than the surgeon has desired, has left the Syphilis to conduct itself, as if the mercury had never been given, that is, sometimes to terminate favourably, after two or three attacks of symptoms of no great intensity, and gradually decreasing in severity; sometimes to relapse at short intervals, and become more and more severe, and at length become tertiary. On the other hand, mercury has its inconveniences and its dangers. While absolving it from the production of imaginary evils—while declaring it innocent of the production of certain syphilitic lesions, which Germany still persists in laying to its charge, I impute to it positively, and on sufficient clinical evidence, the following disadvantages :—

1st. Rendering the primary sore phagedenic.



2nd. Occasioning stomatitis and necrosis of the alveolar borders.

3rd. An acute affection of the gastro-intestinal mucous membrane, and dyspepsia.

4th. Trembling of the extremities.

5th. Apoplexy, though this is rare.

6th. Insanity.

All these accidents I have seen supervene as the results of treatment ordered and superintended by the most competent and most attentive practitioners; moreover, I have seen Syphilis treated without mercury in general recover. I have collected numerous observations where the persistence of the cure has been determined at the end of four, five, six, seven, and fourteen years, counting from the disappearance of the last syphilitic symptoms."

Dr. Hermann, who has had great experience in the treatment of this disease, in the Wien Medicin, Wockensch, says, "he knows of no such thing as a general syphilitic poisoning of the blood, and affirms that all the forms which have been hitherto traced to a syphilitic crasis of the blood, and considered as constitutional, do not belong to Syphilis, but are distinctly traced to chronic mercurialization, to the admixture of mercury with the blood. During the last three years he has had

under his hands at the Vienna Hospital some ten thousand syphilitic patients; most of them had been treated without mercury. 300 of these cases, presented in exquisite forms, &c., so-called constitutional Syphilis—the clearest proof was obtained that they belonged to the class of mercurialised diseases. In all the other cases which came immediately under his care, there has not been one single case in which the constitutional Syphilis was developed."

Mr. James Syme, in his "Principles of Surgery," says, "Instead of using mercury pill, which, even thus restricted in its employment, is not free from the dangers of doing harm, I prefer the hydriodate of potass in the dose of two grains taken three times a-day." In reference to secondary symptoms he says, "It is much better to abstain from mercury altogether, and either trust entirely to local means, together with a suitable regimen, or employ iodine in some form in which it is usually prescribed. The simple solution of the hydriodate of potass seems to me the most convenient. In affections of the periosteum, or bones, which, as already mentioned, never occurs in a severe form, except when the patient has suffered from mercurial influence, iodine is also found eminently useful. If mercury were never used improperly,



the treatment of venereal disease, both primary and secondary, would become very easy, and as its abuse is becoming every day less common, there is reason to hope that the formidable class of mercurial diseases, on which volumes have been written, and particularly ulcers of this origin on the genitals, skin, mouth, and throat, will soon cease to be met with in practice."

Dr. Graves, in his "Clinical Medicine," states, "The inferences which my experience has led me to draw on the subject are, that many cases of Syphilis—indeed, a great majority of cases of primary sores—may be cured without mercury. There are others in which its employment is indispensable."

"Were I to speak for myself, I would say that, as a general rule, I prefer the non-mercurial plan in the treatment of primary chancres, particularly of some at the commencement, and when they appear in persons of a delicate and scrofulous habit, I think at least you will not be wrong in giving many cases of chancre a trial, and see whether you can cure them without mercury. If secondary symptoms appear, you have still a resource in mercury —the patient's constitution is unimpaired, and the disease is still amenable to treatment. If you treat your patient properly, he has many chances

in his favour, and if he get secondary symptoms, mercury will still act favourably on his system * * Where a patient has been salivated without being improved, one of two things must be inferred—either that the mineral has had no effect on the disease, or that it has an injurious effect on the constitution. This I have often endeavoured to impress upon you; I will venture to say that I would give a patient labouring under primary symptoms any quantity of mercury without producing a favourable effect on the disease, or doing him any good. I would engage to salivate a man affected with sore throat, and yet leave him as bad, or even worse, than ever. I have witnessed the occurrence over and over again, and have laid it down to myself as a proposition that venereal disease may be treated with mercury to the fullest extent without being cured."

Dr. Fricke remarks, "that although affections of the bones and periosteum are a very frequent effect of the syphilitic poison, *per se*, yet caries and destruction of the bone are seldom or ever observed, except when mercury has been administered. This observation is generally correct, but nevertheless it requires some limitation; for I have seen caries of bone in the venereal disease when not a grain of mercury has been given. In



the cases I allude to, the scrofulous diathesis was pre-eminently marked, and the affections of bones which the venereal poison exhibited immediately degenerated from its usual course, and assumed all the characters of scrofulous disease. In either instances destruction of the nasal bones and consequent sinking of the nose occurs—a deformity occasionally of simple scrofulous origin." *

T. Weeden Cooke, "On the Relative Influence of Nature and Art in the Cure of Syphilis," says, "Accidental circumstances led me to the observation, some years ago, that an indurated chancre was not necessarily followed by constitutional Syphilis. I have already quoted instances; I thought that these cases, taken together with the unfavourable results obtained from mercurial treatment, would be ample justification for 'daring' to abstain from mercury entirely. By this proceeding I observed that although some persons were exempt from any constitutional affection, others had cutaneous eruptions, sore throat, and falling of the hair, but in a remarkably modified form. I remarked, also, that this process having been gone through, and no mercury having been administered, the patient recovered, and no relapse occurred, except in those whose habit of

* Graves loco citato.

spirit-drinking prevented the restoration of the tissues to their normal condition. A long-continued observation of the results produced in Nature's own workshop could not fail to convince any one whose mind was not biassed by a foregone conclusion, that the cutaneous eruption was the natural means of relieving the blood of the venereal virus with which it had been inoculated, and that, by suppressing this purifying process, the virus was retained in the system, to spend its venom upon deeper-seated and more important tissues. Here we see the great fundamental error of the mercurial treatment, which not only checks the natural cure of the disease by cutaneous elimination, but adds to the tissues already poisoned a metal whose influence tends most unquestionably to increase the dyscrasia already existing. As long as this counter-poison is in use, the cutaneous eruption is kept in abeyance, but as soon as its influence is removed, Nature asserts her own supremacy, and the disease is thrown upon the surface, unless, indeed, the depressing influence of the mercury has been so great that Nature is cowed, and she has not any longer the power of carrying out her own good intentions."

Dr. Drysdale, in "The Treatment of Syphilis and other Diseases without Mercury," says, "I am



inclined to believe that if the disease were carefully treated by hygienic remedies and topical applications, it would extremely rarely present any features of gravity; indeed, I question whether any very severe symptoms would ever appear in adults. Of course, this is the most difficult point to assert categorically. Almost any disease, in persons of feeble health, either produced by congenital influences, or by bad habits, may lead, in rare cases, to severe accidents; just as a slight bruise may lead, in a spirit-drinker, to erysipelas and death. Severe cases, however, if they may occur under careful hygienic treatment, are extremely rare; but even were they common, it would evidently be a most illogical conclusion to imagine that therefore they ought to be treated by so treacherous a drug as mercury. For the evidence contained, in the previous pages, proves most conclusively that whatever Syphilis may be when treated hygienically and topically, it is infinitely severer when interfered with by the mineral.

"Were mercury entirely abandoned in the treatment of Syphilis by all practitioners in any country during the next ten years, we should then be able to judge what the disease really may lead to; and all that we are now warranted in saying is, that

all the cases which have been treated without mercury by Fricke, John Thompson, Syme, &c., have recovered, without the serious complications we so constantly observe, even to this day, in the patients of mercurialists. I cannot help, then, conjuring my brethren of the medical profession to reconsider their opinions as to the value of mercury in the treatment of Syphilis, and other diseases."

Can these secondary symptoms, which follow either mode of treatment, be cured without mercury?

Yes, they can; there is not the least necessity for the drug at all: the true mode of treatment is to employ the most active means we have, to improve the constitution of our patient by tonics, liberal diet, strict hygienic laws, and to keep the secretory and excretory functions in order. By doing this, our patient will recover much sooner if there has been no mercury administered; but if this drug has been given, we must endeavour, by proper remedies, as iodide of potassium, purgations, Turkish baths, to eliminate it from the system. If we can succeed in doing this, it is my firm conviction the patient will recover, and, judging from practical experience, I am quite certain that, in all cases where mercury has been administered, re-



lapses will be more frequent than in those cases where it has been avoided.

In reference to constitutional Syphilis, Mr. Erichsen says, "I think we should endeavour, if possible, to remove the constitutional affection without mercury. It is true, that in many cases we shall not succeed in doing so, but at least we improve the health and *check the disease*, and bring our patient into a proper condition to support a mercurial course, should it be thought necessary eventually to put him upon one."

"That great advantages result from maintaining the tone of the system in Syphilis, is undoubted: we always find that the intensity of the ravages of the venereal poison are in direct proportion to the debility and want of resisting power in the constitution of our patient."

"I do not believe that the disease can be eradicated from the system by these means, or that any of these remedies, even the iodide of potassium, can take the place of mercury in the treatment of constitutional Syphilis; indeed, I cannot call to my mind a single case in which this form of the affection has been radically and permanently cured without the administration of mercury."

Dr. Graves, in reference to this point, says, "If you are to believe some authors, you cannot.

According to their views of the case, a patient labouring under secondary Syphilis, if treated without mercury, may get well for a time, but the disease will return again and again until it breaks up the health. All I can say on this point in question is, that I have seen several cases pronounced as secondary Syphilis get completely well without mercury.

"About ten or twelve years ago, there was a case of secondary Syphilis in the hospital, which I undertook to treat without mercury. It was a case of well-marked papular disease, which had made its appearance about six weeks after the primary sore; and to remove all doubts on the subject, I showed the man to the late Mr. Hewson, a gentleman justly esteemed for his accurate and extensive knowledge of the venereal disease. He pronounced it at once a case of true Syphilis, and added that it could not be cured without mercury. As there were no urgent reasons for the exhibition of mercury, I thought it a matter worthy of experiment, and treated the man with purgatives and antimonials, followed by vegetable alteratives and nitric acid. I did so, and succeeded in effecting a perfect cure. I kept the man under surveillance to see if a relapse would occur. He never had a return of the disease, and Mr. Hewson was struck



with the result, as he had no conception the patient would be cured without mercury; indeed, this was the general opinion, the other surgeons of the hospital having arrived at the same conclusion. This case made a very strong impression on my mind, and, connected with others having a similar result, has convinced me that there is some truth in the statement of those authors who say that Syphilis can be cured without mercury. On the other hand, I must confess that there are some cases which answer the description by Mr. Colles, and which cannot be cured without bringing the patient under the influence of mercury. Now, to what conclusion does this tend? simply to this—and I believe it is the conclusion which all rational men have come to—that although there are many cases of Syphilis that can be cured without mercury, there are others in which its employment is indispensable." I have treated now upwards of forty cases of primary disease without mercury. A very large proportion have had secondary symptoms, (in every case but one very slight,) and the patients have been cured of these secondary symptoms also without mercury, and in none has there been any relapse, fully bearing out what Dr. Graves says in reference to the case treated by him, and fully proving to my mind

that the disease can be thoroughly eradicated from the system entirely without mercury; and this also, I think, shows that Mr. Erichsen's opinion is not right, when he states that he does not believe the disease can be eradicated from the system by any other remedy but mercury.

In nearly all the cases of Syphilitic Rupia I have seen (or "mercurial syphilide," as my friend Dr. Drysdale terms it), the patients have been either once, twice, or even three times fully mercurialized.

Dr. Bennett, of Edinburgh, says, in reference to this disease, "I have never met with a case of Rupia but in individuals who have been the subjects of mercurial poisoning."

The worst case of this disease I ever saw was in the wards of the Royal Infirmary of Edinburgh, under the care of Professor Syme. The patient, a man, had been mercurialized three times; the stench arising from him rendered it compulsory to keep the poor man in a room by himself. He was treated with iodide of potassium and chloride of lime lotion, and liberal diet, and ultimately was discharged cured. From this case, and from numerous others that I have seen, both at the Skin Hospital and at the Dispensary, I am quite certain that mercury does not eradicate the disease,



and I think, if we avoided that drug and other lowering remedies, Rupia would soon not be so common a disease as it is at present in this country. I have met with one case of Rupia under the non-mercurial treatment. In this case the patient had been taking for a long time small doses of iodide of potassium, and at the same time suffering from loss of appetite. I shall now quote three cases by each method from my case-book, in as short and concise a manner as possible.

## CASES TREATED BY MERCURY.

1st. A male, contracted primary disease, and came under my care in May, 1862. Chancre slightly indurated; glands in the inguinal region enlarged. Treated by pil. hydrarg, gr. v., night and morning; lotio nigra to sore. Treatment continued until he was salivated. Induration gone, chancre healed. Five weeks after the healing of the sore, syphilitic roseola broke out. He was treated by iodide of potassium, of which drug he took 16 drachms. During this treatment he had ulcerated sore throat and tongue, mucous tubercles on lips. As he did not improve under this treatment, I ordered him calomel vapour baths; he took 45, without benefit. I then ordered him small doses of

bi-chloride of mercury. He took 6 drachms and 3 grains. As his health was beginning to succumb through the treatment, I ordered him to the sea-side. He was then suffering from ulcers of the tongue, and mucous tubercles on lips. January, 1863, quite well in health, but still suffers from mucous tubercles on lips. 1866, seems to be quite well, and has married.

Case 2.—Male, aged 21; indurated chancre treated by mercury to salivation; had enlarged glands in both groins; secondary symptoms first appeared three months after the sore had healed. When I first saw him he was suffering from syphilitic psoriasis affecting the whole of the body. Ordered him calomel vapour baths; he took 124. Discharged cured. A relapse the following spring, for which he took iodide of potassium and sarsaparilla; discharged cured at the end of three months. He has continued ever since to suffer from relapses, principally in the form of syphilitic psoriasis palmaris.

Case 3.—Male, aged 20. Indurated sore, enlarged glands in inguinal region. Treated by hydrarg to salivation, followed by a course of iodide of potassium. Six months after the primary sore had healed, secondaries appeared; treated by iodide of potassium. A relapse again at the end of



four months; treated the same way. Have not seen the patient since.

## CASES TREATED WITHOUT MERCURY.

Case 1.—Male, aged 30. Indurated sore; enlargement of inguinal glands; first came under my care July 1st, 1864. Treated with chlorate of potash, 5 grains, t. d., and lotio nigra to sore.

July 31st. Sore healed, induration remaining. December 9th, came again under my care for gonorrhœa; has had no secondary symptoms as yet; induration quite gone.

Case 2nd.—Male, 32. Large indurated sore, enlargement of inguinal glands, and scaly copper coloured eruption on body; troubled with a cough; feels very poorly; came under my care Feb. 18th, 1865; ordered him a cough mixture, and sulphate of zinc lotion to sore.

April 23. Sore healed; induration still continues; cough mixture; rash the same.

May 3rd. Induration continues; pain in chest; cough and rash the same.

12th. Ordered him out of town, and to take bark and ammonia, and squill and poppy pills; the rash commencing to fade.

June 30th. Rash fading; induration not gone; no medicine.

July 29th. Rash quite gone; induration has nearly disappeared; feels quite well.

Jan. 4th, 1866. Quite well; no induration.

Case 3rd.—Male, 25. Indurated chancre; enlarged glands in groin; contracted the disease four weeks before he came under my care; ordered him pot. chlo. grns. 5 t. d. lotio. zinc sulph. July 14th, 1865.

Aug. 4th. Chancre healed; induration not gone; glands in groin still enlarged.

24th. Induration remains; no rash, but syphilitic sore throat.

Sept. 6th. Better.

21st. Discharged cured; induration not quite gone.

Jan. 6th, 1866. Induration quite gone, and has no symptoms of the disease about him.

I think it will not be out of place here to make some brief remarks on the treatment of hereditary Syphilis. M. Cullerier states, "Although in exceptional cases adults may become freed from constitutional Syphilis without the aid of mercury, this is not the case with infants. By appropriate hygiene, we may disperse all the symptoms, but they will reappear at intervals of greater or less length, until a cachexia is induced, and the child either dies of marasmus, or from its being unable to resist some intercurrent affection."



"A young infant, the subject of Syphilis, and not treated with mercury, always dies within a given period, mercury being indispensable."

Mr. Erichsen says, "The curative treatment as regards the child is extremely simple. It should be brought up by hand, lest it infects the nurse, or continues to receive fresh accession of poison from the diseased milk of its mother. It must be then put under the influence of mercury, which in these cases acts almost as a specific; and, indeed, the ready manner in which all disease may be eradicated from the system of a syphilitic child by this mineral is, perhaps, one of the strongest proofs that can be adduced of the specific character of its action in the venereal poison." Mr. Weeden Cooke, Mr. Allingham, Dr. Drysdale, and myself, treat hereditary Syphilis without mercury, and we find in this disease when so treated, that the rate of mortality is much lower, and the time required to cure the disease much shorter, than when treated by mercury; and that children do not die, as M. Cullerier states, when treated *without* mercury.

The first child I treated by the non-mercurial plan is now nearly four years old, and is in the very best of health, and quite free from all signs of the disease. My friend, Mr. Allingham, informs me that he has treated forty-eight cases of here-

ditary Syphilis *without* mercury; six deaths only; one death where the child was over three months old. The average duration of treatment was forty-six days; the number of relapses known by him were six, and they speedily got well again under the same treatment, and the symptoms were not severe. According to his statistics, published in the "Medical Times and Gazette," October, 1863, we find that the per-centage of deaths under the mercurial treatment were twenty-nine, and yet this mode of treatment was considered to be successful by Sir B. Brodie, M. Cullerier and Mr. Erichsen.

The number of cases I have treated myself is sixty-four; four deaths. The average duration of treatment has been forty days, and the number of relapses known to me has been three.

Diday, in his work on "Infantile Syphilis," says, "Apart from all peculiar circumstances, it appears to me that a three-months course of treatment is sufficient in infants, on condition it be with mercury, and on condition that it be administered directly to the patient himself." Therefore, as regards time of cure, we gain nothing by the mercurial mode. In treating this disease, Diday prefers the bi-chloride of mercury to all other remedies. Sir B. Brodie preferred the mercurial bandage. M. Cullerier's mode of treatment was



by inunction of a mild mercurial ointment to the sides of the chest.

I consider that in the treatment of hereditary Syphilis great attention ought to be paid to the diet of the infant; and I consider it an important point of the treatment that, if the mother be syphilitic, she ought not to suckle her child; for I consider that if the mother be labouring under constitutional Syphilis, her milk must, of course, be in an impoverished condition, or even it *may* convey the syphilitic poison to the child.

Mr. Whitehead, in his work on "Hereditary Diseases," reports four cases in which the disease was transmitted through the milk. Dr. Blundell, in his lectures, mentions the case of a child born syphilitic, of a syphilitic mother, who suckled it. The symptoms in this child on two occasions were removed by mercurial treatment, but when they appeared for the *third* time, he concluded that the disease was maintained through the milk of its mother. The child was therefore weaned, and was cured without difficulty. Therefore, in all cases of hereditary Syphilis, I order the infant to be fed upon some light form of diet that I think it capable of digesting. Extreme cleanliness should be observed, and the child should be placed under strict hygienic laws. The remedies

I have used in treating these cases have been chlorate of potash, with and without hydrochloric acid, cod-liver oil, and steel wine.

In conclusion, I think we can draw the following deductions:—

1st. That the primary sore can be healed without mercury.

2nd. That mercury does not prevent secondary symptoms.

3rd. That the secondary symptoms that follow the non-mercurial are slighter than those that follow the mercurial treatment.

4th. That secondaries are more frequent after the mercurial than after the non-mercurial treatment.

5th. That if the patient be of a strumous diathesis, mercury ought to be avoided.

6th. That Rupia and bone disease seldom follow the non-mercurial treatment.

7th. That perhaps the disease disappears more rapidly under the mercurial treatment, but the result is not effective or lasting, and by avoiding the use of the drug altogether we do not damage the constitution, and nature, with a little help, will cure the disease.

Lastly. That, in hereditary Syphilis, the rate of mortality is lower, and the duration of treatment is shorter, when treated without mercury.

FINIS.

London:—Robert Hardwicke, 192, Piccadilly.



happy effects are intelligible upon this principle alone, and that in considering them as both fulfilling this indication, Mr. Hancock's operation is by very far the most simple and harmless, I must express myself very strongly in its favour, and were I unfortunately the subject of glaucoma, I should unhesitatingly submit myself to that operation in preference to iridectomy, on the grounds of its being far less dangerous in its performance, equally intelligible in its mode of action, and, so far as my experience has gone, quite as satisfactory in its results.

---

*Evidence against the Internal Use of Mercury in Syphilis and other Diseases.* By Charles Drysdale, M.D., F.R.C.S. Eng., M.R.C.P. Lond., Honorary Secretary to the Harveian Society, and Physician to the Farringdon Dispensary.

It may assist us not a little in attempting to discuss a question of such intricacy as that of the administration of a confessedly dangerous drug, which is supposed to act as an antiphlogistic in some diseases, and as an antidote in others, if we clearly recognise at the outset the difficulties we shall have to encounter in proving it to possess either of these properties. These difficulties are inherent in the experimental or empirical method of conducting therapeutical inquiries, and are so insuperable as to render almost all the results of such inquiries nearly valueless. We are at no loss to comprehend the *rationale* of administering a purge, such as Epsom salts or rhubarb, in disease, because we know well that these substances have the effect of purging human beings when in health. We use chloroform and opium on the same theory, experiments having been made upon individuals in health. Such drugs, with a few others, and with external applications added, constitute the great body of our true acquisitions in the department of drug therapeutics; but, when we come to the so-called specific or antidotal action of drugs, the difficulty of judging of results becomes enormous; and it is not from any want of labour on the part of past medical observers that we now possess so few specifics, but simply because of the enormous difficulty of the inquiry.

Perhaps quinine in ague is the only undoubted specific we possess, after all that has been said as to the powers of iodine in scrofula, sarza and mercury in syphilis, and recently of saracenia in small-pox, and hypophosphites in consumption.

Mr. J. S. Mill, in his "Logic" volume 1, in a chapter on the method of experiment, shows how little we can expect from

this line of inquiry in medical science. He remarks that in chemistry, or other true experimental sciences, "we introduce the agent into the midst of a set of circumstances, which we have exactly ascertained. It needs hardly be observed how far this condition is from being realized in any case connected with the phenomena of life. . . . . Anything like a scientific use of the method of experiment in these complicated cases is, therefore, out of the question." Mr. Mill is of opinion, that medicine will not make much advance as a science, until we cultivate it by the deductive method, *i.e.*, by the study of general laws, or conditions of health, instead of so exclusively attempting to discover specifics for disease.

It will be my endeavour in this paper to show, firstly, that mercury possesses only one undoubted action on the healthy person, that of a purge; and, secondly, that all that has been said by the empiric school, as to its virtues as an antiphlogistic and antisyphilitic, has been proved, by an appeal to the very experience they invoke, to be entirely erroneous. Mercury is, then, a purge; but, as we possess so many other purges, we have no need to use mercury for that purpose, particularly when we know that some persons become salivated by very small doses of the drug. If, then, the profession had nothing further to gain from mercury than its purgative effects, it would probably not remain long in the pharmacopœia. But in London and Dublin, where the influence of John Hunter and Colles still holds almost undisputed sway, the virtues ascribed to mercury are very numerous. In fact, in the eyes of many, it is the most important of all remedies. In Paris, again, mercury has gone out of fashion in all maladies, save in syphilis and iritis, two specialities, the doctrines of whose therapeutics are left to syphilographers and ophthalmists, to the great detriment of the unity of medical science. In Germany and in Scotland, mercury is now beginning to be very generally looked upon as utterly useless; and in Edinburgh some of the leading professors have entirely abandoned its use in all diseases without exception.

The effects of mercury on dogs have been noticed by Dr. Desruelles, who, in 1827, at the Hôpital Val de Grace, in Paris, administered it internally and by inunction. "Among those which had the metal rubbed in, salivation was observed as in man; amongst all were observed the alterations which are commonly attributed to syphilis. The teeth were shaken and almost all loose; the buccal mucous membrane and velum palati covered with aphthæ; the stomach and pharynx red and congested." Mr. Skey has related his experiences of frequent phagedæna, produced by the use of mercury in



gonorrhœa in St. Bartholomew's Hospital. Mercury has been much praised in peritonitis; but Mr. Spencer Wells and Mr. B. Brown do not make use of it now; and our best surgeons have abandoned it in traumatic inflammations. In orchitis Mr. W. Cooke has shown how much better we may succeed without its use.

Mercury has been called a cholagogue; but experiments on dogs have recently proved it actually to diminish the biliary secretion. With regard to iritis, the experience of H. Carmichael of Dublin, of Dr. H. Williams of Boston (who of sixty-four cases of all its varieties, treated without mercury, had sixty perfect recoveries), of Dr. Hughes Bennett, and of Mr. Zachariah Lawrence, have, in my opinion, completely proved that injury, instead of good, results from the use of mercury; and Mr. Acton confesses that he thinks that iritis is frequently *caused* by the use of the drug.

Dr. Hughes Bennett says, "As to mercurials, the confident belief in their power of causing absorption of lymph, by operating on the blood, is not only opposed to sound theory, as formerly explained with regard to blood-letting; but is not supported by that experience which has been so confidently appealed to in its favour. They have been most praised in the treatment of serous membranes and of iritis; but more careful observation has demonstrated, that the moment these diseases are treated without mercury, they are uninfluenced (except in certain cases for the worse) by the drug." Pericarditis is another stronghold of the advocates of mercury, who in this case do not hesitate to salivate. Dr. J. Taylor, of University College Hospital, however, has completely put this question to rest by his careful observation of forty cases of this condition, in which salivation was employed. In most of the cases no abatement of the disease took place, when salivation was produced; in some the symptoms were aggravated, and pleurisy and laryngitis became added. In the few cases where the patient became relieved shortly after the employment of this dangerous remedy, salivation, the effect could only be attributed to the merest coincidence. With respect to that fatal disease, cholera, again, Mr. W. Sedgwick, Vice-President of the Harveian Society, informs me, that Dr. J. Ayres, of Hull, recommends gr. i. of calomel every five minutes as a perfect cure of the complaint. A woman, of 67, took over 200 grains (1854.) Dr. Taylor, near Liverpool, gave a girl in cholera, age 24, 1,160 grains. Mr. Sedgwick adds, that the mortality from the small doses of calomel in cholera was 74 per cent., and from large doses was 61 per cent.

Some practitioners in London recommend a grain of

calomel to be given every two hours in acute hydrocephalus, and are convinced that they have often saved lives by this experimental practice. It is difficult to ascertain what object they desire to obtain by this heroic practice; but the evidence of Dr. H. Roger, of Dr. Jenner, Graily Hewitt, &c., points to the conclusion that this disease is, when once fairly set in, inevitably fatal under all treatments. Dr. Hughes Bennett and others, too, condemn strongly the administration of calomel to the delicate children in which the disease generally occurs, as likely to lead to a fatal result.

The treatment of inflammatory diseases of the internal organs, such as pleurisy, pneumonia, and bronchitis, by means of mercury, now lingers only among physicians and practitioners who have long quitted the arena of medical debate, and retired into finality doctrines. One hundred and fifty consecutive cases of uncomplicated pneumonia recently treated by Professor Hughes Bennett in Edinburgh Infirmary, without either bleeding or mercury, have recovered, without exception. Had they been leeched or mercurialized, my experience of London practice tells me that a large per centage would have succumbed. In a debate at the Harveian Society, December 3, 1863, Dr. Pollock stated, that he believed he was giving the opinion of the profession when he said, that mercury was now considered quite useless in the treatment of pleurisy, pneumonia, or bronchitis; and Dr. Graily Hewitt stated that he did not believe mercury ever did good in any puerperal state, such as puerperal fevers or phlegmasia dolens. Dr. Walshe has recently informed me that he has never seen mercury of any service as an antiphlogistic; while he has very often seen it do much harm in inflammatory complaints; and Dr. Hughes Bennett is well known to be an avowed foe to the drug in all shapes and in all diseases.

Let us now turn to the citadel of mercury, to syphilis, and we shall find that the arguments which have appeared so conclusive, as to its value in that complaint are as unsound as those used by the advocates of mercury as an antiphlogistic. The origin of ulcers on the organs of generation and secondary eruptions consequent on these ulcers, is believed by M. Ricord, Mr. Syme, and many others, to be as ancient as the history of medicine, and I think all who will study the subject will come to the same conclusion. Celsus and the early writers did not know that there was any necessary sequence between the ulcers and the sore throat and eruption, which latter (as mercury was forbidden among the ancient nations, by legal enactments, and the treatment appears to have consisted of baths and external applications,)



do not appear, as we might expect, to have been so severe as to excite any great terror in the mind of the Latin or Greek authors, although they mention phagedæna of the ulcer. One of the most fortunate results of the British campaign in the Peninsula was the discovery by the medical officers that the disease which they were accustomed to think intractable to all but mercury, was treated with perfect freedom from bad results by the Portuguese medical men by means of diet, regimen, and external applications, without any mercury. Dr. William Fergusson wrote home an account of this in 1812, and at first attributed this in many of the Portuguese to constitution, &c.; but he lived long enough to change that opinion, in 1846, when he recognised that the same treatment produced the same effect on all nations and in every climate. He mentioned that enormous quantities of the British troops suffered the most melancholy mutilations on account of being treated by John Hunter's plan of inunction. Mr. Guthrie, late President of the College of Surgeons, writing in 1817, says that "every sore, of whatever description it may be, will heal without mercury, provided that sufficient time be allowed . . . . Of nearly 100 cases which have been treated in this way (by external applications) all the ulcers healed without the use of mercury." Professor John Thompson, Surgeon to the Forces in Edinburgh, writes in 1818, "I have proved that chancres and buboes have, in every instance, disappeared under an antiphlogistic regimen, rest in bed, and mild local applications, as speedily as I have ever seen them do when mercury was used. The cases in which constitutional symptoms have supervened do not exceed one in ten, and the only forms of these symptoms which have presented themselves are ulcerations of the throat and cutaneous eruptions. These have been slight in comparison with those which usually take place in venereal cases after the use of mercury. They have all gradually, though sometimes slowly, disappeared without the use of mercury, and without seeming to have left any injurious effects behind them. Hitherto, I have not observed among patients treated for the primary symptoms without mercury, any of those deep or foul ulcers of the throat, of the skin, of the nose and mouth, or of the painful affections of the bones." Dr. Hennen, Surgeon to the Forces, says in 1818, that 407 cases of ulcers treated without mercury were followed only once by iritis and once by exostosis; only one in ten had any consecutive symptoms; and all of the latter healed in from ten up to eighty days, leaving the patients in perfect health.

Dr. Desruelles treated a very large number of cases of venereal ulcerations and secondary symptoms in the Hôpital

Val de Grace, (military hospital,) in Paris, from 1825 up to 1845, with low diet, extreme cleanliness, and simple external applications, with the greatest success; and, indeed, he says: "It is easy to see that the internal treatment is reduced to the greatest simplicity, the external is not more complicated; and for the one, as for the other, the help of pharmacy is almost nothing." In his "Lettres Ecrites du Val de Grace," 1841, he says that there have been 300,000 cases recorded, as having been treated without mercury. Dr. Fricke treated, from the year 1825 up to 1841, upwards of 15,000 cases in the Hamburgh Hospital, without mercury, by low diet, Epsom salts, and external applications; and in his "Annalen," published in 1828, he says that, among a number of cases treated thus without mercury, he observed neither iritis, nor alopecia, nor any case of bone disease, all of which were common when the mercurial treatment was used by him before 1825; and in the year 1848 he mentions that his convictions were strengthened by the numbers of cases he had treated rationally without mercury. The Government of Sweden caused all cases of venereal disease, and their treatment, from the year 1822—36, to be recorded. The result was an immense superiority in the case of patients treated by rational means and without mercury: 46,687 cases were observed and recorded. In 1833 there were reports published by the French Council of Health, and from the physicians and surgeons attached to the military hospitals in various parts of France. They all agree in stating the cures by mercury to be a third larger than by the other method. Between 1831—34, 5,271 patients had been treated. No case of caries occurred, and only one or two of exostosis.

In the history of all advances in social science, medicine, &c., there are periods of reaction, for the reforming party begin to abate in their zeal, and immediately the adherents of old doctrines recommence their assertions. Such has been the history of mercury in syphilis. M. Ricord founded a so-called *eclectic* school, and admitted that mercury did no good, and might do harm, in soft ulcers and in gonorrhœa, yet maintained that when sores became hard, there was no treatment adequate to the occasion but "six months of treatment with a daily dose of mercury, which influences the accidents we have to combat, followed by a three months' treatment of pot. iod." One of the few voices which has in this country been raised against this last reaction of the mercurialists, is that of Professor Syme, who, so late as 1856, in his "Principles of Surgery," says energetically, "A fearful system of scientific quackery has in recent times been founded on the



old mercurial delusion; and although the so-called *modified* use of mercury, which is at present so much the fashion at Paris and elsewhere, may not be so speedy in its effects, I can testify, from what has frequently fallen under my observation, that it empties the pocket and injures the health no less effectually than the process of poisoning, which it professes to have so advantageously replaced." Mr. Syme adds, that ulcers of the genitals, and their sequelæ, when treated carefully with cleanliness, external applications, and rational methods, constitute a mild disease, which would never have occupied much attention, had mercury never been admitted into the medical art, as an internal remedy. Professor Hughes Bennett is a strong anti-mercurialist, and in his "Principles and Practice of Medicine," 1860, he says, "The idea that mercury is a specific for syphilis, and the incalculable mischief it has caused, will constitute a curious episode in the history of medicine at some future day." So far does Dr. Bennett go, that he says he has never seen any case, even of rupia, "except in persons who have been subject to mercurial poisoning." Mr. Syme, Mr. Weeden Cooke, and Mr. Spencer Wells, all agree, that they have not seen such a thing as syphilitic bone disease where no mercury has been used. Professor Boekh, of Christiania ("American Med. Times," April, 1863), has, for the last ten years, made experiments with and without mercury, and his results give the complete verification of Fricke's account, namely, that primary ulcers, and secondary eruptions, took nearly double the time (sixty-two to thirty-eight days) when treated with mercury, than when treated with rational means; and besides this, the number of secondary symptoms were far greater where mercury was used (24:14).

Even in the year 1863, the direction of the American Northern States' army has been obliged to forbid the supply of calomel to the surgeons, from the excessive damage which it was reported to have caused to the patients; and Dr. Diday has, in a work entitled "Histoire-Naturelle de la Syphilis," shown the many distressing consequences which have followed courses of mercury in his own practice, and that of others of Ricord's school. Among his cases are to be found examples of extreme dyspepsia, salivation, apoplexy, and mania. Warned by such results, the present Parisian practitioners are now completely altering their practice; for in August, 1863, in a visit to Paris, I found that M. Cullerier, Dr. Fournier, and most others with whom I conversed, had abandoned M. Ricord's doctrine of treating indurated sores with mercury, and they await the eruption before commencing to give it; thus curtailing the amount of the drug administered enor-

mously. Diday, too, treats even the eruptions, in most cases, without the *specific*.

As to the disease called infantile syphilis, Hennen and others have shown that when persons are treated without mercury they very rarely have either abortions or syphilitic children; for, of thirteen children born of parents treated without mercury, eleven were born alive, and none of them had since their birth exhibited any suspicious symptoms, although some of them were in their third year; and Benjamin Bell says, "it is a common opinion that mercury causes abortion." Besides this, these so-called syphilitic children are far more successfully treated by rational means, as their parents also would be. Those who are sceptical on this point, are referred to cases published by the author in "The Medical Times and Gazette," of November, 1862; and to fifteen cases recently published in the same Journal (Oct. 1863,) by Mr. W. Allingham, F.R.C.S., Surgeon to the Great Northern Hospital, where fourteen recovered and only one died; whilst, where mercury is given, that gentleman shows that nearly 30 per cent. of these children die. Unless more can be said for mercury in syphilis and in inflammatory diseases, I, for one, shall not change my bad opinion of the drug, which I have never administered internally in any form for several years.

---

*Suggestions respecting the Best Method of Establishing and Conducting a Village Hospital.* By ALBERT NAPPER, Esq., M.R.C.S., &c., Surgeon to the Cranley (Surrey) Village Hospital.

THE deep and increasing interest manifested in this subject has elicited so many inquiries from ladies, medical practitioners, clergymen, and others, respecting the best mode of establishing, supporting, and conducting a village hospital, that I am induced to offer a few suggestions, founded upon the system which has stood the test of experience in the management of the village hospital at Cranley, not in the supposition that it is possessed of any peculiar merit, but rather as a basis upon which abler minds may mature a more perfect and enduring institution.

The first step is to secure a building suitable for the purpose, which, as I have stated in a former communication, (*vide* "Medical Mirror," No. 1,) needs to be neither costly nor elegant. To accommodate from six to eight patients, a small farm-house, or a double-tenemented cottage, having on the ground-floor, a kitchen, sitting-room, scullery, and larder, and upstairs, from four to six rooms, well ventilated, may, with a few inexpensive additions, be made to answer

# PROSTITUTION

## MEDICALLY CONSIDERED.

WITH

## SOME OF ITS SOCIAL ASPECTS.

*A Paper read at the Harveian Medical Society of London, Jan. 1866.*

BY

DR. DRYSDALE,

HONORARY SECRETARY TO THE SOCIETY.

WITH A REPORT OF THE DEBATE.

LONDON:
ROBERT HARDWICKE, 192, PICCADILLY.
1866.

COX AND WYMAN,
ORIENTAL, CLASSICAL, AND GENERAL PRINTERS,
GREAT QUEEN STREET, LONDON, W.C.

# AUTHOR'S PREFACE.

IT has been remarked by a most eminent writer, that the attention of the ablest thinkers will probably be engaged for the next couple of centuries in discussing the fundamental laws, and ascertaining what are true doctrines of Social Science. The subject of Prostitution is in great measure connected with the science of Society; but there are peculiarities in this subject which have rendered its discussion by bodies of men, composed for the most part of persons foreign to the Medical Profession (the only *class* of men who as yet occupy themselves much with physiological and pathological inquiries), in general somewhat barren of practical results. Thus, the reports which I have read of the discussions on Prostitution, which have recently been not unfrequent in Social Science meetings, have given me the impression of want of completeness, and of the perception by the majority of the speakers of only one or two of what I may call the *medical aspects* of the question. One fact, however, these discussions have testified to is, that the subject is no longer considered one to be dogmatized upon by one privileged class of *à priori* moralists; but that there is now a strong desire on the part of the public to hear all that has to be said upon this many-sided question. The day, too, for the ignoring of such questions is fast passing by. All the nobler minds of this day have begun to discover

that there is no class of mankind so debased as not to deserve, nay to demand, our earnest sympathy. The causes which drive individuals and classes into degraded and criminal conduct, are now found to be in very many cases remediable; and hence the true moralist is now determined, in as far as possible, to discover the antecedents of crime and misery, and if possible to remove them. Punishments even are now regarded, not as a good in themselves, rather as an evil; but as an evil to the individual, which is necessary, in order to act as a motive towards the prevention of like crimes or errors in other members of society. The element of revenge, still remaining in the spirit of some laws, is acknowledged to be a pure evil.

With respect to the pretensions of some persons to expound what are the views of Deity upon particular questions of morals, they are and have been frequently shown by Mr. Stuart Mill and others to be merely another way of saying, "This is *my* opinion, and if I had the power of Deity I would punish any one who presumed to differ from *me*."

The following debate in the Harveian Society is, as far as I know, only the second debate on the subject of Prostitution in a medical society for many years past. I trust it may soon be followed by others; for, although we may hope for good results to the Army and Navy, from the Royal Venereal Commission, which has recently completed its sittings, nothing can be done in civil life for such an enormously complicated question as Prostitution, until the subject has been discussed over and over again, and regarded on every side.

C. R. D.

*February*, 1866.

# Harveian Medical Society of London,

## JANUARY 18TH, 1866.

PRESIDENT, DR. TYLER SMITH.

DR. DRYSDALE read the following paper on *Prostitution*:—

MR. PRESIDENT,

Several circumstances have recently called my attention to the subject of Prostitution. One of these has been the presence in London of the respected and learned Professor Boeck of Christiania, with whom I have had numerous conversations. Again, one of the questions put by the members of the Venereal Diseases Commission to those examined by that Board was, "What measures would you propose for regulating prostitution and checking the spread of venereal diseases?" Although this was not one of the questions proposed to myself, I yet feel it to be perhaps the most important one that can be put. I have, therefore, been anxious to collect as much as possible of the evidence of English and foreign writers on this subject, in order to afford materials for discussion of the question in this society.

In speaking on any scientific subject before a learned society like this, it is always necessary to define our terms. No word, in my opinion, requires more to be strictly defined than the word Prostitution. For example, what end can Dr. Wardlaw's definition serve, who calls the first sexual connection of an unmarried girl, prostitution?

The most salient idea in the term Prostitution is, the granting by a woman of her favours for hire. But, although this is one part of the definition, it is not all, I believe, that is required. I think, that by a prostitute, is meant a woman who habitually, and with scarcely any distinction of persons, except for their ability to pay, gives what other women yield only from motives of affection or desire. Looked upon in this light, I believe that every lover of the race must deeply deplore the existence of a large class of women in society, who are, unwillingly or willingly, in the habit of selling those parts of their bodily functions, which are so nearly connected with all the higher affections of woman, and with the interests of children.

To give some idea of the extent to which prostitution is carried on in Europe, I may advert to a few statistical facts. The Police administration of Paris had 4,232 persons enrolled on its books as prostitutes in 1854. London, with a population of 3,000,000, has probably about 12,000 prostitutes; Turin, with a population of 140,000, has 700.

*Causes of Prostitution.*—The prime mover of prostitution is evidently the sex-appetite. This appetite is, like the law of gravitation, a constant force, which tends to produce certain effects, unless counteracted by other circumstances. To appreciate the intensity of this passion we have only to cast our eyes over the novels and light literature of all countries, or consult the poetical works of all nations, or, lastly, to observe their domestic institutions. Although, however, the sex-appetite is the prime mover to prostitution in both sexes, prostitution would not exist, in its present form, were it not for other circumstances which are at present painfully frequent in the midst of the most civilized countries. Few women would lead a life which is so much despised by their neighbours, were it not for certain peculiarities in the actual position of women, which force a certain number of them into prostitution.



Among the concomitant circumstances which prompt to prostitution are enumerated vanity, and the desire of wearing fine clothes; idleness, domestic sorrow, and the unkind treatment of parents or step-parents, Puritanism, spirit-drinking, and, lastly, by far the most common antecedent, want of education and poverty, the prolific causes of so many of the evils of society.

M. Dupin, procureur-général, recently,—June 1865, in a discussion upon prostitution in the French Senate, speaks of *vanity* as one of the chief causes among the wealthier classes of Parisian prostitutes, as follows:—"Is there any cause of prostitution more evident than the exaggeration of luxury, those excesses of toilette which throw the whole world off its balance? La Fontaine, in one of his fables, laughs at the frog, which desired to make itself as large as the ox: but with the modern fashions the frog would succeed. . . . . When a woman wishes to go to a ball and cut a figure there, without sufficient means, her vanity overcomes her. She fears to tell her husband, for the conjugal purse is empty. She, therefore, dresses on credit, and signs bills, for which endorsers must be found, and the coming due of which is always fatal to virtue."

*Puritanism* is a frequent cause of prostitution in this country, and especially in Ireland and the United States. One slip made by a young woman is not easily passed by, and this, in many cases, renders prostitution the only resource. Among other occasional causes, especially in northern nations, must be reckoned the habit of *spirit-drinking*, one of the great debauchers of virtue and health.

*Want of Education* is a frequent antecedent of prostitution. Thus, of 4,470 girls, born in Paris and educated there, inscribed on the police lists of prostitutes, 2,332 could not sign their names, 1,780 signed badly, and only 110 well. In Bordeaux, of 105 prostitutes, only nine could sign their

names. In the capital of France, where education is gratuitous and eagerly sought for by all, from the difficulty of obtaining a living without it, this is a proof how little these poor girls had usually to thank their parents for. This want of education is also found in London; and it has been remarked that, in the poorest classes, a girl rises in social position by becoming a prostitute, so poor and uneducated are many of them.

*Idleness*, or the desire of procuring enjoyment without industry, is a cause of prostitution, as it is of many other social ills. The idleness of many women is, however, the result of the very poor remuneration they can obtain for their labour. It is well known that the Irish cottier is idle and indifferent when living in Ireland, with its detestable land customs, where no industry of his can do more than give him a scanty meal of potatoes; whilst the same Irish cottier, transported to America, becomes industrious, because his toil is adequately remunerated

*Poverty.*—Duchatelet observes: "Of all the causes of prostitution, particularly at Paris, there is none more frequent than the want of work, and poverty, inevitable effect of insufficient wages. What do our sewing-women, our shirt-makers, earn, and in general all who occupy themselves with the needle? Let us compare the gains of the ablest among them with those of the unskilful, and we can calculate whether it be possible for the latter to procure for themselves the necessary quantity of food; and let us compare the price of their labour with that of their dishonour, and we shall cease to be surprised that so many of them fall into a disorder, which we may even call inevitable. This state of matters tends unfortunately to increase in the actual state of society, on account of the usurpation by men of a great number of employments which it would be more suitable and more honourable for our sex to leave to women. Is it not



a shame to see at Paris thousands of men, in the prime of life, passing in cafés and warehouses the effeminate life that is suitable for women, occupied in cleansing a cup or measuring ribbons."

"At Hamburg," says Lippert, "as in all centres of commerce and industry, a girl can scarcely provide for her own necessities. A week of labour is less well remunerated than one act of condescension." These remarks are true, when applied to England, perhaps even more than to France. Thus, M. Léon Faucher observes, "Other things being equal, prostitution ought to be more frequent in London than in Paris, because in London the resources for young women are more limited. In all English towns men occupy the place of women: they preside over needlework, and serve behind the counter in shops, as well as in public establishments."

In an essay read before the Harveian Society, in 1865, I endeavoured to point out how the low wages of the working classes, caused by the enormous families so common among that class, especially among the rural labourers, was one of the most fruitful causes of crowding into towns and of the great prevalence of pulmonary consumption in our society. But prostitution is another of the consequences of the extremely low wages which so many women receive. In the sixth report of the medical officers to the Privy Council, there is a report by Dr. Edward Smith, "On the Food of the Labouring Classes," in which I find a table of the cost of food of various classes of English workpeople, as follows:—Silk-workers, 2s. 2½d. a week; needlewomen, 2s. 7d.; kid-glovers, 2s. 9d.; shoemakers, 2s. 7½d.; stocking-weavers, 2s. 6½d. Dr. Edward Smith, speaking of the needlewomen, observes: "This is the lowest paid class included in my inquiries. Their ordinary hours of work are from ten to twelve hours. The average weekly income was 3s. 11½d. per adult."

Some authors have placed the *intense desire for sexual*

*intercourse* among the causes of prostitution. This, I think, is not strictly true. Such desire would lead to debauchery and licentiousness; but I doubt whether it would lead to prostitution as defined on setting out.

*Decrease of Marriages.*—On all sides, in our newspapers, &c., we hear complaints of the difficulty of obtaining husbands for young women. This difficulty has several causes; among which the most prominent are the growing fear among all the educated classes of bringing too many new beings into existence, in countries where the labour market is already so over-stocked; and, again, to the avowed or secret dislike of many to risking the whole of life upon the chances of a union from which the law of most countries has not as yet provided any *reputable* exit, except in Prussia and Indiana, U. S. Thus, in Paris, where divorce, with the power of marrying another person, is not permitted, Mr. Goodrich, in the *Westminster Review*, 1860, tells us that, "Although in the highest society of Paris, the avowed or reputed good character of the *woman* is as indispensable as elsewhere, there exists a large class of the Parisian world, where unmarried couples, and even couples cohabiting temporarily, are as well received as if they had submitted to both the ceremonies. This is especially the case in the theatrical world, and in the world closely connected with it—that of light literature."

From 1796—1805, according to the Registrar-General, there were 1,716 marriages to 10,000 women; and from 1836—1845, only 1,533 marriages to 10,000. This fact is found to hold good for Hamburg and other continental towns.

These circumstances, at present, much favour prostitution, and (in England, at present) infanticide; a custom which Dr. Lankester has recently adverted to in the following terms, as reported in the *Morning Star*, November, 1865:—"England was spoken of as a nation of child murderers, and when Englishmen spoke of the crimes of other nations, the child



murders of their own country were thrown in their teeth. It was a very unhappy thing that this was so; and, that it should be calculated that one out of every thirty women met with in the streets was a child murderer." In Hamburg, according to Dr. Lippert, in 1799 there was one marriage to 45 inhabitants; and, in 1841, only one in 100. Formerly the proportion of illegitimate to legitimate births was as 1 to 16, it is now as 1 to 5.

Sir William Wyld tells us that, in Vienna, one out of two births is illegitimate; that in Munich, in 1838, there were 270 more illegitimate than legitimate. In Sweden, according to Sanger, there were in 1838, 1,137 illegitimate children to 1,577 legitimate. And in Paris some authors say that one-third of the births are illegitimate.

*Diseases of Prostitutes.*—It is an interesting inquiry, what effect the various employments of mankind have upon the health of those occupied therein. In no case does the inquiry afford more food for reflection than in the case of prostitutes. In the days of asceticism, in the Middle Ages, when morality was based, not upon the greatest-happiness principle (which has been so elaborately illustrated and vindicated by J. S. Mill in his noble essay on *Utilitarianism*), but, as Bentham remarks, almost on the contradictory of this standard, it was presumed that the prostitute lived but a few years of sin and misery, and then died. This *à priori* view has not been found to be in unison with the facts. To sum up, what will be vouched for by observers in all cities, the health of prostitutes is above the present standard of female health; the only diseases peculiar to that class being venereal diseases and itch. Thus Dr. Sanger, in his work on prostitution, p. 346, quotes Mr. Acton's speech at a London meeting, in which that gentleman said, "It was a popular error that these women died young, and made their exit from life in hospitals and poorhouses. The facts were not so. Women of that class were all picked lives, and dissipation did not usually

kill them. They lived a life of prostitution for two, three, or four years, and then either married, or got into some service or employment, and gradually became amalgamated with society. About one-fourth of the whole number amalgamated each year with the population." In Hamburg, in Brussels, in Paris, in Nantes, the same account is given of the health of the prostitutes. Could spirit-drinking become less frequent among our lower classes than it unfortunately is at present,—and the admirable efforts of Dr. Carpenter, Dr. Edward Smith, and others tend to cause it to be so,—the health of prostitutes would be very much higher in this country than it is even now. In Hamburg these women are reported as only drinking coffee, and in Paris they are never seen intoxicated.

With regard to the details of the diseases of this class, *hoarseness* is frequently observed among prostitutes, and has been ascribed chiefly to their frequent exposure to the atmosphere, when ill-clad; to their intemperate habits; and, in some few cases, to syphilitic affections of their vocal chords.

*Obesity.*—Duchatelet observes, "The stoutness of prostitutes and their brilliant health strikes all who behold them united in groups. We must attribute this to the number of warm baths they make use of, and to the abundant nourishment they procure. Indifferent for the future, eating at all hours, consuming more than any other women of the poorer classes, who have to toil hard for their living, rising at ten or eleven, why should they not take on fat? Everything would tend to show us that their trade is not so dangerous to health as many believe. . . . . As some one has remarked to me, they have *bodies of iron*. If I compare the existence of these women with that of work-girls, accustomed to lead a sedentary life, and extenuate themselves with toil to provide for their necessities, the latter class seem to me more to be pitied than the former."

In Brussels, according to Dr. Marinus, "the health of the prostitutes is, thanks to their robust constitution, gene-



rally good, with the sole exception almost of venereal diseases." The editors of Parent Duchatelet's work, ed. 1859, say that the average number of days passed by a prostitute in hospital in Paris for ordinary diseases is two; and for all diseases, including venereal ones, they pass on an average ten days each year in hospital.

*Diseases of the Anus* are remarked among some of these women, and are attributed to the unnatural habits which some of their vicious clients are accustomed to indulge in, especially in Paris and Italy. Such diseases are rare in London.

*Tumours of the Labia majora* are sometimes found filled with a fœtid honey-like fluid.

*Abscesses of the Labia majora* are common, and recto-vaginal fistula in girls of a scrofulous family.

There is nothing, as observed by Duchatelet, in the genitalia of prostitutes which generally would distinguish them from ordinary married women. Indeed, in one or two cases, prostitutes have pretended to be virgins, and it seems to have been difficult, even on medical inspection, to disprove this pretension of theirs. This must be remembered in medico-legal investigations.

*Sterility of Prostitutes.*—One of the most important facts in the picture of prostitution is the want of procreative power of prostitutes. Of this fact there cannot be the slightest doubt. Duchatelet says, ed. 1859, p. 217: "It is generally recognized that prostitutes do not have children, or that, if they have any, it is only so small a number that they may be regarded as barren. . . . . I find from inquiries that a thousand prostitutes scarcely furnish one birth per annum at Paris."

Madame Legrand, chief of the Maternity Hospital at Paris, stated that "there do not enter into the hospital more

than four or six prostitutes yearly. . . . These girls rarely have an easy labour, but usually require forceps. The children rarely live, often being still-born."—(*Ibid.*)

The above evidence, coupled with what I have heard from medical men in London, appears to me to be conclusive as to the comparative sterility of prostitutes. This fact is one of the most important in the phenomenon of prostitutes. Were it not for this sterility, there would either exist a far greater amount of infanticide than now obtains, or the workhouses would be overburdened by numbers of abandoned infants, so that the rate-payers of parishes would be even more severely taxed than they now are. This is the reason that prostitution is so frequent in all countries where over-population is so glaring an evil as in this.

The causes of the sterility of prostitutes are far, in my opinion, from having been sufficiently examined and made out. I presume that over-exercise of the sexual organs of the female must cause imperfect elaboration of the ovum, and other secretions necessary for impregnation, just as, in the male sex, the spermatozooids become fewer in number and less lively in those who are impotent, either from sexual excesses, from old age, or from abstinence. Again, the constant exercise of the female organs may cause a difficulty in the retention of the male fluid in the uterus. A certain number of cases of sterility among prostitutes must be attributable to inflammations of the os and cervix uteri, or of the whole body of the organ; or, again, to that obscure affection *ovaritis*. Retroflexion of the womb, again, may occasionally produce it.

According to Duchatelet, some of the prostitutes do not menstruate for three or four years at a time: the younger ones remain regular for some time, and then menstruation ceases in many cases. Those who, touched with repentance, enter the convent of the *Bon Pasteur*, are said to arrive there, almost without exception, with absence of the menstrual function. Among the younger ones, again, menorrhagia is



frequent, and has been known to be sometimes fatal. Syphilis causes abortions in some cases, and Boeck and others have found this to be most the case when much mercury has been used. The mortality of the children of prostitutes is excessive: almost all die within their first year.

*Cancer of the womb* was said by Lisfranc to be more common in prostitutes than among women in general; but this is denied by Duchatelet, who says, ed. 1859, p. 236, "It results from what I have seen, that prostitutes are not exempt from cancer of the uterus; but that this disease is rarer in them than we should be led to suppose from their occupation. What I have just said may be applied to the elongations, irritations, and inflammations of the cervix uteri. They are rarely affected by them . . . . I have too often seen cancer of the womb in old maids, to believe that it has anything to do with local irritation . . . . we know that it used to be very common in convents: and old physicians, who had the confidence of these establishments, and have given me the details, have been so persuaded of the good conduct of their patients, that they have attributed the frequency of these diseases to celibacy and infraction of nature's laws."

Dr. Lippert of Hamburg says, "Cancer of the womb occurred only once in my experience of eleven years at the general infirmary; and cases of prolapse of the womb are very rare among the prostitutes in Hamburg."

*Feebleness of intellect* has been not unfrequently observed among the prostitutes in Paris. Twenty-one of their number entered the Salpêtrière lunatic wards in 1830. Erotic mania is not seen among them.

*Hysteria*, a disease admitted by all medical authorities to be very common among the generality of the female sex, appears to be almost unknown among prostitutes. This is vouched for by Parent Duchatelet in several parts of his

work, and also by Dr. Lippert of Hamburg, who says, "Convulsions are rarer among prostitutes than in the female sex in general, and of hysteria there is scarcely a trace."

M. Villermay, in his "Dictionnaire des Sciences Médicales," says, "It is assuredly true that absolute and involuntary abstinence is the most common cause of hysteria." Again, at a meeting of the Medico-Chirurgical Society, reported in the *Lancet* of February 14, 1859, Mr. Holmes Coote is reported to have said, "No doubt incontinence was a great sin; but the evils connected with continence were productive of far greater misery to society. Any person could bear witness to this, who had had experience in the wards of lunatic asylums." Again, Sir Benjamin Brodie, at the Birmingham Social Science Meeting, is reported to have said, in a discussion on prostitution, that "the evils of celibacy were so great, that he would not mention them; but that they quite equalled those of prostitution."

Dr. Copland, in his learned *Dictionary of Medicine*, has laid great stress on the production of leucorrhœa and dysmenorrhœa among single women of all classes by habits of solitary indulgence. In this view he has recently been corroborated by Mr. Baker Brown (*Lancet*, 1865). Among prostitutes confined in prisons this vice is said to be so universal that two of these women are never allowed to sleep in the same bed.

I should have imagined that every medical observer would have been ready to admit, from *à priori* reasons even, not to speak of clinical observations, that a life of abstinence from sexual exercise would be likely to produce grave diseases. Among the lower animals, I am informed that the males are apt to become rabid when excluded from the females. The disordered emotions of persons of both sexes who pass lives of voluntary or enforced celibacy, is a fact of every-day observation. Their bad temper, fretfulness, and excitability are proverbial.

But, as is usual in questions of such deep import to human



happiness as these, there is the greatest diversity of opinion on this point. Some authors, even, seem to consider all connection of the sexes opposed to longevity and health. Thus, Dr. Carpenter, in his Manual of Physiology, ed. 1856, p. 503, says, "It may be stated as a general law, prevailing equally in the vegetable and animal kingdom, that the development of the individual and the reproduction of the species stand in an inverse ratio to one another. We have seen that in many organized beings the death of the parent is necessary to the production of a new generation; and even, in numerous species of insects, it follows very rapidly upon sexual intercourse. It is a curious fact that insects, which usually die, the male almost immediately after the act of copulation, the female soon after the deposition of eggs, may be kept alive for many weeks, or even months, by simply preventing copulation: and there can be no doubt, that in the human race early death is by no means an unfrequent result of the excessive or premature exercise of the generative organs; and when this does not produce an immediately fatal result, it lays the foundation of future debility, that contributes to produce any form of disease to which there may be a constitutional predisposition, especially those of a scrofulous nature."

The truth contained in Dr. Carpenter's statement I presume is this, that excesses in sex-exercise are very frequent causes of disease in both sexes, although more especially in the male, as appears from the evidence already cited from Acton, Lippert, Duchatelet, and others. The error consists in that distinguished physiologist not appearing to perceive that, as Mr. Holmes Coote has so truly and boldly observed, continence causes far *greater* evils, at this time and in this country, than incontinence, as is seen in the frequency of hysterical convulsions and erotic and other mania, so common in our lunatic asylums. I can quite well understand a non-medical or clerical moralist not seeing this fact; because he is not in daily contact with the consequences of repressed emotions,

and, moreover, he is frequently biassed by a foregone conclusion, as in the case of such eminent advocates for celibacy as M. Comte, who was in favour of indissoluble marriage and the permanent chastity of widows and widowers, who were in his system not to marry again; but I am unable to comprehend how the medical man, accustomed to hospital, dispensary, or private practice, can fail to perceive the truth of Mr. Holmes Coote's remarks. A gentleman, official in the Lunacy Board, has informed me that, in the histories of the cases of lunatics sent to the different asylums, solitary indulgence is constantly mentioned in the majority of the cases. Such are the evils of celibacy hinted at by Sir Benjamin Brodie; but by no means well understood by men of science in general, from the extreme dread felt in all families with insane relatives to let the fact be known, in case it should be thought that the disease is hereditary. No wonder that Mr. Coote says that there are worse evils than prostitution.

## VENEREAL DISEASES AND PROSTITUTION.

Venereal diseases are connected with prostitution in the same way that lead-colic is with the occupation of the painter. There are few diseases which give so much distress to adult human beings as the venereal; although there can be no doubt that their severity has been greatly exaggerated in many cases—partly from ignorance, partly from interest, and not unfrequently from design.

"Of all diseases," says the benevolent Duchatelet (ed. 1859, p. 603), "which affect the human race by contagion, and which bring the greatest misfortunes upon society, there are none graver, none more to be feared than syphilis. . . . Plagues, and in general all epidemics, terrify us, because they



strike at one instant a large number of victims, and because they deride the measures we oppose to them; but they are all of them transitory; long intervals generally separate their epochs of apparition, and the blows they strike fall by preference on the aged, and those whose feeble health will not allow of their hoping for length of days. Syphilis is amidst us, among our neighbours, and throughout the world. It does not kill at once, like many other diseases; but this does not prevent the number of its victims being immense. Millions have been annually expended for the plague and yellow fever, and nothing to arrest the progress of the gravest and most frightful of plagues."

This eloquent appeal of Duchatelet has produced the desired effect in France and other continental countries; but it still might be said with much justice in this country and in the United States, where no efforts have as yet been made to arrest the evils produced by prostitution.

Dr. Holland, in an article in the *Medico-Chirurgical Review*, 1854, gives a calculation of the amount of venereal disease annually existing in Great Britain, placing it at about one million and a half cases. It has been said, also, that about 50,000 venereal cases are seen in London hospital practice in the course of a year, among the in and out-patients.

Mr. Acton, in a pamphlet written in 1851, says that 1 in 5 of the troops in Great Britain were affected in 1851, whilst only 1 in 200 of the Belgian troops were affected at the same epoch. Again, 1 in 7 in the English navy, and 1 in 3 in the merchant service were affected. Also, that about one half the cases of out-patients at St. Bartholomew's Hospital were venereal cases.

Dr. John Francis, of New York, says (Sanger, p. 666), "Venereal diseases prevail to an alarming extent among the poor of this city. . . . Authorities believe that there is no vice among the unavoidable diseases, however prevalent, for the treatment of which the well-to-do citizens

of New York pay half as much as they pay to be relieved from the consequences of their illicit pleasures."

Such being the picture of these diseases in this country and the United States, let us glance at continental statistics.

Paris has three venereal hospitals—Midi, Lourcine, and St. Lazare; the first for men, the second for women, and the third for prostitutes under police control. The Midi has 336 beds, and about 100 out-patients daily; about 4,500 in-patients are treated there yearly. In the year 1854 occurred 34 deaths in this hospital; only two of these from stricture of the urethra—a very fatal surgical disease in all hospitals, and 90 per cent. of which are caused by gleet. The other 32 deaths were due to tertiary accidents,—adenitis, balanitis, buboes, indurated chancres, epididymitis, orchitis, phymosis, mucous-plates, roseola, syphilis, urethritis, and varicocele. From this we may observe how many deaths are, in the male sex, attributable to the diseases kept up by prostitution. The misery and bad health caused by stricture of the male urethra are not to be measured only by the number of deaths caused by this disease, which, as before said, is great among all classes. It is a curious fact, however, that, among prostitutes themselves, venereal diseases are very seldom the cause of death. In the St. Lazare hospital for prostitutes, with 193 beds, only 16 deaths took place in 1853. Of these, almost all were from ordinary non-venereal complaints. In the Lourcine hospital, again, with 276 beds for female venereal cases, in the year 1854 there was not a single death attributable to venereal diseases. This fact is true for London, Dublin, and Edinburgh; in the Lock hospitals of these towns death from syphilis is very rare among the women. The patients in the Lourcine, in 1854, suffered from abscess of the vulva, bubo, uterine catarrh, chancres, phlegmons, mucous tubercles, roseola, syphilis, ulcers, urethritis, vaginitis, and vulvitis; in all 1,358 cases.

The following account of prostitution in the French town of Nantes, by Dr. Baré, shows what can be accomplished for



the hygiene of contagious diseases by the activity, skill, and devotion of the medical staff.—(Duchatelet, ed. 1859.)

"Formerly," says Dr. Baré, "from 1833-39, in the prison infirmary of Nantes, we could daily exhibit to our confrères forms of constitutional syphilis of the most various kinds. In one of these visits I remember our friend Lucas Championière was astonished to find so many symptoms, which he rarely met with in Cullerier's wards in Paris. What a contrast to the present state of matters! Here and there we indeed see syphilides, such as mucous-plates on the vulva or perinæum; but only in clandestine prostitutes, or on the unfortunate girls who are arrested in the course of a life of debauchery by the ravages of the venereal disease; or in foreign girls, arrested in a state of mendicity, and sent by me out of charity into the hospital. The only forms now remarked among girls regularly visited are chancres, vulvo-vaginitis, uterine catarrh, and some mucous tubercles. Buboes are rarely seen. Secondary symptoms, I repeat, are exceptions. *As to tertiary symptoms, I never see them nowadays.* Strange tale, or rather benefit of the wise forethought of our age! The prostitute, formerly so dangerous for her own health, uncleanly personage, whom none save those utterly careless of their health could be supposed to approach,—this prostitute, regularly inspected, may be frequented almost with impunity, certainly not occasioning the fifth part of the affections contracted either by the civil population or by the military." Contrast this picture with what occurred in the Bicêtre hospital, in Paris, in the reign of Louis XV. In Parent Duchatelet, ed. 1859, t. ii. p. 15, we find the following:—"As only one hundred venereal patients were admitted to treatment at a time, and the treatment was only commenced at the beginning of every two months, during the long delay the disease made progress, new symptoms arose, the organs of generation were destroyed, some were attacked with gangrene, others by hospital fever, and death carried off a great number."

Belgium is remarkable for the regulations with respect to prostitution and the spread of venereal disease. The perfection of the arrangements is shown in the fact that out of an army of 30,000 men there were less than 200 cases of disease in 1855. All classes of women are examined weekly in Brussels. Hamburg again, a town of 150,000 inhabitants, has 400 prostitutes, and Dr. Lippert reports that venereal diseases are now very mild there. In the month of December, 1854, there were, in the female venereal hospital, only eighteen cases, of which only six were venereal. Tertiary syphilis is rare. This is attributed to the good effects of weekly inspection of the prostitutes. At Lyons an esteemed and devoted physician, Dr. Munaret, established a special dispensary for these diseases in 1841. The town of Lyons now gives a small subscription to assist this dispensary. The comparative rarity of spirit-drinking in Paris aids the carrying out of hygienic measures for the prevention of the venereal contagion. A French gentleman thus writes to Dr. Sanger (Sanger, p. 661): "One of the greatest aids to the Parisian police in the maintenance of public decency in this class is the fact that they do not use strong drinks. A drunken public woman is never seen. As liquor is the great debaucher of mankind, this fact strikes out a marked line of distinction between the class here and in England and the United States." My own observation, as far as it goes, would corroborate the writer's statement. I know of no more important social undertaking for the regeneration of the lower classes in this country than that which has for its object to induce them to abandon the dangerous vice of spirit-drinking.

The striking results above mentioned, favourable in so many respects, although not in all, from the serious interference they necessitate with the individual liberty of women, have been obtained, as is well known, by the system of the *Dispensary of Salubrity*, the first of which was established in Paris in 1802. This dispensary is under police regulation. In Paris there are ten physicians and two assistant-physicians, employed to examine all the prostitutes. Visits are made at the dispensary, where the isolated women go once a fortnight for examination, and at the tolerated houses, which are visited once a week. In 1854 no less than 155,807 examinations were made. These visits are made privately, only the patient and medical man being present in the chamber. In order to prevent the occurrence of prostitution at a very early age, *i. e.* from 12 to 16, a circumstance which, according to Ryan, is not at all unfrequent in London and our large towns, the police in Paris place such girls in a part of the St. Lazare prison until their parents are communicated with, and no inscription is permitted before the age of 16. This age is ascertained from legal documents. The tolerated houses are not allowed in certain localities in Paris, and only one of the inmates is allowed to walk the streets; the others are confined to the house.



In Brussels, with 161,826 inhabitants, the prostitutes are divided into four classes, the first three of which pay for examination, and the fourth do not. Sanitary regulations are enforced in all the houses. In 1842 a circular was issued by M. Vleminckx, chief of the army medical staff, of which the following are some of the heads:—

"1. No venereal patient is to be treated in the casernes.
2. All who enter hospital are to be asked where they were infected.
3. They shall be punished if they will not tell.
4. Any soldier concealing his disease to be punished, but if he reveals it, nothing humiliating is to be done to him.
5. A close relation to be kept up between the army medical men and those of the town."

We have already seen how these wise measures have almost purged the Belgian army of venereal diseases, still so common among our troops. Nothing can be more unjust than to keep a body of men, like our troops, in a state of enforced celibacy, and yet to permit the poor fellows to become a prey to the

diseases, which they are so certain to contract in the present state of public hygiene.

Dr. Boeck has informed me that in Christiania, a town of 38,000 inhabitants, the prostitutes are inscribed in the register of the officer of health of the town, and have a book given to them, which contains their name, age, &c. This must be given up at each visit to the dispensary. The medical inspectors inspect at least once a week. At the end of the visit they mention the day when the next visit is to take place, and the physician is required to give a gratuitous certificate of health to those who are healthy, and to send the diseased into hospital. In Hamburg, with 180,000 inhabitants, one of the regulations of police orders the keepers of tolerated houses to advise the women in their house to have nothing to do with any man who is diseased. Three medical men are required for the inspection in Hamburg. Were a like proportion required for London, with three millions of population, forty or fifty inspectors would be necessary.

In Berlin, a city of 300,000 inhabitants, there was formerly exhibited a great deal of puritanical zeal in putting down prostitution, without remembering the difficulties of the task. Dr. Behrend (Parent Duchatlet, ed. 1859) tells us that in 1840 there commenced petitions of the neighbouring proprietors, demanding the suppression of tolerated houses. In spite of all the police could say, the Government in 1844 decreed the suppression of these houses, and banished the inmates from Berlin. In consequence of this, not only was syphilis more frequent, but the gravity of the disease was augmented. Infamous habits were the fruits of the suppression. Venereal accidents at the anus were frequently observed, along with onanism. Illegitimate births were multiplied. The authorities were, therefore, obliged again to tolerate houses of prostitutes as before.

---



Notwithstanding the many advantages which we thus observe to have arisen to continental states, in regard to the lessening of the frequency and gravity of contagious venereal diseases, by means of police supervision of the prostitutes, there is much to be said against such police supervision. For my own part, I do not hesitate to assert, that I should be averse to seeing the liberty of the female sex in any way lessened, more than it is at present, unless it were clearly proved, which it has not yet been, that there is no other way of checking the spread of venereal contagion. No continental country has sufficient idea of the paramount importance of as much as possible maintaining inviolate the liberty of the individual, whether man or woman. As for the liberty, or rights of women, no *nation* has as yet had even the faintest idea of anything of the kind, having always kept women in the position in which the black race has until very lately been enthralled.

Duchatelet, for example, exclaims, "Will any one invoke in favour of prostitutes the liberty that all desire to possess, to do what he or she desires, the most precious of the rights of the citizen?" In another part of his work a French magistrate thus addresses the Chamber of Deputies:—"Do you not prosecute all games of hazard which are established on the highway? would you permit roulette to be carried on in the streets, and expose its glittering heaps of gold to the passers-by? Why, then, do you not keep out of sight by force the objects of a more deplorable passion—the picture of debauchery?"

One of the strongest arguments for police regulations is the following: it is used by a Strasburg physician:—"In cases of grave epidemics," says this gentleman, "we do not hesitate to employ exceptional measures, often violating the rights that belong to every one, for the sake of the common

safety; yet, in face of a permanent epidemic, which not only costs enormous sums to Government, to the hospitals, and to private persons, but which undermines the constitution and weakens the entire race, it feels itself powerless. Should it be urged that in the case of epidemics no one can shelter himself from the influence of these, whilst the individual in the case of syphilis runs himself into the midst of the danger, this reasoning is valueless when the facts are inspected. It will some day become a telling argument, when society shall be composed of eunuchs, or when it shall be organized so as to permit of any young man having recourse to legal marriage at eighteen or twenty; meanwhile we must take matters as they exist."

The arguments derived from the apparent incompatibility of police regulation of prostitution with the sacred rights of female liberty are left out of view in most of the French writers on the subject, although they are seen clearly by a few of them. They are well put by Sanger:—"Able writers," he says, "especially the continental, have forgotten to take into account the inherent and innate right which every woman has in her own person. Society has legislated only against woman, ignoring her rights—innate and external—to use her own person as she may think fit, so long as she commits no outrage on society." Again, Mrs. Mill, wife of Mr. J. S. Mill, in her essay on the "Enfranchisement of Women," shows what the most noble-minded and highly-educated women think of the disabilities under which their sex now labour, which are aggravated by such laws as those of police regulation of prostitutes. "The world is yet very young, and has just begun to cast off injustice. It is only now getting rid of monarchical despotism. It is only now getting rid of a feudal nobility. It is only now getting rid of disabilities on the ground of religion. It is only now beginning to treat any *men* as citizens except the rich, and favoured portions of the middle class. But of all relations, that between man and woman, being the nearest and most



intimate, and connected with the greatest number of strong emotions, was sure to be the last to throw off the old rule and receive the new; for, in proportion to the strength of a feeling is the tenacity with which it clings to the forms and circumstances with which it has accidentally been associated."

The argument, then, against the police regulation of prostitution is chiefly to be based upon the extreme importance of in every way extending, instead of lessening, the liberty of women to use their industry and talents to the best advantage for themselves. There can be no doubt that this argument is an extremely telling one; indeed, so strong is it, as to render it extremely improbable that the French system of *police* supervision will ever be established, either in this country or in the now *free* United States of America.

There are, doubtless, evils connected with the liberty of individuals, for example, in the recent case of Windham; but these are but as dust in the balance, compared to the numerous abuses which arise, when the sacred principle of human liberty has once been violated. As Mr. Mill shows in his *Essay on Liberty*, Augustus enslaved Rome, and prepared the way for the demon Tiberius.

In this country, however, it is to be hoped that a great *social* effort may before long be made by the people, if not by the Government, to check the spread of venereal contagion; and this might be accomplished by means of special officers of health being appointed by the various town-corporations, to inspect all prostitutes in their district, who were willing to submit, to send those with diseases into hospitals, where they should only be admitted on promising to remain until all fear of contagion was over; and to give certificates of health to the rest, as is done in Christiania, with the only difference that, in this country, the inspection should be voluntary, not enforced by the police. The certificate of health would act as an inducement to prostitutes to seek the inspection.

Unfortunately, however, for such plans for lessening the sufferings which arise from the contagion of venereal diseases,

there is still a strong desire, avowed by some and secretly entertained by a greater number, to prevent any such sanitary measures. Thus, it is highly important to be acquainted with what has already been said by medical men, and not only by theologians, as to the propriety of such attempts.

In the debate on Mr. Acton's paper on "the Rarity and Mildness of Syphilis among the Belgian troops quartered in Brussels, as compared with its prevalence and severity among the Foot-guards in London," read before the Medico-Chirurgical Society (*Lancet*, February 25th, 1859), in which paper the author stated that out of 3,500 troops quartered at Brussels whilst he was there, there were only eleven men laid up with venereal complaints; whilst at that very time, out of 600 Fusilier Guards in London, there were no less than 64 cases. Mr. Holmes Coote, surgeon to Bartholomew's Hospital, is reported to have said that "he was much indebted to Mr. Acton for the bold manner in which he had brought the subject of his paper before them. It was proper to call diseases by their right names, and to present them in their true aspect to the public. The manner in which venereal diseases were spread in London at present was disgraceful to the legislature, and the remedies which had recently been suggested at meetings for its control were puerile and silly. Meetings were held and subscriptions raised, with the view of recovering girls from the streets, really to make vacancies for others. . . . . The evils attendant on the spread of venereal diseases were most serious. He was constantly in the habit of seeing, at St. Bartholomew's Hospital, most respectable women, mothers of families, covered with various forms of venereal eruptions, who were compelled still to live with their husbands, and give birth to diseased or dead children. Evils such as these, and others equally grave, were permitted to exist, because, forsooth, we were so remarkably pious a people, that we could not take any legislative steps, which would appear to be sanctioning vice."

Mr. Solly, surgeon to St. Thomas's Hospital, is reported to



have said that, "far from regarding syphilis as an evil, he regarded it, on the contrary, as a blessing, and believed that it was inflicted by the Almighty to act as a restraint upon the indulgence of evil passions. Could the disease be extirpated, which he hoped it could not (marks of disapprobation), fornication would ride rampant through the land."

Mr. Solly's remarks show how strong is the pressure of opinoin in many quarters in this country against any attempts towards the prevention of venereal diseases, which are, with much truth, looked upon as one of the best methods of terrifying recusants into matrimony. It is, however, doubtful, whether this object is so beneficial as, at first sight, it might appear to enthusiastic but unscientific moralists. In Ireland, for example, where detestable land-customs and other causes have enabled the priesthood to have so much power over the peasantry, as to drive them, in most cases, into early and indissoluble marriage, the pauperism and abject condition of the people has long been a by-word throughout the civilized world, on account of the enormous influx of children that have been thus brought into existence, destined to starvation, or the sorrows of a life-long expatriation. In the ten years ending with 1856, the United Kingdom sent out 2,800,000 emigrants, and the *Times* newspaper, of April 20th, 1857, tells us that "the sister island must have, in the course of a few months, lost at least 1,500,000 by famine and emigration."

Sir Benjamin Brodie recommended early marriage as a remedy for prostitution, at the Birmingham Social Science meeting; but in this already over-peopled country, this advice, if followed, would only reduce the ill-paid labourer to the starvation level of the Hindoo or Irish cottier. It is only in France that early marriages seem possible, without much lowering the standard of comfort of the labouring class, since it is only in France that the question of the size of families seems ever to be considered. Once a couple are married in this country, as remarked by Mr. J. S. Mill, it seems

to be almost universally thought that prudence as to the numbers of their offspring is out of the question. Not so in France. The *Times* of April, 1857, remarks, "Who can wonder at the families of these people (the French peasants), and that they carry out to the letter the teachings of Malthus and Mill, and deliberately marry with the intention of having only one or two children, or none at all?" In this country, as yet, *à priori* views of providential interference, and other fallacies, seem to prevent all but the very few from seeing the great social error of engendering a numerous progeny, destined to grow up ill-educated, miserable, and to jostle each other in what Mr. Darwin calls the "struggle for existence." So little heed, indeed, is paid to this fact, that it has been observed by Mr. Mill, in his "Principles of Political Economy," that "whilst a man who is intemperate in drink is discountenanced and despised by all who profess to be moral people, it is one of the chief grounds made use of in appeals to the benevolent that the applicant has a large family, and is unable to support them. Little advance," he adds, "can be expected in morality, until the producing of large families is looked upon in the same light as drunkenness, or any other physical excess; but, whilst the aristocracy and clergy are foremost to set the example of this species of incontinence, what can we expect from the poor?"

I should be quite ready to agree with Sir Benjamin Brodie's recommendation of early marriage as a remedy for prostitution; but only on condition of a far greater facility of divorce than at present obtains in any country, except, perhaps, in Prussia, and, as appears from *Fraser's Magazine* of January, 1866, is now the custom in Indiana, U.S. It appear that in 1864, according to the *Star* of November, 1865, there were 7,596 couples who applied for divorce in Prussia; and in Indiana, U.S., a recent law permits of divorce for incompatibility of temper alone, six months' notice being given by either party. Such a law would discou-



rage over-population, and probably abolish prostitution almost entirely. But, in addition to this, the sphere of women should be as far as possible extended, and they should be encouraged, as well as permitted, to attempt any trade and occupation they feel inclined for. Should they fail to compete with men in most trades, which is possible, it will be time enough to say that woman's only sphere is the domestic. The professions should of course be thrown open to educated women, as well as the trades to the others; and I can, for my part, see no reason why a woman should not succeed in many cases in the professions of law, divinity, or physic. Surgeons might then take a partner in practice, who might end by becoming their wives. I am glad that one lady has already set a good example, and that she has selected the noble profession of medicine as a field for her energies—the rest will follow.

Mrs. Mill, in the essay before quoted, observes, "Numbers of women are wives and mothers only because there is no other career open to them; all other paths to independence are fenced round as the exclusive domain of the predominant section, scarcely any doors being left open to the dependent class, except such as all who can enter elsewhere disdainfully pass by. . . . When the reasons for excluding women from active life are stripped of their declamatory phrases, and reduced to the simple expression of a meaning, they seem to be mainly three. First, the incompatibility of active life with maternity, and with the cares of a household; secondly, its alleged hardening effect on the character; and, thirdly, the inexpediency of making any addition to the already excessive pressure of competition in every kind of professional or lucrative employment. The first, or maternity argument, is usually laid the most stress on, although it need hardly be said this reason, if it be one, can only apply to *mothers*. It is neither necessary nor just to make it imperative on women that they shall either be mothers or nothing; or that, if they have been mothers once, they shall be nothing else during the whole remainder of their lives. Their is no inherent reason

or necessity that all women should voluntarily choose to devote their lives to one animal function and its consequences."

In summing up the results of the present inquiry into prostitution, we have found that the causes of the phenomenon are to be sought for in the sex-appetite, in idleness, the love of dress and luxury, in habits of drinking, in the decreasing number of marriages, and the stringency of the marriage laws in most countries; but above all, in the low wages and want of education of the female sex.

The health of prostitutes has been shown to be better than that of average women of their age; and in particular far more free from nervous diseases and hysteria, probably on account of the unrestrained enjoyment of the appetite of sex. The diseases they are most exposed to are sterility, venereal diseases, and itch.

Venereal diseases do not appear greatly to influence the longevity of prostitutes, since women do not suffer from stricture of the urethra, like men, who frequently die from this sequela of gleet; and syphilis, when not absurdly treated, as it used to be, is, in the great majority of cases, a mild disease, although in some few cases, and especially when foolishly treated, it is quite the contrary, and in rare cases may cause rapid death, like variola. . . . The foreign methods of regulating prostitution by means of police supervision have had, in France, Belgium, Hamburg, and Christiania, the effect of lessening greatly the severity and extent of venereal diseases in these localities. In some cases tertiary symptoms are said never to be seen. The English *laissez faire* system has certainly as yet nothing to boast of, since the spread of venereal diseases in civil, and especially in military and naval life, is exceedingly extensive. There have not as yet been any serious attempts made in this country to lessen the evils of prostitution, or combat the diseases it foments; since even the number of hospital beds in our towns has always been quite inadequate to the sufferers from this disease, who, when ill,



have been obliged to go on with their trade. In many hospitals venereal cases, however distressing, in *women*, are not admitted into the wards, although males equally affected are admitted. This is a disgrace as well to the humanity as to the intellect of the day.

"The practical conclusions I have drawn from the facts and opinions brought forward and discussed in this paper are, that we should not in this country desire to imitate too closely the system of police regulation of prostitution which obtains so generally in France, Belgium, &c., however excellent the results have been in limiting the spread of the disease, until we have tried means more suited to the manners of a free country. These plans are all interferences with the already over-restricted liberty of women, a liberty which stands in need, not of further repression, but of far greater extension. Instead of putting prostitutes under more stringent police supervision, I think society has no right to interfere with them unless they create a disturbance, or violate the laws of common decency, just as men would be interfered with under similar circumstances. A far greater attempt, however, should be made than has hitherto been made, to cure and to prevent the spread of the diseases parasitical on prostitution. To do this we should make calculations, as has been done in Paris, as to the number of beds requisite to accommodate women likely to be diseased in the course of a year, and admit them readily to these beds, in order that they may not spread contagion by continuing their trade when diseased. A number of medical inspectors—say 30 or 40 for London—should be appointed in two or three centres of the large towns to examine, once a week, all women who voluntarily presented themselves for examination, to send the diseased to hospital, or refuse them a certificate, and to give a certificate of health to the rest, as is done, according to Professor Boeck, in Christiania.

"The last part of the question is the social one; not, perhaps, the less medical on that account. It is essential that women should be allowed to follow any occupation they

have an inclination for. They should, therefore, be educated not only in domestic economy and accomplishments, but in science, which, as Mr. Herbert Spencer truly says, comprises almost all human knowledge. In addition to this they should be enfranchised, in order that their voice should be heard on questions which relate to their interests and existence. Prostitution will cease when poverty ceases to exist, and when the relation between the sexes has been more frequently discussed and better understood than it has hitherto been. In the mean time let us try to alleviate the condition of the prostitute, both for the sake of our common brotherhood with her, and because she is at present the focus of dangerous contagious diseases.

"Mr. President, I have had a difficult subject to treat,—one avoided by many, but soon I trust to be able to be discussed by all. If I have in the course of my remarks said anything that has offended any of my audience, I hope they will forgive me, and that they will combat any opinions they consider unpractical or erroneous. Discussion alone can elicit truth, I believe, in this many-sided question."

*Mr. R. W. Dunn* said:—"Mr. President, I have listened with great pleasure to Dr. Drysdale's able paper on this most important subject. Amongst the causes of prostitution I think he has omitted one,—namely, *seduction*. This is certainly in many cases the first step towards prostitution. There are in this, as there are in every other large city, a certain class of men who make a boast of how many girls they have seduced. For this class of men no kind of punishment can be too great. The law ought to compel them either to marry, or to allow the unfortunate girl enough money to live in a respectable manner; and if they refuse this, they should be punished severely in some other way. Society might do much to remedy the evil. It might refuse to admit within its pale any person who can be found to be a seducer. I agree completely with the author of the paper,



that the scarcity of employment for women, and the low rate of their wages, is another cause, particularly in this country, where there are so few trades or professions left open to women. Again, the great excess of the female population here causes the supply to exceed the demand for their work. All trades should be thrown open, therefore, to women, and their employment should be encouraged as much as possible. Emigration of women should also be encouraged to countries where there is a large excess of men. There is, however, another cause I think of prostitution,—namely, *nymphomania*. A great number of women, again, take to this calling as a matter of business, from the mere fact that they see other women walking about the streets dressed splendidly, whilst they, as respectable women, can scarcely obtain food on the miserable pittance they earn. For example, the poor work-girl, who has been sewing as fast as her fingers and strength will permit her at shirts or mantles, and earning perhaps a shilling or little more a day, as she returns home at night completely exhausted with toil, sees these gay, flaunting creatures in fine dresses, whilst she, poor girl, in her well-worn gown and boots, is perhaps suffering the pangs of hunger. She may, perhaps, too, have heard of the fabulous sums earned by some women by prostitution, more pounds, perhaps, in a day than she earns shillings in a week. Is not this a temptation we should all find it difficult to resist? Are we not all, more or less, envious of the better fortune of our neighbours? We should then endeavour to lower the wages of the prostitute. Let the women of England refuse to admit into society any man who is the known associate of such women.

"In London, according to Dr. Drysdale's paper, there are about 12,000 prostitutes. I think the number is underrated; but let us now ask what amount of hospital accommodation there is in this large metropolis for these women? I believe I overstate the amount when I say there are not in all the hospitals in London, Lock Hospital included, more

than 200 beds. Is this accommodation sufficient? I think not. What is the consequence if one of these unfortunate 12,000 women becomes diseased? If very fortunate she may get into hospital; but if the beds are full, what alternative has she? Why, she must either go into the workhouse, or become an out-door patient at some hospital or dispensary, or, perhaps, she may be able to afford to consult some private practitioner. But this class of women, we know, is very improvident, and cannot often afford either time or money. How are they then to live during the time they are diseased? Can they obtain employment of any kind? No; they are still obliged to follow their old calling, and by so doing propagate the disease to an immense extent. Any one who has visited the out-patient department of any large hospital or dispensary in London, must have been struck with the large number of venereal cases he sees; I think I might say that almost every second surgical case is venereal.

"I know that at the dispensary I am connected with the number of cases I see of this disease, yearly, is very great; and it constantly is coming before my mind how this evil can be remedied. The only way I can propose (and yet I dislike the idea of interfering with individual liberty) is that all prostitutes should be placed under police control for some years to come, at least until the present numerous venereal cases are gradually diminished in this country. I agree with Dr. Drysdale that medical men should be appointed in every large city to examine women; but I differ from him in that I think that instead of such examinations being voluntary, every public woman should be compelled by law to present herself for examination at least once in ten days. If upon examination any contagious disease was found, she should be sent immediately to the *Lock hospital*. Each district should have its own Lock hospital, and the medical men who examine the women in the district should also be the officers of the hospital. Women ought to be forced to remain in these hospitals until they are quite well, and during their



residence in hospital there would be time to try to reform them. A trade or business should be taught them, and those who cannot read and write should be taught to do so; and when they are cured, and leave hospital, some employment if possible should be sought out for them to prevent them from falling back upon their old trade. By such means, I think, much good might be done, and the dreadful scourge of venereal disease might be diminished in this country. What an amount of happiness this would produce, and what a saving to the country? How many unfortunate new-born infants might be saved from early death, or a life of misery?"

*Dr. Tilbury Fox* said:—"Mr. President, I rise merely to explain to the Society, that Dr. Lankester has informed me, that the observations reported to have emanated from him, as to the frequency of infanticide in London, were not his. He, Dr.-Lankester, only quoted from a recent work of a French writer, an Abbé, who had pointed to the large number of cases of infanticide occurring in London. The words quoted were that author's, not his."

*Mr. Holmes Coote* said:—"Mr. President, I acknowledge that I made use of the expressions which I am reported to have uttered at the Medical and Chirurgical Society on the occasion referred to, and I still entertain the opinion that there are worse evils appertaining to human weaknesses than prostitution. I happen to possess opportunities of witnessing the fact, that among the young there is no cause of insanity more common than indulgence in habits which I will not further particularize even in a medical society, but which are well known to result in the most complete bodily and mental prostration.

"Idleness and vanity may rank among the causes of prostitution in women; but occupation alone will not avail to prevent it. There is a peculiar condition of the mind when the passions become excited, and women thus affected seek

the opportunity of going astray. After a period of repose in a proper asylum, the mind recovers its equilibrium, and the patient returns to society; but she is liable to relapse. This condition I have seen both among the married and unmarried.

"With regard to the question of trying to check the spread of venereal disease, I say that which I said before the Venereal Commission,—namely, that, in my opinion, legislative enactments *are* required. Women should not be permitted to quit the hospitals partly cured. It is known that, at Portsmouth and other naval stations, they leave the wards and crowd down, still diseased, to meet the seamen of a ship just paid off. In the London hospitals they leave the wards at certain periods of the year, such as Christmas, for purposes of festivity.

"With reference to men, it is impossible to institute any system of inspection. Even in public services such an order would lead to discontent, breaches of discipline, and concealment. Moreover, what classes are to be included in this inspection? Is it to comprise officers? But I quite approve of the inspection of all houses where prostitutes dwell, and of examination and registration of such women. The spread of venereal diseases is a very grave evil. It makes its appearance in houses where it never should be known, and falls upon the innocent young mother and her offspring. I am glad that the subject has been so fairly discussed before this learned Society, and that the members have the moral courage and philanthropy to grapple with the evil. My opinions are the same as those which I expressed at the Medico-Chirurgical Society in February, 1859, where, however, I heard from one or two of the members some statements on that occasion of an opposite character, which, to say the least, were startling."

*Mr. Acton* said:—"Mr. President, It gives me great pleasure to find that the author of this paper has taken up the subject of prostitution. That he has done so marks a great



progress in the question, since, a few years ago, it would not have been possible to bring this question before a society like that of the Harveian Society of London. The subject of prostitution cannot be too often discussed.

"One of the recommendations I made to the Venereal Diseases Commission, when I gave my evidence there, was, that they should not attempt to go too fast. They should, I think, commence by attempting to make the army less overrun by venereal diseases, before they attempt any measures for restraining these diseases in civil life. If this suggestion be carried out for the army, I trust that it will be carried out efficiently, and not negligently; for if well done, it cannot fail greatly to lessen the amount and gravity of venereal diseases in the service. With regard to examinations in civil life, I am not an advocate for indiscriminate examinations, such as are made in Paris.

"For example, were such a case to happen in London as I am about to relate, there can be no doubt that the Puritan party, who are most opposed to any such prevention of venereal diseases, would raise such an outcry, that in all probability the practice would have to be given up. When I was in Paris some years ago, I visited the *dispensary;* and was admitted to the examination of the prostitutes, which, as you know, is carried on to an immense extent. One of the patients examined was pronounced to be sound by the medical inspector. I said to him, 'Do you not think that that girl is a virgin?' He replied, 'It is possible; but that is not our business.' It turned out, from inquiries that I made, that this girl had quarrelled with her mother, and had come at once to be enrolled as a prostitute, and to be examined. Now it almost seemed, as if Government were by this sanctioning this girl in taking to prostitution for a livelihood. I do not know what has become of her. She may have married a duke, or some person in high rank, for anything I know; but, I repeat, such a thing occurring in London could not fail to excite the zeal of that portion of the

religious party who are at present sulkily acquiescent, but may be easily roused.

"Two or three questions have been mooted this evening with regard to prostitution, which I cannot quite coincide in. I cannot think that want of education alone, or poverty, can be such frequent causes of it as has been supposed. Thus, it is not low wages that causes prostitution, so much as the desire of getting money easily; a failing which, I think, is common to men as well as women. When a half-educated or ill-regulated woman sees that by prostitution she can make twenty guineas a day and wear fine clothes, I think there is not much wonder that she often prefers it to working. It appears, that in the streets of Melbourne, where every woman that wishes can earn a good living, prostitution is more rampant than it is even in London. Again, with regard to emigration, many of the women who have been lately sent out to Australia do not like working. It is a well-known fact, too, that in Paris the students do not so much take to mistresses who are idle; they prefer those who are earning good wages, in order not to have so much trouble with them. It is the temptation of living easily in most cases that conduces to prostitution; and, also, as Mr. Holmes Coote truly observes, in some cases the sexual passions are very strong in women. Whatever the virtuous portion of society may wish, prostitution will go on.

"Again, Mr. Dunn has spoken of seduction being a great crime, and no doubt this is true; but how are you to punish the man for this? I remember, when young in my medical career, accompanying a deputation, composed for the most part of clergymen, on the subject of prostitution, to Lord Brougham. On some of the party proposing to the noble lord that a still more stringent law should be passed to punish seduction, he replied, 'But, are you certain, gentlemen, that it is always the *man* who seduces the *woman*?' I quite agree that no sin can be greater than that which men about town are known to boast of, namely, the sedately sitting



down to seduce as many girls as they can. Some men have seduced many girls. Would Mr. Dunn, or any other person, say they should marry them all? I am afraid punishment for these men does not come in this life. The old parish law ought, I believe, to be remodelled, and a far greater sum should be exacted from the father of an illegitimate child, which sum the parish should be empowered to recover from the father. But my opinion on this subject will be found in detail in a paper read before the Statistical Society, and published in their journal."

*The President* said:—"The author of the paper has asked what are the pathological reasons for the sterility of prostitutes. They are, I think, as follows:—Prostitutes are subject to amenorrhœa and dysmenorrhœa, caused by their frequent sexual connection; also to spasmodic contraction of the os and cervix uteri, from the frequent repetition of the orgasm. This prevents the entrance of the male fluid. In some *post-mortem* examinations of prostitutes, also, there has been found to be thickening of the indusium of the ovaries. Although not closely connected with the question, I may mention that I once have seen an unbroken hymen in a prostitute. She was a well-known woman, and lived in great splendour. In this case the hymen was elastic—quite like india-rubber, and the genitalia presented the aspect as if the girl were a virgin. The subject of prostitution cannot be too frequently discussed, and I believe that this discussion may result in great good."

THE END.

*Cox & Wyman, Printers, Great Queen Street, London, W.C.*

## Review VI.

*Army Medical Department.—Statistical, Sanitary, and Medical Reports for the Year* 1860. Parliamentary Paper, 1862. pp. 488.

When we reviewed the first Report of the Army Medical Service in October, 1861, we stated our opinion that of all the reforms introduced into the department, this plan of publishing an annual statement was the most important. We have been still more impressed with this conviction on reading this second Report, which chronicles the medical history of the army during 1860. In a succinct form the occurrences of the year, as far as they bear on the health and lives and happiness of thousands of men, are placed before us; their influence is tested by minute statistical analysis, and suggestions are made which may tend to lessen or avert unfavourable results. It seems clear that as long as the officers of the department do their duty, it is impossible that the British soldier can ever again suffer from the neglect and ignorance of former times. It is gratifying to be able to state that the medical officers appear to be faithfully reporting to their head-quarters everything which affects the health of the men under their charge. We have considered with the greatest interest this information, as epitomized by the heads of departments and laid before Parliament, and we earnestly commend the study of this Report to our professional brethren. The brief description of its contents which we can give will but faintly indicate its value; it ought to be in every large medical library in the kingdom, for it possesses a high scientific as well as historical value.

As with the first volume, this Report is divided into three sections.

First comes the Statistical Report for 1860, drawn up by Dr. Balfour. It is the most complete statement which has yet been published, and includes returns from every station of the army, India included. It must be very gratifying to Dr. Balfour, who, as a young assistant-surgeon, had the honour of co-operating with Marshall and Tulloch nearly a quarter of a century ago, in drawing up the first statistical report of the health of the Army, to see the system brought to such perfection.

A significant indication of the value of such statistical returns is shown by the fact that the French Government, after an intermission of sixteen years, are about again to commence the publication of complete numerical records of their army. Several reasons have rendered this desirable, and among others a very curious one—viz., that it is found necessary to dispel the exaggerated notions entertained by the public of the yearly losses of the French army from disease; notions which have been created, or at any rate augmented, by the obstinate silence of the Government. Those French returns are, we understand, to be issued every three months, and are to be brought up to the latest date, and thus the Minister at War and the public at large will receive the most complete information of the health of their army at the time.

There are many advantages in publishing such frequent reports, though with our scattered army it would be almost impossible to do so. It may be questioned, however, whether, if the documents are carefully worked out at the several regiments or stations, so as to lessen the labour of arrangement and calculation in London, the statistical return could not be ready at an earlier date. We know, however, the time these calculations necessarily take, and that even the Registrar-General, with his immense staff, is usually eighteen months in arrear with his annual return. It is probably impossible to have both accuracy and early publication, and if we must make our choice, there is no doubt which alternative we should prefer.

Passing from these points to the Report itself, it is gratifying to see that, with a few exceptions, the extraordinary improvement in the health of the army still continues. The mortality of the army at home amounted in 1860 to nearly 10 per 1000, but varied somewhat in the different arms and regiments, ranging from 3·27 in the Household Cavalry to 14·86 per 1000 in the Depôt Battalions. In the cavalry regiments the amount was 6·09 deaths per 1000 as against 7·94 in 1859; and in the infantry regiments it was 9·95 per 1000 as against 7·59 in 1859. The admissions into hospital ranged from 513 per 1000 in the Household Cavalry to 1418 per 1000 in the Cavalry Depôts; this last high number being caused by the number of injuries received by the recruits while learning to ride.

The invaliding in 1860 ranged in the different services from 9·61 to 24·65 per 1000; the greatest amount being in the Foot Guards (24·65 per 1000).

Dr. Balfour traces out carefully the effect of age, and then proceeds to the enumeration of the different diseases causing admissions into hospital and mortality.

We shall only notice under these two headings, that as far as regards admissions into hospital, the class of "enthetic (venereal) diseases" gave the following—

| | Ratio of admissions per 1000 of mean strength. | |
|---|---|---|
| | In 1860. | In 1859. |
| Household Cavalry | 119 | 120 |
| Dragoon Guards and Dragoons | 356 | 402 |
| Royal Artillery | 446 | 571 |
| Royal Engineers | 324 | 468 |
| Military Train | 427 | 580 |
| Foot Guards | 287 | 338 |
| Infantry Regiments | 324 | 399 |
| Cavalry Depôts | 333 | — |
| Depôt Brigade R. A. | 511 | — |
| Depôt Battalions | 312 | 400 |

At Portsmouth the admissions from venereal were 503 per 1000 of strength; at Woolwich, 473; at Plymouth, 440; at Dublin, 409; at Chatham and Sheerness, 351; and all other places in less proportion.

It is surely time that some action should follow the never-ending and apparently fruitless discussions on the best means of preventing



venereal diseases among the troops. While the doctors quarrel the patient is dying; and this indeed is literally true, since there is no doubt that the syphilitic cachexia plays a most prominent share in the etiology of many fatal diseases, liver and lung affections among the rest. Is it not time to do something, when at Woolwich—that hotbed of vice—every other artillery recruit suffers from some form of venereal disease within the year? And year after year the same thing goes on, because some persons think it wicked even to discuss the subject, and others to adopt the obvious means of prevention. We should like to have an accurate history of the future diseases and length of service of the men who are thus diseased at the very commencement of their career; we believe the record would be a startling one. We are convinced that whatever sanitary measures are adopted in the army, they will never bear their full fruit until this great and constant evil is boldly met and dealt with.

Among the causes of death on home service, tubercular diseases still hold the first rank. The Foot Guards still show very unfavourably in this respect—the deaths from tubercular diseases being not less than 5 per 1000 of strength, and the invaliding from the same cause being 10·68. Altogether, the strong, powerful men of the Foot Guards lost nearly 16 per 1000 of their strength in 1860 from tubercular diseases alone. The infantry regiments of the Line only lost 3·06 by deaths, and 3·82 by invaliding, per 1000 of strength in the same time. This astonishing difference ought to lead at once to a thorough re-investigation of the conditions affecting the Foot Guards, as to lodging, diet, clothing, duties, &c.

With regard to suicide in the army at home, it appears that only 26 instances occurred among 83,387 men serving in the United Kingdom in 1860, or at the rate of ·31 per 1000. Dr. Balfour questions whether this is greater than among the civil population; but as in his table referring to civilians he is obliged to include accidental as well as violent deaths, he doubts whether the comparison can be drawn without more accurate details.

Dr. Balfour gives some interesting statistics on the rejections among recruits. It appears that 318 men are rejected at the primary inspections out of every 1000 recruits; the proportion in France is stated to be 317 per 1000. England and Wales, from a population of 20,061,725 persons (census of 1861), gave 15,756 recruits; Scotland, from a population of 3,061,329, gave 2983; and Ireland, from a population of 5,792,055, gave 8937 recruits.

| | | | |
|---|---|---|---|
| Of every 1000 recruits, | England and Wales | furnish | 566 |
| " " | Scotland | " | 107 |
| " " | Ireland | " | 321 |
| " " | Colonies & Foreign Countries | " | 6 |
| | | | 1000 |

The causes of the rejection of recruits are very carefully given. Small or malformed chest and curvature of spine, diseases of the eyes or lids, disease of veins, muscular tenuity, defects in lower extremities,

general appearance of unsound health, give the largest proportions of primary rejections (more than one-half). There are no less than thirty-nine headings of diseases or conditions which cause rejection. The ages, height, weight, and state of education of the recruit are also very carefully stated. Of every 10,000 recruits, 2409 were between 64 and 65 inches in height, 2075 were between 65 and 66, 1764 between 66 and 67, 1243 between 67 and 68, 811 between 68 and 69, 480 between 69 and 70, 294 between 70 and 71, 138 between 71 and 72, 57 above 72 inches or 6 feet. A few were below 64 inches. The Scotch were the tallest men on an average, the Irish the shortest; the greater number weighed from 120 to 130 pounds.

Such an immense mass of facts is indeed recorded by Dr. Balfour, that we are doing him the scantiest justice by taking out these few points from his elaborate analysis of the health of the army at home; we trust, however, we have said enough to induce our readers to study this instructive work for themselves.

On the various foreign stations the health of the troops in 1860 appears to have been pretty good. At Malta and Ionia both admissions to hospital and deaths were much less numerous than in 1859; at Gibraltar, on the other hand, there was a slight increase in mortality, owing partly to an outbreak of cholera.

In the West Indies there was no very striking incident, except that at Trinidad there was not a single death among the white troops during the whole year. Among the black troops at the same station there appears to have been no less than 8·54 deaths per 1000 from suicide.

In Jamaica the mortality was 20·2 per 1000, which is an increase over the loss of 1859, owing to paroxysmal and "continued" fevers. It would be very important to learn precisely what the "continued" fever of Jamaica is? Is it not chiefly typhoid? The term "continued" is a most unsatisfactory one, leading to no conclusions as to cause or suggestions as to prevention.

In Canada the loss was 10·33 deaths per 1000. There were fewer admissions than usual from continued fevers.

We pass over all these and other stations to turn to the chapter on the "Health of the Troops serving in India." This is the first time that statistics of all the Europeans in India have been brought together in an official Report. We wish our limits would allow us to make a critical examination of this important chapter, but we must content ourselves with a few extracts only. The following table gives the broad results:

| | Average strength. | Admissions into hospital. | Deaths. In India. | Deaths. Of Invalids. | Deaths. Total. | Ratio per 1000 of strength in 1860. Admitted. | Ratio per 1000 of strength in 1860. Died. | Annual ratio of deaths per 1000.* |
|---|---|---|---|---|---|---|---|---|
| Bengal | 42371 | 85693 | 1569 | 99 | 1668 | 2023 | 39·37 | 55·56 |
| Madras | 10696 | 15901 | 193 | 49 | 242 | 1487 | 22·63 | 29·76 |
| Bombay | 11388 | 22013 | 332 | 29 | 361 | 1933 | 31·70 | 26·09 |

* Average of five years—1850-54.



This table bears out the old saying of "Madras for Health" as compared with Bengal and Bombay, but in all the Presidencies the sickness and mortality are far greater than they should be. The forthcoming Report of the Sanitary Commission on India will doubtless strongly direct the public attention to the causes of this yearly loss—causes which we already have learnt from the striking pages of Chevers and many other Indian surgeons. Suffice it now to say that we feel sure future years will tell a very different tale from that Dr. Balfour now puts before us. One point even now is satisfactory—it is, that the mortality, great as it is, is still less than in former years.

In Bengal there are stations, such as Saugor, Meerut, Jullundur, Ferozepore, and Nowshera, where the death-rate is scarcely more than at home. At Jullundur (Punjaub), indeed, it was only 7·34 per 1000, and at some of the very much smaller stations, where the numbers are too few to make a single year's returns of much value, as Futtygur, it was even below this.

In some stations, again, the mortality was immense; in Calcutta it was 92·53 per 1000; at Morar (Gwalior) it was 119·33 per 1000; and at Raj Ghat, Benares, it was 161·89 per 1000; no less than 121 men out of a strength of 1014 having died in hospital. Cholera of course is to blame for these high numbers, and probably next year's report may tell a different story.

Dr. Balfour very properly remarks, that his numbers "may be useful in calling the attention of medical officers to those stations where a high rate of sickness and mortality has been observed." We should hope, however, that there will be no need for this prompting as soon as the numbers are known in India.

In the analysis of the diseases in Bengal, we are struck with the large number of cases returned as "continued fever." At Calcutta, 320·7 men per 1000 were admitted, and 1·4 per 1000 died. At Benares, 378·8 per 1000 were admitted, and 5·9 per 1000 died. At Peshawur, 404 men out of every 1000 were admitted in the year, and 2·72 died. We must again remark that it is most important that a clear diagnosis should be given of this class. Is it typhoid, or relapsing fever, or obscure malarious remittent, or something else?

At page 121 a table is given of the different corps; on looking through it, it seems as if half the army were in Bengal. Two troops of horse artillery, sixteen batteries of foot artillery, two companies of royal engineers, four regiments of cavalry, and forty-four regiments of infantry,* make up (with the remnant of the old Company's troops) the imposing army which watches at the same time the cowed nations of the north-west and the wild tribes roving on the slopes of Nepaulese and Affghan hills. And every year, from deaths alone, it is as if nearly two regiments disappeared.

In Madras, both the sickness and mortality are less than in Bengal, and in some stations, as at Cannanore and Rangoon, the death-rate was only 7·08 and 5·12 per 1000. The greatest loss was at Secun-

* These numbers do not include the old Company's regiments, which, at the date of the Report, had not been amalgamated.

derabad, that place of ill repute, where twenty-five men died out of every 1000, though even this was an improvement over the average amount at this fatal locality. In an after part of this volume is an excellent paper by Mr. Crawford on Secunderabad, which explains very completely the causes of this mortality. Five companies of artillery, three regiments of cavalry, and ten regiments of infantry, compose the army of this Presidency, and of these, death removes only a quarter of a regiment annually.

The returns from Bombay are not sufficiently complete to allow Dr. Balfour to enter on any analysis.

The number of soldiers constantly in hospital amounts in Bengal to 3173, or more than three regiments; in Madras to 672; and in Bombay to 754, or nearly two regiments more, so that it may be said that a number equivalent to five regiments out of the army in India are constantly non-effective. The average duration of illness is 13·51 days in Bengal, 15·55 in Madras, and 12·5 in Bombay.

We leave Dr. Balfour's report with reluctance, for to us these dry tables possess the highest interest. Year by year, as comparison becomes easier and more certain, they will gain in interest and in importance. As it is, we know no work of the kind of greater value; it is a credit to our country and the department which issues it.

The second division of the Report is occupied by the documents presented by Dr. Logan, the head of the Sanitary Branch. It consists of several valuable papers. First, there is a very long and elaborate account drawn up by Dr. Logan, of the sanitary condition of all the chief stations of the British army. The amount of accommodation, the warming, and ventilation of the barracks, the cooking arrangements, provisions, bathing, water-supply, clothing, condition of latrines, drainage, gymnastic exercises, &c., are all recorded. We most earnestly commend the suggestions made by Dr. Logan to the attention of the authorities. Every commanding officer ought to read this Report, and to endeavour to carry out the improvements recommended. It is almost impossible that the central authority can issue specific instructions on all the points which require attention, whereas officers commanding regiments or stations can, in many cases without difficulty, either at once remedy evils, or can much facilitate the official routine which has to be gone through. But there are certain points with which the central authority can alone deal, and we will refer to a few which have struck us in reading Dr. Logan's excellent Report.

Thus, in the home stations, it appears that the men are still too crowded in barracks, and it is by no means uncommon for them not to get their regulation amount of space. No doubt time must be given to pass from the old to the new system, and to carry out precisely the present regulation, which allows to each soldier in permanent barracks six hundred cubic feet of space.

But we infer that much apathy prevails in carrying out this regulation; whenever it is inconvenient it is at once set aside, and the amount of cubic space at present given in some barracks is below the half of



what the man is entitled to. This is a great error in all ways; an error as a matter of hygiene, for it is impossible that ventilation can be properly carried on without a sufficient allowance of cubic space; an error as a matter of discipline, for a regulation once made should never be set aside, without the most formal statement of the reasons for a temporary alteration. Better at once to alter the regulation, and to make a rule which can be adhered to, than to let an official order be constantly over-ridden and set at nought. What, perhaps, is wanted here is a determination on the part of the War Office authorities to carry out their own order, and a more thorough recognition on the part of commanding officers, that it is as wrong to deprive a man of his ration of air as it would be to deprive him of his ration of food. Good air and plenty of it is just as important as good food; an officer would be horrified if his men were to receive only half their allowance of meat; but every day, without the least hesitation, he allows them to be with half their allowance of vital air. No one will pretend that the Queen's Regulation errs on the side of excess of air; six hundred cubic feet of space is, after all, a very poor allowance.

But not only is the ration of air deficient, the ration of food is still not what it ought to be. We learn from this Report, that the Director-General has urged the necessity of increasing the amount of meat. At present a man receives 12 ounces of uncooked meat; deducting 25 per cent. for bone, and allowing a loss of weight of 30 per cent. or 35 per cent. in cooking, and his daily allowance falls to barely 6 or at most 7 ounces. This is the amount which is given in workhouses to men who are leading the idle life of a pauper, and is evidently quite insufficient for a young soldier in full occupation. But it appears that the expense of the change would be too great. Now this we are sure is a false economy; if the amount of meat is insufficient, it must tell in some way; it must lessen the force of the soldier, and his value as an agent of force; it must, in a definite degree, impair his health, and if it were possible to deduce the amount of ill health, and the necessary expense resulting from this ill health, which cannot but proceed from this cause, we should find that the State is paying with one hand what it is holding back in the other. No more certain rule can be laid down than that anything which improves men's health is economical. We trust that the Director-General's wise suggestion will yet be carried out.

Another point is urged in Dr. Logan's Report. At present the soldiers receive from the commissariat certain parts of their food, such as bread and meat; they buy others, such as vegetables, tea, sugar, milk, &c. At Aldershot the system has been commenced of allowing the men to buy many of these articles from the commissariat at cost price. The system has worked very well; the men buy better articles at a cheaper rate, and Dr. Logan, with the sanction of the Director-General, urges an extension of the system. We are certain this is a move in the right direction; from an examination we have ourselves made into this point, we have found that the soldier buying his articles in the open market pays at least 25% too much for coffee, and in a less proportion for tea and sugar.

Lord Herbert was of opinion that the commissariat should supply everything, and probably this system will be gradually adopted.

Another point, the unsatisfactory state of the cooking, is also noticed by Dr. Logan. When the Royal Sanitary Commission discovered, in 1857, that the British soldier lived for twenty-one years of his life on boiled beef, every one was ready to pity the unhappy wretches condemned to a diet of such utter monotony. Roast and baked meat were introduced a certain number of days weekly. Well, the British soldier now appears to be sighing after his boiled beef. His small modicum of meat appears so very much smaller after roasting than after boiling, that he turns with regret to the time when his meat was more bulky if more tasteless. In fact, the loss of weight in roasting is often 35 or even 40 per cent. with the commissariat meat, and though the loss is chiefly water, it makes the amount of meat appear very small. Care, however, should be taken that the fat and juices of the meat are got by the soldier; it is one of our absurd customs, that the fat of roasted meat becomes the perquisite of the cook. If this happens to be done in military kitchens, there is some reason why the soldier should prefer his boiled beef, all of which, at any rate, he obtains. Stewing meat with vegetables is, after all, the best dish for the soldier, as there can be no loss of this kind.

Dr. Logan mentions in several places the effect produced on the men, especially in the Rifle Brigade at Aldershot, by the custom of carrying their packs and kits on field-days. Young soldiers especially suffer, and there would be still more suffering were it not that the men constantly manage to leave their kits at home, and carry their packs empty. Some commanding officers wisely shut their eyes to this habit, but the fact that the men find their full packs so dreadfully oppressive should lead at once to a full examination of the accoutrements of the soldier, and what he should be called on to do in respect of carrying his kit on ordinary duties, such as sentry, guard-mounting, &c. From some inquiries we have made, we are convinced that there is no subject of more immediate importance than this. The present accoutrements of the infantry soldier are extremely faulty; they cause considerable sickness and loss of efficiency, and are irksome to the wearers in a degree only to be appreciated by those who have either carried them, or who have got soldiers to talk to them without reserve on the subject.

The system of gymnastics is being gradually developed in the army, and in addition to a fine gymnasium at Aldershot, which is admirably conducted by Major Hammersley, gymnasia will be constructed at Chatham and other stations where there are depôt battalions, and then at all other places. They are intended as means of physical training, and also as places of recreation and amusement for the men. At present the system is in its infancy, but the Government are evidently pushing it on. Yet a little more vigour is necessary here. Physical training, especially of the recruit, is still too much neglected. A young man or boy of eighteen or nineteen years of age has a frame which is exceedingly immature both as to its bones and muscles; incalculable harm is done by improper exertion at this important age, while as much good is done by judicious training. On this subject we would allude to an excellent little book by Dr. Aitken, of the Army Medical School, on the condition of the bones of the young soldier, in which the evils to be avoided, and the general plan to be followed in training men, are pointed out very clearly.* The increase in the girth of the chest and in the size of the muscles, by proper gymnastic exercises, is most remarkable. Dr. Logan gives a table at page 200 of the increase in height, girth of chest, and size of fore and upper arms in twelve men trained at the Gymnasium at Oxford. In some cases the height increased three-quarters of an inch; the girth of the chest three inches; the upper arm one and a quarter to two and a half inches.



At Aldershot, results even more remarkable have been brought out, even when the training has been carried on merely for an hour or two twice a week. The average increase in 360 men who last autumn went through the training was: increase of girth of chest, one inch and five-eighths; of fore-arm, half an inch; of upper arm, three-quarters of an inch.

From some statistics which we have had an opportunity of seeing, it appears that many young soldiers under two years' service are discharged from various causes, but especially from lung and heart diseases. The probability is that the causes of this are several, but that faulty training and the pressure of improper accoutrements are the principal. The authorities should certainly see to this point without delay, in justice both to the State and to the men themselves.

The clothing of the soldier at home is considered by Dr. Logan to be tolerably satisfactory; he adverts to the *vexata quæstio* of flannel under-garments. No doubt there are some difficulties of first expense, replacement, and washing, but these are not to be set against the hygienic importance of flannel next the skin, and we trust medical officers will endeavour to get a woollen or mixed woollen and cotton shirt introduced instead of the present cotton one. The high "military heel" of the boot (which is about the most unmilitary make which could be devised) has been complained of in some regiments as throwing the weight of the body on the toes. We thought Camper, Meyer, and Humphry, and the indefatigable Mr. Dowie, had settled this point.†

We have been sorry to notice a decided tendency to return to the old custom of tight-fitting and scanty tunics. The "modernized" tunic is, it appears, two inches shorter in the skirt than its antique model of three years ago. Why is this? The more covering a man can get over the thighs the better; the coat ought to be as long as it can be without touching the ground when the man kneels in rifle practice. The difference of even two inches more covering over the hips and thighs is something when a poor soldier has to march for hours through rain. Then, let us ask, is there no hope that the tunic may loosen out into a blouse, and allow a man not only to use his muscles with perfect freedom, but in winter to put a jersey or some under-garment under his

* See our Bibliographical Record in the present number.

† See No. lix. of this Review, p. 116.

coat, instead of wearing, as he does now, exactly the same amount of dress winter and summer?

One remark by Dr. Logan will certainly amuse our readers; there is a quiet irony in it which is very telling. He writes: "The great boon recently conceded to the soldier in allowing him the wear of his great-coat in winter or inclement weather, irrespectively of his being on duty, must be pronounced in the minds of all medical officers an inestimable benefit."

It appears, then, that the soldiers' great-coat has been chiefly to look at; and that it is only when he was on duty that it was permitted to stand the brunt of "inclement weather." It was, we presume, feared that the spongy and miserable cloth of which it is composed, through which the wind blows as through a sieve, and the rain passes as into a sponge, would be torn into shreds and tatters in a few weeks if the great-coat were put to its legitimate use. We are happy to learn, however, that the great-coat is not only to be worn, but that it is to be made fit to wear. The excellent system commenced at the Government clothing establishment at Pimlico is doing great things for the soldier; it is not only giving him excellent boots, but is providing a good great-coat, warm, serviceable, and tolerably resistant to wet. It only wants a waterproof cape which could be removed at will, and a hood, to make it a garment fit for a soldier. The hood, however, should be at once added; to a man who may be called on at any moment, not merely to march through pelting rain and bitter wind, but who may have to lie out all night under an inclement sky, there is perhaps nothing so comfortable as the waterproof hood which keeps the head and neck dry and warm. It is time that the extraordinary prejudice against this contrivance should be given up.

After reviewing the home stations, Dr. Logan proceeds to describe the foreign stations with the same fulness and care. We shall not follow him through his summary, though some of his statements elucidate remarkably the statistics of the same places given by Dr. Balfour. The two reports must, in fact, be read together; they are complementary of, and mutually illustrate each other.

Dr. Logan's summary is followed by a paper by Dr. Rutherford, on the "Sanitary Condition of the Troops employed in China in 1860;" and at a subsequent page, the "Medical History of the War in the North of China" is given by Dr. Muir, C.B., the principal medical officer of the expeditionary army. Both papers are of the greatest interest and value. What lives might not have been saved if, at the commencement of the Crimean war, any accounts like these of previous campaigns had been accessible! Every point connected with the equipment of the force and its preparation for the field, with its final organization, and with the successive phases of that brilliant campaign (which, short as it was, had medical difficulties and dangers of its own), is here set forth. These Reports will be the guides of future medical officers in all wars; they lay down excellent sanitary regulations, and show how these were carried out, and what were the results attained.

Dr. Muir's paper is, indeed, something more even than this; it is



really a history of the war, written with a vigorous and practised pen. Short as it is, it will occupy a lasting place in our military literature, and future historians will use it for their chief authority on this eventful war, which broke up the antique civilization of China, and introduced, for weal or woe, singular and momentous changes among the most populous kingdom on the globe.

We find it impossible to give any analysis of these two admirable reports; they are so concise that compression is impossible, and extracts would do them injustice.

In addition to this Report, Dr. Rutherford contributes a paper on the promontory of Kowloon, the portion of mainland opposite Hong Kong, which after the war was ceded to England. It would seem that a locality much healthier than Hong Kong has been found, and that the men will have much more breathing space than can be given them in the confined limits of Victoria. But Dr. Rutherford concludes his paper with some recommendations which are at once so sensible and so simple, that the authorities will surely at once adopt them.

"It ought not, however, to be lost sight of, that position of barracks alone forms only one of the many items to be considered when the health of the soldier in China is concerned. Useless will it be to erect spacious and expensive barracks on the best sites in Hong Kong and its neighbourhood, if other and most important considerations be omitted or neglected. Let the soldier be dressed in loose, roomy flannel or serge dress. Let all unnecessary drills, parades, and fatigue duties be abolished, particularly in the hot season. Let the guard duties by day and night be reduced exactly to the minimum required by strictly public contingencies; and to carry out this most essential requisite, let boards of senior officers periodically inspect every sentry-post, with a view to considering the necessity for its further continuance. Let 'bayonet' and 'flying sentries,' where and when practicable, be established. Let all guard-rooms, cells, and 'lock-ups' be adapted to the wants of the occupants. Improve the rations of the troops; and, in the case of men on guard, let there not be so long an interval of fasting — viz., from five o'clock P.M., when a scanty and unstimulating 'tea meal' was or is given, and eight o'clock next morning, when a breakfast of similar materials — bread and tea — was partaken of. Let the men who have passed twenty-four hours on guard, eight of which on foot — no inconsiderable amount of labour in the hot season — be exempted from all parades, drill, &c., on the day succeeding. Let bathing parades be encouraged and enjoined at due times and under proper inspection. Let each man have fully seven nights or more in bed. Cut him off as much as possible from the pernicious influence of noxious drinks, by encouraging him to pass his unemployed time in such establishments as the 'Institute,' established and carried on with such success in Hong Kong in 1860." (p. 313.)

The next paper is a Report on Secunderabad (Madras Presidency), by Dr. Crawford. It is a history of this notorious station, round which the English dead are buried in thousands. For many years one of the chief duties of the medical officers stationed at Secunderabad has been to make vehement, but ineffectual, reports to Government on the unhealthiness of the old barracks. In that dry and oppressive climate, with an average annual temperature of 80° Fahr., the European soldiers were crammed into barracks which were condemned by the

highest medical authority in the Presidency, as "unfit for human habitations in any climate." At length, in 1839, these shambles were pulled down, but unfortunately, at the instance of the Brigadier commanding the station, and in opposition to all medical advice, the new barracks were placed "on the old and ill-starred site," and even these new barracks, though better than the old, were badly built. The consequence has been, that the waste of life and of money at Secunderabad has been, and even is now, something appalling, and is a deep stain upon our administration of India. A new barrack has now been built, but the old building is still used, and will doubtless continue to be used until some determined and sensible Governor, like Metcalfe or Dalhousie, closes for ever the ill-omened pile.

But the mistakes of this region are, it appears, not yet over. One of the newest buildings, the hospital, is said to be an "enormous blunder;" and the following extracts from a Report of Dr. Cashman's, quoted by Dr. Crawford, will give our readers an apt illustration of how still in India "the best way not to do it" is occasionally followed:—

"The following dimensions give some idea of the magnitude of this hospital:—

| | |
|---|---|
| Extreme length | 235 feet. |
| „ width | 93 „ |
| Width of outer verandahs (each 12 ft.) | 24 „ |
| „ inner „ (each 13½ ft.) | 27 „ |
| Width of main ward | 42 „ |
| Height of each story | 20 „ |
| Total elevation of building from ground to top of parapet | 48 „ |

"In this measurement no account is taken of inner partitions, if such can be said to exist, there being only pillars and open arches.

"In the roof of the inner verandah of the upper story are ten ventilators on either side, each a foot in diameter; two others of double that size, opening on the ceiling of the lower flat, pass through the upper one from the roof. Each flat is divided into one main ward 154 feet long and 42 feet broad, and one smaller one 42 feet by 18 feet, the longer diameter of the latter being transverse to the main length of the building. At either end, in the north-west and south-west angles, are small rooms each 13 feet by 11 feet, used as offices, and another larger one open on one side, and used occasionally as a special case ward, but ill suited for that purpose. There are also small rooms in the other angles now used as lavatories and bath-rooms, but for what purpose originally intended is not known. They are very unsuitable for the use to which they are now converted.

"Beyond its dimensions nothing can be said in its favour. In most other respects it appears to have been an enormous blunder in hospital construction. Its interior is nothing more than a great shed. That great principle of breaking up the sick into small numbers under separate roofs has been completely lost sight of, in fact reversed, thus rendering its very magnitude a radical error. It has been proposed to divide each flat transversely into four small wards, but the obvious objection to this would be the great extent of dead wall, which would far more than counterbalance any benefit otherwise derivable therefrom.

"The ventilation is either in excess or none at all; the former state occurring in high winds, sometimes amounting to gales, and during the hot seasons dust storms and the hot winds being even more obnoxious to the sick; the latter, during the afternoons and evenings of the hot season, when the atmosphere is motionless. At such seasons, a man lying in the centre of the main ward, and being forty-six feet from the outer wall on either side, lives in an atmosphere which I believe to be, under these circumstances, as much localized around him as if he were shut up in a room six feet square. There are no ventilators in the roof of the main ward in the upper story, and but two in the lower one. There are ten round holes, about two feet in diameter, in the roof of the inner verandah of the upper story; none in the lower one.

"The great width of the building certainly serves to maintain a cooler temperature in the centre during the mid-day heat of the hot season, but there are certain conditions occurring towards evening and night which render it impossible to replace the entire volume of air within the ward, the atmosphere being so completely motionless, often for six or eight hours at a time, that no perflation can take place. It is under such circumstances that cases of heat apoplexy have been observed to occur.

"The porous state of the roof, and the failure of the engineers to make it water-tight, is severely commented on, and the extraordinary resonance of the building is described as not only injurious, but irremediable."



Some of the new barracks are also badly placed; and, in fact, it would appear that even after all the outlay, Secunderabad is destined still to be the *bête noire* of the medical department.

A curious and interesting attempt is made by Dr. Crawford (p. 328) to give a numerical statement of the causes producing sickness at Secunderabad. It is given merely as a first attempt, but the plan seems to us in every way worthy of being carried out on a large scale. Of 100 cases of disease (belonging to the miasmatic and enthetic orders), Dr. Crawford calculates that the causes are—

*General.*

| | |
|---|---|
| 1. Peculiarities of climate | in 25 |
| 2. Overcrowding and defects of accommodation (remediable) | in 15 |
| 3. Defective sanitary supervision of cantonment (remediable) | in 10 |

*Personal.*

| | |
|---|---|
| 4. Venereal (entirely under personal control) | in 17 |
| 5. Drunkenness (ditto ditto ditto) | in 10 |
| 6. Defects and errors in cooking, hours of eating, and composition of diet (within administrative control) | in 10 |
| 7. Neglect of personal cleanliness, slovenly habits, want of exercise (personal, and therefore under individual control) | in 7 |
| 8. Other undefined agencies and contingencies | in 6 |
| | 100 |

The large amount of remediable disease seems extraordinary when matters are put before us in this way; yet our opinion is, that the case is rather understated than otherwise, and that further observations will reduce the number of cases attributed to "peculiarities of climate." Dr. Crawford has adopted the true way of dealing with the subject; the study of causes is the true philosophy of medicine. Some practical suggestions close this very able and interesting Report.

The next paper is a pithy "Topographical Report of Nova Scotia," by Deputy Inspector-General McIlree; and then follows an admirable "Review of the Progress of Hygiene during the year 1861," by Dr. Parkes. This Review is stated to be written for the purpose of bringing before the army medical officers the latest important observations made during the year on the subject of the prevention of disease. The design seems to us a useful one, and well executed.

This closes the sanitary section of the Return, and is followed by the Report of Dr. Mapleton, the head of the medical branch.

In this Report all the departmental intelligence, circulars, &c., are given. It appears that in 1860 there were 1075 medical officers on full pay on the 1st of January; 32 died in the year, or at the rate of 29·76 per 1000 (if the number 1075 be assumed to represent the mean of the year), a very large mortality, as the department is now officered by young men; we should much like to have the ages and causes of death of these 32 gentlemen. Mr. Neison, the actuary, showed some years ago that there is an extraordinary mortality among the junior medical officers of the Queen's army, and he strongly urged that inquiry should be made into this point. The numbers we have just quoted have recalled this remark of Neison to our mind; and we beg to reiterate his request that the matter be looked into. Besides these 32 deaths, the department lost 7 men by resignation, 11 were placed on permanent half-pay from ill-health and other causes, and 17 on temporary half-pay. Altogether there was a loss of 67 officers; and to make up this loss, 58 gentlemen entered the service.

In Dr. Mapleton's Report are contained Dr. Muir's "History of the Chinese War," already noticed, and the following papers:

1. "Cases of Frostbite occurring in China," by Dr. Currie, Deputy Inspector-General. Twenty-one cases are shortly but clearly related; 7 died, and all the remainder lost part of the feet.

2. "Report on Ophthalmic Surgery at Fort Pitt," by Dr. Philip Frank. This paper occupies no less than fifty-three very closely-printed pages; it contains an immense number of most important and in many cases original observations, and is illustrated by some chromo-lithographs. We find it impossible to analyse it, but we beg to direct the attention of ophthalmologists to it, as we believe it will be found to be one of the best papers ever written on the subject. There appears to be a most curious collection of cases among the invalids at Fort Pitt, and the use of the ophthalmoscope has singularly elucidated many of the obscure causes of inefficiency arising from defects of vision. Dr. Frank enters at some length into the question of the so-called "military ophthalmia," and the nature of the "vesicular granulations" which exist in that disease. How commonly this condition prevails appears from the fact, that vesicular granulations were found on the lids of men belonging to no less than forty-one different regiments in various parts of the world. The very interesting observations of Assistant-Surgeon Marston, R.A.,* also bear out the conclusion that this disease prevails extensively in our army.

* Beale's Archives, 1861.



Dr. Frank has no doubt of the normal existence in the lids of closed solitary follicles, structurally identical with the closed follicles of the intestines, the Malpighian follicles of the spleen, &c. The sago-like vesicular granulations arise from "multiplication of intra-follicular corpuscles, frequently combined with germinative cell-growth in the surrounding connective tissue, under the influence of irritating agencies."

That the disease is contagious Dr. Frank has of course no doubt, but he does not seem disposed to conclude that it cannot arise *de novo*. Indeed, he thinks Stromeyer's observations show the production of vesicular granulations in the eyes of animals when exposed merely to a vitiated atmosphere, and he believes that thus the existence of a vitiated atmosphere may be discovered in a barrack room by examining the eyes of soldiers, before there is any other evidence from disease of its presence.

The progress and consequences of vesicular granulation are described with great care; indeed, the whole chapter forms a complete monograph on this disease.*

In a subsequent page we observe Dr. Frank refers to an undoubted case of blindness after the use of large doses of quinine, and he refers to similar instances related to him by Professor Maclean, of the Army Medical School, and by Dr. Mouat, of Calcutta, and to some cases given by Von Graefe and Briquet. He points out that quinine blindness must not be confounded with the loss of vision caused by pigmental obstruction as a co-effect of malarious poisoning.

Two of the plates refer to beautiful instances of chorio-retinitis pigmentosa (Von Graefe), both of which commenced with hemerolopia. The deposit of pigment is enormous.

The other plates give very perfect drawings of a case of staphyloma with choroiditis, and of a capital example of retinal detachment in a man who was struck by the hock of a mare over the root of the nose.

Dr. Frank gives the following statistical statement drawn from 656 cases of eye-disease observed at Fort Pitt in 1860 and 1861:—

| | | | |
|---|---|---|---|
| Ophthalmia contributed | 428 | or 65·3 | per cent. |
| Iritis and sequelæ | 56 | 8·5 | „ |
| Defects of accommodation | 24 | 3·8 | „ |
| Disease of retina and choroid | 108 | 16·5 | „ |
| Cataract | 6 | 0·9 | „ |
| Strabismus | 3 | 0·45 | „ |
| Traumatic affections | 30 | 3 | „ |
| Neuroparalytic corneitis | 1 | | „ |

We are really sorry that our space will not permit us to extend our extracts from Dr. Frank's most admirable paper.

3. Notice of a form of ulcer prevalent at Delhi, by Dr. Fraser, gives an account of the so-called Delhi ulcer, which Dr. Fraser thinks arises from the drinking water being impregnated with nitrates. It seems to be different from the "Bouton d'Alep," or the Damascus ulcer, and perhaps also from the Algerian ulcer, and has "a strong tendency to return." It is probably connected with some of the in-

* See Article No. xiii. for a description of this disease.

gesta, but possibly it is the organic rather than the inorganic matter in the water which is to blame.

4 and 5 are records of a case of ligature of the iliac artery, by Dr. Le Lisle, and of a case of lithotrity by Mr. Park, R.A.

6. Dr. Skipton describes a new form of splint for compound fracture of the extremities; it is illustrated by figures.

7. Professor Longmore, of the Army Medical School, contributes a curious paper on the mode of testing the power of vision of recruits, in reference to their power of learning to shoot properly. Sets of dots of a certain size, placed at a particular distance, represent the bull's-eye of a target at 600, 800, or 1000 yards. If the recruit can tell easily the number of the dots, he can see the bull's-eye at the distance corresponding to the size of the dots.

Will the great range of vision now required much limit the number of recruits, and are there many stout, healthy boys who will be rejected on this ground? If so, our new armament may have serious consequences, and we should not wonder to find this subject turn out to be one of national importance.

These various papers are followed by an account of the sessions of the Army Medical School, and of the questions put at the various examinations. We are glad to see that the Professors speak very highly of the diligence and intelligence of the gentlemen entering the Medical Department of the Army.

In noticing this Bluebook, we have preferred to give an analytic review of the whole volume rather than to discuss minutely any of the papers contained in it. At the end of our work we repeat what we said at the beginning, that this Report is most creditable to the Army Medical Service; it proves that the department is administered with equal activity and sagacity, and that the medical officers are entering on a career of usefulness and influence greater and wider even than heretofore.

This being the case, we cannot avoid pausing for a moment to ask how it is that we have lately heard so much of the discontent of the medical officers; a discontent so great and so urgent that we are informed nothing like it has ever been known in the service. The feeling has now commenced to operate beyond the department, and in letters and articles in the medical journals and addresses from medical teachers, young medical men are dissuaded from entering this renowned service. This is a matter so important that we shall offer no apology for making a few observations on it.

As far as we can understand it, the present discontent of the medical officers is in several respects a just one. But to make it clear, we must, for the sake of our civil readers, make a few preliminary observations.

Of late years, and of late years only, a custom has crept in of terming some of the sections of the army "Civil Departments." This is an unfortunate word, which has arisen in a confusion of ideas. The army is an unit, composed, it is true, of many sections, having special



duties, separate and uninterchangeable, but all bearing on one end—viz., to make the army an agent of force, and to keep it so. None of these sections, either combatant, or engineering, or commissariat, or medical, should be termed civil; these are all necessary portions of the army, and without any one of them the army would not exist. The commissariat or the medical officers in our view are as much *soldiers* as any other officer whose duties are in another direction. And therefore there should be nothing like a feeling of superiority or inferiority on the part of any section of the army. The duties of the medical officer are perfectly well-defined, consisting in the treatment of the sick and wounded, and in the preservation of the health of the sound men. The medical officer can alone perform these duties, and he can perform no others; he cannot command men, or draw the lines of batteries, or buy and distribute food; he has nothing to do with these things any more than other officers can take his special duties. His relations with those combatant officers who necessarily command bodies of men are quite fixed, and no difficulty ought to arise on this head.

Although the duties and relations to each other of the various sections of the army are thus usually quite clear, there are some cases in which the various officers meet on a sort of neutral ground: when their immediate duties are not being performed; when the surgeon is neither treating his sick, nor the combatant officer is parading or inspecting his men. In such cases as these, it is absolutely necessary that the relative rank of the different classes of officers should be understood and acknowledged; this is not a question of pride or vanity; it is essential to order, comfort, and regularity. Such cases are, for example, when officers meet on committees, when they choose quarters, when they assemble in those social meetings in which the question of rank must necessarily be raised; when prize-money has to be distributed, &c. &c. In all cases the relative standing of officers of the different sections of the army must be fixed.

The State estimates highly, but not more highly than it ought, the importance, nay, the vital and imperative necessity, of having its medical department composed of the best class of surgeons; and it also justly appreciates the way in which the medical department performs its duty. Partly as a reward for these services, partly as an attraction for the best young civil practitioners, partly, or perhaps we should say chiefly, to secure a proper degree of influence to this important section of the army, the Government lately raised the relative rank of the medical officers, and granted them certain privileges. In the often quoted Warrant of 1858, we believe we can trace the views we have now given, and we see that the exact position of the medical department was fixed with a full knowledge of how far the warrant ought to go, and where it should be limited. There is certainly here no intimation of the view which has lately been started, and which we look upon as the origin of all this confusion—viz., that the army surgeons are merely so many civil practitioners, forming a class separate from the regular army.

Now it is undoubted, that in some respects this royal warrant has remained a dead letter, especially in India, where it seems to have been set at nought in a way which shows little reverence either for royal orders or for military discipline. In this country the warrant has, in some respects, been violated or altered, and this in the face of the strongest remonstrances from the medical department. The result is, that the army surgeons have lost faith in the honesty of their rulers. This may seem a hard saying, but it is true. It is argued, that if plighted words issued with all the authority of a Queen's command can be rescinded, or disregarded even in the slightest degree, what security is there that the dearest privileges may not be taken away?

Moreover, it is stated that, owing to the peculiar position in which medical officers are thus placed, they seem to be in a condition of inferiority to the other departments of the army; an inferiority which is in no way warranted by any relative deficiency in education, birth, or importance of duties, and which is opposed to the very principle of army organization, which looks only to the rank fixed by regulation as indicating superiority or inferiority. Some of the weaker-minded of these officers are, it appears, so influenced by this as to be ashamed of their noble and useful calling, and instead of the position of a medical officer being looked upon by them as an honourable one, it is dropped as much as possible. We hope, and indeed believe, that this is rare, and that the members of our profession have too much good sense not to feel proud of belonging to what is really the most liberal and scientific of professions—a profession which in all parts of the civilized world holds an independent and honourable rank.

Without entering more fully into this question, we will make only two remarks—

1st. It is a most important thing for every officer and private soldier that his surgeons should be capable men. If the combatant officers think the Warrant of 1858, and the advantages it gives, are too dear a price for this, they are much mistaken. Their lives, their happiness, and the happiness of those related to them may be, nay, *must* be, influenced by the character of the surgeon who has to preserve their health or to restore it. No price is too dear for this; and if the combatant officers are wise, they will do all in their power to make the position of the medical officers honourable and pleasant, and to attract the best of the rising medical men into their service.

2nd. We would earnestly urge upon the authorities this point:

The warrant was granted by the best War Minister we have ever had; by the man who knew better than any one what were the services and what should be the position of the army surgeon, to enable him to perform those services in the best way.

Now, in every position in life, but especially in the army, a regulation once issued should be literally adhered to. If it is found inconvenient and must be altered, the alteration should be made on grounds publicly stated, so that those concerned may be satisfied or may be able to appeal. But alterations on secret grounds, constructions which are



opposed to the spirit and even the letter of the regulation, evasions when the case is too clear to be disputed, ought not to be tolerated for a moment. How could any organization, any society, be carried on under such mal-administration?

Some action is certainly now necessary; either the warrant must be put into full action in every particular, or it must be remodelled, and the grounds of alteration must be publicly stated before a final decision is come to. This is the only plan to restore peace to this vexed department, and to encourage young men of promise to enter its ranks.

This is, we are certain, a matter of great moment. After doing so much for the medical department, after raising its pay, defining and increasing its privileges, and augmenting in an increased ratio its duties and its responsibilities, the whole object of all three measures is now being sacrificed. That is, indeed, to scatter the seed, and then to trample it under foot.

---

## Review VII.

*The Climate of the South of Devon, and its Influence upon Health.* By Thomas Shapter, M.D., Fellow of the Royal College of Physicians, Physician to the Devon and Exeter Hospital, &c. Second Edition.—*London*, 1862. pp. 282.

The period of twenty years which have passed since the first edition of Dr. Shapter's work appeared has been marked by more than one revolution in the numerous branches of human knowledge which, although ostensibly of only local purport, it embraces. Geology, botany, economic and statistical science, epidemiology, medicine, and (may we not say also) meteorology, have assumed a development during that interval which must render it necessary for any author who desires to rehabilitate (the current term, we believe, at the present moment for the process) a production of so respectable an antiquity, so thoroughly to revise it as practically to re-write it altogether. And such, the author tells us, has been the case with the present edition. Nor is the claim which he puts forward for it as representing fairly the general physical conditions of the district an unreasonable one. As a handbook to the natural history of South Devon, and more especially as an epitome of the leading geological features by which it is characterized, the earlier chapters exhibit a fulness of description for which we should scarcely have looked, and which enhances greatly the utility of the work.

In the meteorological department, also, the statistics which Dr. Shapter adduces are unusually copious, embracing a period of thirty years, and are carefully tabulated so as to exhibit both the mean records of the various phenomena observed, and the extreme fluctuations by which they were attended. It is true that nothing in particular is evolved as the result of all this praiseworthy labour, Dr. Shapter being himself compelled to make the humiliating confession, that, despite the protracted attention he has given to this subject, he is no better able

to forecast the weather on any particular day than are his neighbours. However, there are the facts, and perhaps some future investigator may find the clue to their meaning, which Dr. Shapter has failed to discover.

The descriptive notices of the principal towns in the district, though not sufficiently detailed to be of much practical value to the intending visitor who may wish to obtain precise information as to conveniences of residence, social attractions, or special advantages of any particular resort, are yet ample enough to give him a bird's-eye view of its general relations. The non-medical portion of the work is creditably put together; and we can recommend it as containing a good account of the natural and social characteristics of that portion of Devonshire to which Dr. Shapter has more especially limited his survey.

We regret that we cannot speak quite so favourably of those chapters which are devoted to matters of an exclusively medical nature. Of these, by far the longest—occupying, indeed, more than one-third of the book—is occupied by a review of the "Diseases of South Devon;" and if by that title the reader should be led to its perusal under the expectation of finding in it any description of pathological conditions that are otherwise than common to the whole of England, he will certainly be disappointed. For, like the well-known chapter of the old Danish geographer, "On the Snakes in Iceland," after discoursing somewhat lengthily on almost every known disease, including necusia (!), dysentery (which, however, we are told is "not a disease proper to this district"), bedsores, alcoholism, and numerous other affections to which, so far as we are aware, Devonshire can lay no special claim, Dr. Shapter *naïvely* winds up with the remark, that "South Devon has no characteristic disease." In default, therefore, of material more appropriate to his text, our author presents his readers with his recollections of disease in general during the last thirty years in the neighbourhood of Exeter, accompanying them by a commentary on its varying phases, and on the results of the treatment which he has adopted. Now, although the impressions which are derived from so lengthened a practice cannot but contain much that is both interesting and instructive, we cannot help thinking that in their present position they are, to say the least, considerably out of place. Even if the memoranda upon which Dr. Shapter's deductions are based were given with much greater fulness and exactitude than is the case, we can hardly see what most of them have to do with "the influence of the climate of South Devon." It is very true that the cases to which they refer occurred *in* the climate of South Devon, and that, if that portion of the globe had happened to have been endowed with no climate at all, there would have been no disease to make a note of; but even on this hypothesis, the connexion is scarcely less remote than that between Monmouth and Macedon. At present Dr. Shapter's experience has sadly the appearance of having been dragged in bodily to give a medical aspect to a work which, however useful it may be as a guide to the physical features of the district, has little claim to rank

ON THE

# PATHOLOGY OF DENTAL CARIES.

BY

SIDNEY LONGHURST,

DENTAL SURGEON,

LICENTIATE OF THE ROYAL COLLEGE OF SURGEONS; AUTHOR OF 'LOCAL ANÆSTHESIA,' 'THE MERITS AND DEMERITS OF CONGELATION IN DENTAL OPERATIONS,' 'DENTISTS AND CHLOROFORM,' 'OBSERVATIONS ON STOPPING TEETH,' 'THE EXPULSION OF FILLINGS,' ETC.

[*Reprinted from the 'British Journal of Dental Science.'*]

LONDON:
PRINTED BY J. E. ADLARD, BARTHOLOMEW CLOSE.
1863.

ON THE

# PATHOLOGY OF DENTAL CARIES.

By Sidney Longhurst, L.D.S.

---

We understand by caries of the teeth that pathological condition of the organs, in which the superstructure has been penetrated, and the dentine excavated or exposed. The subject I will divide into three parts—First, the external structural peculiarity of the teeth as a predisposing cause; secondly, the systemic variations or agents furthering their destruction; and thirdly, the morbid phenomena accompanying their resolution.

In treating the first part I shall notice the classes of teeth most prone to the disease; their physical and physiological conformation, and the parts usually affected.

The subjoined tables, arranged to give at a glance, the relative liability of the several teeth to decay, with the parts generally involved, I have reduced from Mr. Tomes's tables of 3000 cases, as appended to his lectures.

From these it will be apparent that the approximal and grinding surfaces are those chiefly attacked, the labial and lingual, particularly the latter, being comparatively exempt. It will be our purpose, by examining the structure of these parts, to endeavour to ascertain if in them can be found a cause, beyond that usually received, why the one should be constantly invaded, while the others escape with comparative immunity. The approximal surfaces being those in which the disease is usually established, the lower molars and upper wisdom teeth excepted, it is to these I would first direct attention.

The theory of lateral pressure, as a cause and source of

caries, is an explanation frequently advanced, and as often rejected, as being insufficient to cope with the disease in the many phases it constantly assumes. It is, however, on this that I would again cast a weighty portion of the burden. The way in which it is productive of the mischief, I believe to be this. A tooth, when erupted, I conceive to be not in a condition fitted to endure the wear and tear of life's tenure. Its size and configuration have been attained only, but its integral compactness has not been effected. We know the dentine continues to increase in density long after the period of adolescence—even to old age; and this, not only at the expense of the pulp by encroachment, but that its entire structure becomes harder and more compact. I imagine a similar process takes place also in the enamel, and that its maximum density is attained only by years. In corroboration of this I would cite its change of colour, as well as the more practical point—the facility with which the file impresses the teeth of youth, and the resistance it meets with in adults.

This supposition runs counter to no pre-conceived physiological laws. On the contrary, it would be a phenomenon of which the whole economy possesses no parallel—that of an organ, the maximum power and durability of which is consummated simultaneously with its appearance. The milk teeth I take it to be no exception. Their semi-transparency at eruption, verging, gradually, into complete opacity, is but evidence of the same nature.

The teeth being erupted, enveloped in a tenacious membrane, the persistent Dental capsule, it would seem for the purpose of protection during their early stage of existence, and to perform an office for the crown, similar to one of those of the periosteum to the root, to cushion and guard it from abnormal shocks and pressure. That it is designed to this end would appear undoubted, it being analogous to the cementum or cortical substance often found sheathing and incorporated with the enamel of teeth of many animals, preserving them from fracture, and otherwise furthering their efficiency and integrity. In alluding to this tissue, Mr. Nasmyth has the observation—"It does not appear to be liable to caries as other parts of the teeth, but is subject to removal by absorption. . . . Its union (with the enamel) is merely one of mechanical contact, and its purpose purely mechanical." If, then, from undue approximation, this membrane becomes absorbed or obliterated before its office be complete, *i.e.*, the enamel attained sufficient compactness to enable it to resist impression from without, it is exposed in its weak and frail condition to the harsh contact with its fellow tooth, which in its turn becomes similarly affected.



The firm, soft, and grateful sensation experienced on the rotary closure of a perfectly constituted denture will be lost, but, what is more, the first inroads to caries will have been thrown open.

Impressed with this fact, we may understand the way in which a tooth, normal, when erupted, becomes eventually carious by pressure.

I infer that, when a recently erupted tooth is from deficient linear space forcibly encroached upon by its neighbour, the capsule is absorbed and destroyed, and that no further consolidation will take place in that part of the enamel thus exposed. Without its natural sheaf, and in its unfinished condition, it is not only bared to every morbid agent or influence likely to beset it in childhood, but has now itself to endure the destructive pressure. The sequence is obvious, the columnar structure is soon broken up, and the common phenomena of caries rapidly brought about.

With the objections which have been raised to lateral pressure as a source, the frailty of the first permanent molars have been instanced, as rendering the hypothesis particularly invalid; the inference is, that as these teeth make their appearance first, they would be likely to endure the least pressure, and, therefore, be a class the least, instead of the most, subject to caries. The pressure to which I attribute the mischief, is not that to which the teeth are subjected from the crowded state of the jaws during their development; this, being a natural arrangement, can have no evil effect, save in maxillæ abnormally contracted, which, in such, may interfere with the enamel matrices, causing their columns to be irregularly deposited in thick and thin patches, but the pressure following their eruption, after a definite position has been assigned them in the mouth. I cannot, therefore, understand, if sixteen teeth of given dimensions are to find accommodation in a limited space, why it should be assumed that the first to appear should be exempt from the influence of the crowding consequent upon the cutting of the other fifteen. I am disposed to regard the first comer as having to bear the greatest, as well as the most severe part of the ordeal—until all shall have found a site. For, be it remarked, although these teeth are often found extensively decayed on the grinding surfaces soon after their eruption, they are not, as a rule, diseased at their approximation until the anterior and posterior teeth have taken up their positions.

On comparing the relative durability of the bicuspids, it will be noticed that in both jaws the second is by far the more frail tooth. In the upper, in the 3000 cases, 279 were second bicuspids, against 207 first. While in the lower

jaw the difference is still more marked, 155 to only 66. This, and more particularly with the last, is doubtless in part due to their more compact figure, with less strongly defined sulci, taking a form more closely resembling the canines, to which in the category of decay they occupy the next place. With the upper bicuspids, the similarity to the canine is less, and their frailty rises in proportion. On the other hand, the configuration of the bicuspids themselves is more akin, and as a consequence their durability less diverse. But as in both jaws caries is chiefly approximal, we must look to pressure as the bane.

These teeth differing from all others, inasmuch as they are smaller than their predecessors, would seem, for a time after their evolution, to be subjected to less pressure than most, and, as a consequence, disease in them as with others, is rarely seen till the canines have forced their way into position. But, on this taking place, their previous immunity will be more than counterbalanced by being crowded into a limited space, with the first molar presenting an unyielding barrier on the one side, and the canine on the other: between these the weaker will succumb. It will be further observed, that it is the *distil* surfaces of both the upper and lower bicuspids that suffer most, a fact which I think must be attributed to the circumstance of the pressure being mainly produced, and continued over a longer period, from *behind forward*, by the cutting of the second and third molars.

As a negative instance of the mischief arising from this cause, the wisdom teeth may be adduced. It is observable that, although so frail, caries is never found to attack them on their distal surfaces. If there found, it will be from decay having travelled from a coronal cleft, and not there originated. The posterior portions of the crowns of these teeth are parts commonly invaded, and is, no doubt, due to the lengthened overlapping of the gum, &c., when slowly or insufficiently erupted. Distal decay is then but secondary. The remark refers only to such as are fully and perfectly presented.

Of the canines—teeth which have been also advanced as refuting the same theory, being little liable to decay, yet often found forced through in irregular positions for want of space, I have a different explanation to offer, to be noticed in treating of the configuration of the enamel as a predisposing cause.

The lower central incisors might be further urged as examples antagonistic to the same supposition, and with much apparent plausibility. They are teeth usually more or less crowded,



yet are by far the most durable, being the first to come, and the last to go; often found tenaciously grasped by their alveoli long after all the rest have ceased to be: and even when removed, it is not usually by the means by which the others have been destroyed. On these, the agencies under which they have fallen have passed in vain, and others are commonly devised to remove them. I have somewhere seen an explanation of the durability of these teeth, when compared with the rest, which I think tenable. That, from their long and slender figure the approximation at angular and prominent parts as found in others is in these modified, and reduced to surfaces with a nearer approach to parallelism. So that the pressure, although as great or greater, will be thrown over a larger portion, comparatively, of each tooth, and thereby be rendered less detrimental. To carry the idea still further, I would add, what may seem somewhat paradoxical, that I believe that these teeth will be found to suffer even less from caries when exhibiting a certain amount of overcrowding upon each other, than when set regularly and *closely* together. In the perfect arrangement the contact will be more partial, resembling the upper incisors. In the crowded condition a more equalised antagonism from neck to edge will be presented. It is rarely that we are called upon to plug these teeth, but my experience tends rather to show that when invaded by caries, it will more frequently be found in the evenly, but closely set, than in those less regularly arranged. This, of course, will apply only to the class under consideration, and to no other, and may be instanced by conceiving a densely packed arch, in which, from deficient linear space, the pressure is rigid and unyielding; if a stone slip from the rest, all will be immediately relieved. The illustration, I am aware, would be more happy were the teeth erupted simultaneously, but sufficient analogy exists in many points to render it available.

The first lower molars claim attention, as being by far the most frail teeth in the human denture. Not only is the percentage of caries on the masticating surface, the greatest, but the liability to anterior approximal decay second only to that of the first upper molar; facts from which we may infer, being erupted together, to be due to the same cause.

Without entering further into detail with the other teeth, but referring the reader to the appended tables, a glance at which will convey more than pages of description, I pass on to notice the physical structure of the enamel of the teeth which are found to be the most liable to the affection.

I take it for granted that, in individuals of average constitution, caries, as a rule, will be produced only in those parts

where an acquired or congenital enamel defect exists. The deep fissures and pits on the grinding surfaces of the molars, are the source of almost half the cases daily presented. Approximal decay forms an equally formidable array. The explanation I venture to offer as to the comparative exemption of some teeth, and certain parts of others, will, I think, add also an indirect one of the origin of the disease in many obscure places. We find that teeth usually healthy to be such, the enamel surfaces of which present, not the largest and smoothest planes, but those the figure of which exhibit the greatest convexity. The canines, particularly those of the lower jaw, are the best examples of the class. The lingual surfaces of the lower incisors may claim almost entire exemption. The cusps, the lingual and labial sides of the bicuspids, and parts also of the molars, may also be added as being rarely singled out by caries whereon to develop itself. The reason I would assign is this: recollecting the physiological characters of the enamel, and its relative thickness to the rest of the tooth, it would seem probable, that as the columns of enamel are thrown off from the developing organ, and converge towards the basement-membrane, they would naturally become more compact and impervious; there being no evidence under the microscope to show the columns themselves contract, or that fewer exist at the junction with the dentine. If, then, a weaker part exists, it will probably be at the periphery; if a stronger, it will certainly be at the basement. The part then that would seem most assailable would be the thinnest and flattest surfaces, where the columns run directly, or in simple parallel undulations from without inward, as seen in the sides or approximation of the bicuspids and molars, or at the junction of the labial and lingual plates of enamel in the incisors.

It is, however, a fact which must not be overlooked, that in cases of irregularity of position, such, for instance, as when a bicuspid is half turned on its axis, and so presents to its neighbours its lingual and labial surfaces instead of its normal sides, these parts will then be seen to be as readily attacked and destroyed as any other; while what would otherwise be its medial and distal, will remain perfectly sound. A fact bearing strong corroborative evidence that the natural figure of the tooth and its enamel must be regarded less as a predisposing cause, than pressure from undue approximation.

In approximal decay when developed above (or if, in the lower jaw, below), the actual point of contact, as frequently seen in the distal decay of molars, the enamel will there be generally found thin and flat, ofttimes lipping into a concavity, or receding angle from crown to neck, and so forming



a hollow, into which, in contracted jaws, the mesial prominence of the subsequently erupted tooth is apt to be retained, to its own prejudice, but to the still more serious injury of the one impressed upon.

A description of decay, the source of which would seem obscure, is that where the labial surfaces of the upper centrals, as well as that sometimes displayed on well-defined prominences and parts of other teeth, assume an opacity or white spot, which afterwards breaks away and exposes the dentine. Here it is only left us to fall back on the former supposition, that at such parts the enamel was left originally porous or otherwise defective.

The teeth destined for rude offices and vast strength, such as those of prehension and defence, as well as the molars of the carnivora, are invariably more or less conical, either single or multiple, and are found the strongest and most free from disease. That decay will not as a rule attack a thick and convex part of the enamel, experience is pregnant with examples. Before leaving this part of the subject I would adduce but one instance more, as characteristic of a certain class, and bearing on this point. It is the rarity of disease at the free edge of the gums on the labial surfaces of the temporary molars. It would seem that here the peculiarity of the thickened terminal edge of enamel is not without a design; that the tenacious and finely comminuted amylaceous food on which the child is nourished, being particularly liable to cling and remain in these parts of the mouth, with little chance of removal, Nature has there set an additional barrier against invasion.

That the teeth throughout their existence, from the fœtus to advanced age, are amenable to systemic impressions, is sufficiently established. The exact nature of the disorders capable of leaving their morbid impress on their growth and development is at present vague and undefined. To the Physician, rather than to the Dentist, are the resources open calculated to elucidate this important subject.

Facts, therefore, at our disposal are few and meagre, and their deductions unsatisfactory. A contribution to Dental pathology, such as that given us by Mr. Hutchinson, is a brilliant star amid the surrounding gloom, shining as it were alone.

Diseases productive of great constitutional disturbance, such as smallpox, scarlet and typhoid fevers, measles, with many of the less important disorders of the febrile eruptive class, have each and all been impugned with contributing, more or less, to abnormalities in Dental development.

The subject, however, is one on which opinions in high places clash. Here we have a leading authority in our profession attaching grave importance to the sequelæ of all infantile eruptive complaints; there, a physician equally eminent as an acute physiological and pathological observer, holding it as his opinion that so far as the diseases *per se* are concerned (smallpox excepted), their effects on the teeth may be considered *nil*.

So far as scarlet fever is implicated, I am inclined to believe its injurious effects to be rather under than over estimated, and that if the disorder be fully and strongly pronounced in a child during the period of enamel deposit, an imperfect formation may be looked for with almost as much certainty as a pitted or defective presentation from smallpox at the same age.

Long prior to the time when the teeth came to be regarded as dermal appendages, were the more acute exanthemata, when occurring in infancy, thought to exert a prejudicial effect on the formative process. But, since the still closer analogy has been drawn, that they are neither more nor less than transformed portions of the cutaneous system, we can easily comprehend, if the hypothesis be correct, how a disease productive of vast systemic disorder, and even indelible and unsightly mischief, as variola, should leave its traces on these organs. A circumstance bearing on this idea, or showing, at least, how little the teeth possess in common with other bones, is that in rachitis and mollites-ossium, the teeth do not share their defects, but are usually on a par with those of strumous children in general free from those specific disorders.

I am disposed to think the class of teeth common among weakly children, such as those erupted with sharp edges and points, almost or wholly without enamel, may, in the majority of cases, be referred chiefly to mal-assimilation, verging or running into mesenteric disease, and so involving, to a greater or less degree, the healthy functions of the alimentary system.

I take it, that during infancy, any morbid interference, however transient, with that standard of waste and supply we designate health, will leave an impress on the formative organs, and which, in the more solid structures, will be borne throughout life. There cannot be a doubt but that certain abnormal conditions of the maxillæ and palate bones—such as extreme angularity, narrowness, and height, in the alveoli of which large deep teeth are commonly irregularly impacked—are often correlative with general physical and mental depravity. The mouths of idiots present frequent



and striking examples, and a very marked characteristic of which is, the rapidity with which such teeth decay.

It would seem from the vast amount of experience and observation which from time to time has been brought to bear on this subject, that the disorders calculated to exert the most injury on the erupted teeth, are those which tend to render the saliva and mucous secretions the most acid. Aphthæ in children, and gastritis in adults, may be instanced, and many others. The mephritic breath accompanying some diseases, and certain medicines, are found to interfere less with their integrity, than the bathing of them constantly in the weakly acidulous saliva of the dyspeptic.

That acids are a source, and an important one, in bringing about caries, is undoubted. To question it would be to ignore the wisdom of Solomon himself. "As vinegar to the teeth, and as smoke to the eyes," &c. But whether it be deserving of the dire amount of censure heaped upon it, is open to doubt. The every-day complaints of patients, that their teeth have been ruined by protracted courses of acid medicines, needs qualification; the probability being that, had the disease for which it was administered been permitted to take its course, the teeth, through the system, would have suffered much more than by the direct action of the acid. The immediate and salutary effects of all antacids in neutralizing caries, as well as in many instances, of entirely arresting its progress, offers a strong proof of acid being instrumental in the affection.

The numerous experiments which have been instituted for the purpose of clearing away the obscurity in which the subject is involved, and to bring the arch-offender to light, have been somewhat unsatisfactory, and their deductions open to fallacy. Either sound or carious teeth have been macerated in fluids of various degrees of acidity, temperature, and combinations, and their various deportments at different times carefully registered. But it must be obvious, that unless, in conducting such investigations, the whole series could be wrought out with teeth removed from the same mouth, and, to be more accurate still, teeth extracted at the same time, much diversity of results must of necessity accrue, according to the nature of the decay or integrity of the tooth.

A long catalogue of acids and various medicines have, from time to time, been called up, examined, censured, and passed by. Of late years the bulk of the blame has been charged to lactic acid, but evidence other than that acquired by scientific induction, is yet to be forthcoming.

From common observation we certainly have broad reasons to infer, that the same acids and agents affect the teeth simi-

larly, whether in or out of the mouth. Lehmann, in his 'Researches in Physiological Chemistry,' comes to the conclusion, that the solvent power of lactic acid on phosphate of lime, is much greater than that of acetic acid on the same salt. So far, however, as I have been able to judge by experiments with lactic acid, employed in proportions likely to find its way to tooth structure, its direct action seems far less, in fact feeble, when compared with many others. Neither do clinics teach us that in those diseases, such as gout, rheumatism, &c., in which this acid is thrown off by the sweat in marked and considerable quantities, that caries is found to be the more rife, or what is, perhaps, more to the point, that the rapidity of decay is increased. In scrofula, as well as in many cutaneous affections, where acetic, lactic, and other acids are largely secreted, the teeth certainly seem to suffer.

In cases where decay attacks the teeth at the free edge of the gums, it is usually ascribed either to a vitiated mucous secretion, or, as has been more recently suggested, to the formation of lactic acid, generated by the decomposition of the cast-off scales of the epithelium. I can hardly bring myself to accept this latter explanation. In the first place, forasmuch as the cause would be at work, and its mischief exhibited alike in every mouth, whether in health or disease, if the teeth were naturally frail. Or, if it be objected to, that the acid would be produced only in certain abnormal conditions of the system, we even then should have a right to expect, that every tooth, as well as every part of a tooth emerging from, or embraced by the gum, the lingual, and particularly the approximal surfaces, where the decomposing scales would have little chance of escape, would all suffer alike, which is not the case.

Again, it were a gratuitous libel on Nature to conceive her prematurely busied about the destruction of those organs which play so conspicuous and important a part in maintaining the integrity of the economy. On the contrary, both Surgery and Pathology are fraught with instances of the most curious and wonderful expedients, constantly devised to grapple with, counteract, or expel, a simple interference with her perfect bearing; each and all of which tend to give the hypothesis a negative. That the conjunctiva or meibomian glands should, on certain trivial departures from health, throw off or secrete matter capable of destroying the eyes, we should conceive to be a singular idea.

We are, I think, too prone to overlook the fact that the human body, naturally developed, is *incapable* of generating disease; it must be from without, hereditary or acquired. Nature makes little effort to rectify congenital defect; that



it is congenital would seem at once sufficient to place it out of the reach of repair. Then the beneficent hand that wields the recuperative elements seems still and impotent, and is roused to action only when its legitimate domain is threatened with encroachment or subversion. The ways and means employed for the furtherance of her object, bear rather the stamp of the useful, than the beautiful; her efforts being subservient to effect, rather than method. For the fractured bone, we have the rough, ossific wrapping, instead of a neat splice. The severed artery, a bulging neighbour, in lieu of the reunited duct, conveys the vital current. For a lacerated derma, a contracted, shining patch, devoid both of exhalent pores and hair, suffices for her purpose. In our treatment of caries we but copy Nature; we simply do that which she would do were she equal to the task—supply a lost covering; and experience shows us that our success usually rises or falls in proportion as this is perfectly or imperfectly carried out.

Although mercury cannot be classed with agents productive of decay, yet the notoriety it has obtained as a tooth-destroyer, warrants a passing allusion. As a predisposer to caries, facts whereon to hang any valid charge are wholly wanting. When a child presents with a faulty denture, who has passed through the usual infantile disorders, and to whom mercury has been given, it were difficult to determine whether the tooth-defect be the result of the disease or the drug. Certain it is that mercury may be given to saturation, and that the whole of the deciduous teeth may slough away with the gums, and yet the permanent set be developed and erupted perfectly. Its direct action on the periosteum, and its unfortunate sequela, is an attribute with which we are but too familiar; but that the enamel and bony structure of the ejected teeth escape unscathed, is also certain. In inveterate cases of salivation, where the drug has been pushed to an unwarrantable degree, the whole maxilla may be necrosed and softened, but still no tissue of the teeth be involved save the periosteum.

Most practitioners seem to agree in the opinion that no marked difference of the teeth is discernible in phthisis. Observation tends to show that they are usually well arched and set, their development, like that of the frame in general, being often showy and well looking. A diagnosis would seem to be found in form, than in hue; their configuration, like that of the phalanges, neck, and thorax, partaking of a tendency to narrowness and length, rather than to any peculiarity of colour or defect. The only feature I have noticed is, that in subjects (more particularly females) in whom the com-

plexion often assumes a waxy transparency, the teeth in such share the same characteristic, and which is especially apparent at the approximation and cutting edges of the incisors; but this, too, is frequently wanting.

Few will have failed to notice the frequent slight changes of colour of the teeth of those with whom we are daily in contact, the colour varying with the state of the health. The ruddy cheek and lips, with bright eyes and teeth, often seen after a few days' country ramble, contrast painfully with the opaque denture, and dull, pale physiognomy of the same person after a brief period of care and sickness.

The condition of the mouth *in toto*, as an index of the general health, is that the importance of which seems hardly sufficiently estimated by the physician. Even the examination of the tongue is passing out of fashion. The state of the teeth may be looked upon as the hour-hand of a clock—precise and definite; the tongue merely as the quickly changing minute-hand—its tale but temporary, and value limited.

The physical characters of caries have been so carefully and minutely described, as to make the subject familiar, and to render detail here useless. Prominent features only, as bearing upon the phenomena now to be considered, will therefore alone be noticed.

That decay, after a certain stage, is simply a chemical resolution of the tooth structure, most are willing to admit. Of the origin of the disease there is less concurrence of opinion. The theories which have been advanced—the vital, the chemical, and the chemico-vital—are those which have received the greatest support. The first, as taught by its promulgators, has long since been laid aside. The second of late years has been fast falling into neglect. The last, is that which at the present day is advocated by the majority of the profession. Without staying to enter into the well-known attributes of each, I pass at once to consider the subject as I understand it.

Putting aside the pathological conditions which may be productive of a faulty conformation of the tooth structure, or the systemic variations by which it may afterwards be influenced, I take it for granted that a tooth, as usually presented, if it become subsequently carious, it will be so by virtue of one of two causes—undue approximation, or enamel fissure or defect.

The first step towards the breaking up of the enamel is, as has before been stated, conceived to be due to the untimely removal by absorption (through pressure if the decay be approximal) of the Dental capsule, before it has attained



sufficient density to bear it upon itself. Caries originating in a pit or cleft, I believe to be due to the same cause—an imperfect enamel covering.

With the histology of the dentine before us, as well as the practical fact of its exquisite sensitiveness in health, we have no more reason to assume that it is able to retain its normal integrity without its enamel, than a nut without its shell. It is true the teeth are occasionally erupted entirely devoid of enamel (the first permanent molars are not unfrequently so presented), but rapid destruction usually results. If otherwise, the dentine will be found to have assumed a density compensatory to its condition, in a manner similar to that seen in many other organs, whose natural functions have been altered through accident or disease; having become re-adapted, and made capable of sustaining or performing offices for which originally they were wholly unfitted.

The source of caries I take to be due to a low degree of inflammation (which the dentine possesses sufficient vitality to take on), consequent upon irritation produced by the admission of air and foreign matter through a defective covering of enamel, exactly in the same way as any other part of the economy would resent an injury to, or loss of, its investment. In the latter, the recuperative efforts of the parts are immediately brought into action to replace the lost tissue, or an equivalent; but failing suppuration and death results.

The vitality of the dentine, although conceived to be sufficient to cause it to suffer thus from exposure, is insufficient to enable it to resist a morbid impression from without, by any effective effort of its own. Its feeble attempts to construct a barrier by the consolidation of its tubes, or by the formation of secondary or nodular dentine are usually futile; it becomes, therefore, almost a tacit sufferer.

It has been remarked that certain uneasy feelings are often found precursory of the first inroads of decay. This is, doubtless, at the time when the oral fluids have obtained access through the defective enamel to the hitherto faultless dentine; irritation is set up, and hence the sensation described.

To everything finite there must be a limit. We acknowledge the vitality of the dentine, but speak of its low degree. We may assume it to be the recipient of so much only, as shall be compatible with its condition and purpose; in fact, a minimum. We have but little reason to infer from practice, it to be possessed of a surplus on which to recruit or draw. If, then, irritation be excited at a certain point, inflammation will be set up at the expense of that part, and

those immediately contiguous, robbing them of that minimum of life, and leaving it a helpless prey to chemical decomposition. If we admit, what I think is only a fair inference, that so delicate and complex a structure as dentine, normally incased in a texture at once the hardest and most impervious in the human body, would naturally militate against exposure, its capacity to take on inflammation may be assumed. It is true that the word, according to its usual acceptation, seems to imply too much when applied to tooth-bone. With it we are wont to associate the phenomena of an abnormal aggregation of red-blood particles, with swelling, heat, and redness. As exhibited in dentine, we are able to discern neither the one or the other. But starting from the fact of its sensitiveness, whether we regard its tubuli as containing the fibrils of Mr. Tomes, the soft germinal matter of Dr. Lionel Beale, or the attenuated shreds of coagulated fibrine, as suggested by others, we must assume it to be possessed, in some form or other, of nerve matter, which would seem to involve the admission of the necessity of a fluid medium for conservation and nutrition. And that this fluid should be analogous to the liquor sanguinis, and subject to the same or similar laws, would also follow. We know that certain parts of the economy are traversed by this fluid, entirely void of red corpuscles, and that the latter are attracted and discernible only, when irritated or diseased. Conceiving, then, dentine to be amenable to the laws which produce and regulate inflammatory disease, we will pass on to notice the part it plays in, or towards, the development of caries.

Inflammation may be tersely defined as being a preternatural combustion of the living animal tissues; like ordinary combustion, needing oxygen for its support, and like it, leaving a *carbonized residue*.

If we take a young tooth, in which the capsule has been removed, and the enamel at the part left unconsolidated and porous, irritative agents are absorbed and conveyed to the dentine, which at first suffers depression, but soon assumes an inflammatory reaction, lighted up and supported at its own cost. As this proceeds, the vitality of the dentine is sapped, its fibrillæ broken down, and a minute effete matter is left, which it has no power to expel. This remains only to serve as an additional irritant, by generating in abeyance to the well-known law, that "first and unfailing product of decay of all organized structure, *carbonic acid*." A little leaven leavens the whole. The disease once set in motion, its subsequent progress we need not trace.

Before leaving the subject of inflammation, there is one point worthy of remark; it is, that suppuration is not a necessary sequela of this affection, but that a frequent result of inflammation is, what has been designated "interstitial absorption:"* and this, according to the microscopical research of Mr. Tomes, is a condition constantly displayed in dentine in several stages of decay.



It will be seen, that in giving this explanation of caries, I have borrowed a link from each of the theories previously mentioned. From the "vital," inasmuch as having conceived the primary impression on the dentine to be of an irritative or inflammatory origin; but the result, not of a primal internal vital action, but from an external physical cause—enamel defect. From the "chemical," in that after the vitality of the dentine has succumbed, the subsequent progress of the disease *is* simply in obeyance of chemical laws. The "chemico-vital" inserting another word for, or before "death," I take in its entirety. That word, as I read it, is intended to imply the death of the dentine, since to the enamel it were scarcely applicable. Its inapplicability to the dentine, in the first stages of the disease, is shown by the fact, that in cases of incipient caries, where its location is obscure, we ofttimes fail on examination to detect anything amiss, till the probe suddenly falls upon an irritated surface of the dentine, and pain ensues. Here, then, we must certainly acknowledge caries to have commenced, but no death as yet can be said to have taken place. To my mind, the wording that would convey with brevity what I conceive to take place, would be, Destruction of the superstructure, exciting irritation and death of the dentine, terminating in chemical resolution.

Against the vital theory *per se*, which implies inflammation to arise internally, and entirely independent of the perfection of the enamel, numerous and valid objections have been urged, which it were useless to repeat.

That the "chemical" theory, too, is inadequate to yield a sufficient explanation, is also obvious. If the deleterious compounds resulting from the decomposition of animal or vegetable substances retained in or about the teeth, were able to decompose and destroy tooth tissue during life, in the same way and with as much facility as similar agents would attack inert matter, it were but reasonable to suppose that in the case of death, when vitality has ceased to reign, and its tenement surrendered to the fulsome putrefaction of the grave, that there, and then, it would find full scope for uninterrupted progress; but such we know to be far from the case. On the contrary, independent of their density, they

* Dr. Watson's 'Lectures on the Practice of Physic.'

are found, when compared with the rest of the economy, to endure the longest and to suffer least.

This remark would at first, perhaps, seem to tell as heavily against one theory as the other, but in truth it is not so. A faulty tooth in a corpse will retain its integrity longer than one similarly affected in a living person. In the latter the temperature of the system, together with the feeble resentive effort of the dentine, only recoils upon itself, subtracting from the contiguous parts that which it cannot restore, leaving it weaker, and so contributing towards its own destruction.

That caries, after a certain time, and after certain inroads on the dentine have been effected, is merely due to the ordinary phenomena accompanying chemical decomposition, is certain. It is true that the disorganization of the part involved, hardly proceeds step by step through the several phases recognised in the decomposition of bone, as perfectly and completely as an experiment of the same nature conducted in the laboratory; the vital antagonism we cannot supply, hence the discrepancy. Nevertheless, we find sufficient analogy to warrant the assumption. We seem to have the struggle for supremacy betwen the vital and chemical forces, productive of the exalted sensibility of the dentine, but ultimately of its annihilation and subsequent disintegration. Accompanying this is the peculiar taste and fetid exhalation characteristic of organic putrefaction, and this, considering the circumscribed surface involved, to a marked degree: as well as the plentiful crop of Confervæ as shown by the microscope. As evidence also of the same may be mentioned the fact, of its being much under the control of the usual antiseptics, creasote, permanganate of potash, carbolic acid, &c.; and as also corroborative, and bearing on this subject, although somewhat digressive, I am induced to add a point of much practical interest.

It has long been a prevailing opinion that in the operation of plugging, it were better practice to allow a portion of the decayed dentine to remain to cover the pulp, than to remove all, and so complicate the case. It is, therefore, frequently left, and I am apt to think with, too often, mischievous results; and in this way. It is a familiar fact that although the absolute exhibition of nitroginized matter in atmospheric air, is essential to putrefaction, yet that, it having once become established, no matter to how slight an extent, its progress will continue to the resolution of the whole mass, even though it be subsequently hermetically sealed against future access with the atmosphere, *i. e.*, oxygen. We not unfrequently see the failure of what at the time we considered a satisfactory operation, and this without assignable cause.



With the above before us, we may venture a pretty shrewd guess, in many instances, as to the cause: indeed, realising the fact, and knowing the pertinacity with which Nature works her ways, we could hardly anticipate a different result.

The question then is—In such cases where there obviously exists no alternative but to suffer a portion of the decayed dentine to remain, or to cut all away, and expose, and destroy the pulp, which is the lesser evil? I would reply, leave it; but with this reservation, that it be treated with some antiseptic, by which further decomposition may be arrested.

It has been objected to by some, who in all doubtful cases are opposed to any intermediate course, but, at once advocate the summary exposure and extirpation of the pulp, that any therapeutic treatment is practically unsafe; and further, that to leave merely a thin layer of dentine, in which vitality must necessarily be diminished or lost, between plug and pulp, were as uncongenial to the latter, as would be an artificially constructed cap, or the actual contact of the plug itself. And again, that by chemical agents we simply accomplish by other means the work Nature has herself already commenced—the reduction of the dentine to a lower degree of organization. To this I cannot *in toto* subscribe. Granting that the devitalised part may be more prone to decay, still I think it may be regarded (to use a homely simile) very much as wood. While part of the living tree, it may be exposed to destructive influences with comparative impunity. As felled timber, it may be still freely assailed, yet, although vitality has been cut off, its power of retaining its normal structure remains for centuries: and, to push the simile further, it is even found to be increased to a considerable extent by chemical treatment. The same too may be said, to take an illustration nearer home, of ivory.

It is to the "chemico-vital" hypothesis, then, that we must turn in order to seek a fuller, and more satisfactory explanation of this disease in the variety of forms and conditions as daily presented; such as a denture, hitherto well described and apparently faultless, in a few short months falling rapidly into decay. Or, what is again occasionally seen, although, unfortunately, less frequently—mouths in which every member seems irremediably doomed and marked out for destruction—such in which we are wont to confess operative interference almost unavailing, pointing to a well-directed hygien as the only chance, anon becoming dense and useful, and often retaining their efficiency to advanced age. Again, constitutions in which the vital power is feeble, waste and supply, striving together at unequal odds, the teeth probably retained only by scrupulous care. A few

weeks' inattention from ill health, and the penalty is exacted by fresh inroads of decay. Even a light abnormality of the saliva, the accumulated fragments of the invalid's diet, or the medicine itself, each and all leave their traces behind. On the other hand, he on whom Nature seems to have lavished her choicest gift—the ruddy and stalwart recipient of her most precious boon—health, but who, in the heyday of his strength, casts about him this blessing as an empty bauble, striving, as it were, to overthrow the well-built column; and who at last, passing into our hands for some triviality, we find, from prolonged neglect, the mouth reeking with foul exhalations and fetid secretions, yet the teeth continue sound and unassailed. The "chemico-vital" theory it is that must interpret such cases, and reconcile such phenomena.

TABLE I,

Showing the relative frequency of central, mesial, and distal decay, in 3000 cases of extraction.

| Kinds of teeth. | Central. | Mesial. | Distal. | Total extracted. |
|---|---|---|---|---|
| First lower molar | 270 | 123 | 85 | 644 |
| First upper molar | 131 | 140 | 70 | 480 |
| Second lower molar | 165 | 26 | 47 | 388 |
| Second upper bicuspid | 13 | 51 | 89 | 279 |
| Second upper molar | 48 | 36 | 46 | 249 |
| First upper bicuspid | 1 | 27 | 77 | 207 |
| Lower wisdom | 55 | 12 | 3 | 168 |
| Second lower bicuspid | 9 | 32 | 44 | 155 |
| Upper wisdom | 23 | 16 | 3 | 97 |
| First lower bicuspid | 4 | 7 | 20 | 65 |

TABLE II,

Showing the relative durability of the teeth.

In 3000 cases of extraction there were—

| | |
|---|---|
| 19 | Lower centrals. |
| 20 | Lower canines. |
| 23 | Lower laterals. |
| 53 | Upper centrals. |
| 58 | Upper canines. |
| 66 | First lower bicuspids. |
| 92 | Upper laterals. |
| 97 | Upper wisdoms. |
| 155 | Second lower bicuspids. |
| 168 | Lower wisdoms. |
| 207 | First upper bicuspids. |
| 249 | Second upper molars. |
| 279 | Second upper bicuspids. |
| 388 | Second lower molars. |
| 480 | First upper molars. |
| 644 | First lower molars. |

# OBSERVATIONS

ON THE

# EPIDEMIC FEVER

## PREVAILING IN CORK.

BY

DENIS CHAS. O'CONNOR, A.B., M.D.,

PROFESSOR OF PRACTICE OF MEDICINE, QUEEN'S COLLEGE, CORK.

DUBLIN:

JOHN FALCONER, 53, UPPER SACKVILLE-STREET,

Printer to Her Majesty's Stationery Office.

1865.

[Reprinted from the Dublin Quarterly Journal of Medical Science, November, 1865.]

# OBSERVATIONS

ON THE

# EPIDEMIC FEVER PREVAILING IN CORK.

[Read before the County and City of Cork Medical and Surgical Association.]

THOUGH it cannot be said that fever has prevailed more in Cork than in other localities, it has never existed as an epidemic in Ireland without making its virulence felt in this city. An admirable description of the disease, as it appeared in this city in the middle of the last century, is to be found in the writings of two eminent Cork physicians—Drs. Rogers and O'Connell. Since the beginning of this century we had a severe visitation in 1802, when the Fever Hospital was founded; afterwards in 1817-18; again in 1826-27. In 1832, Asiatic cholera seemed for a while to have eradicated every other disease, and we had an exemption from fever till 1836-37, when it broke out in a mild form. It re-appeared in 1846, and became intensified in 1847, in consequence of the famine. It was, however, an error to call the fever of that year "famine fever," as the peculiarities attributed to the famine existed the previous year. The famine did not produce the fever; it only rendered a greater number susceptible of its influence. After the subsidence of the epidemic, intermittent fever made its appearance, and as long as it lasted scarcely a case of continued fever was seen. As soon as the last cases of intermittent disappeared, the present

epidemic broke out, and still rages with much severity. This alternation of continued and intermittent fever is remarkable. Indeed it might have been observed that the fever of 1847 passed first into a remittent form, and gradually into the intermittent, which prevailed more or less for ten years subsequently.

From this short sketch it is manifest that although fever is more or less indigenous in this country it still appears in an epidemic form only after long intervals. It might be said these outbreaks of fever originated in the chance circumstances of prevailing distress, as in the years 1748, 1802, 1817, 1847. But the other epidemics referred to could not be traced to such a cause, and the present one occurs at a time when the food of the people is most abundant, and of the best quality. It is also said to be the direct emanation from cesspools, or other malarious influence; but in contradiction to this it may be observed that while this cause is constant, the effect attributed to it is most variable; and, besides, the particular form of fever said to be specially dependent on this cause—typhoid—has scarcely appeared in this locality, which cannot boast of the excellence of its sewage. We must, therefore, seek for some cause, atmospheric or telluric, different from those which come under the cognizance of our senses, or which are discoverable by chemical analysis, to account for the outbreak of fever at particular times. Sydenham used the term, "constitutio æris," to express this unknown property in the atmosphere. But fever spreads more slowly, and is more capricious as to the localities it invades than could be expected if the poison were diffused freely in the atmosphere. For instance, we find one town assailed, and a neighbouring city remaining exempt for a long time after; and even when a town or city becomes the seat of the disease, all parts are not assailed together, but those parts first attacked become first freed from the poison. Many striking examples of this fact presented themselves in 1847. Amongst others, the Cork Workhouse—where every third person was a victim of the disease, in the Winter and Spring—became entirely exempt from it in the Summer, the time at which other parts of the city were virulently assailed. In attacks of influenza, on the other hand, we have an example of how rapidly diseases purely atmospheric spread; as this assails not only all parts of a town simultaneously, but is diffused at the same time throughout the whole country. From all this we might infer that although the atmosphere, or some emanation from the soil, is capable of producing a tendency to fever at times, there must be



some immediate cause capable of bringing it into activity in each locality. We might compare it to a house filled with combustible materials which, nevertheless, remain innocuous till something is brought into contact with them capable of producing ignition. The primary and secondary cause in this development of the disease are as much beyond our comprehension as the essential nature of the poison itself. The contagious character of this epidemic has been exhibited in the death of two of the medical attendants at the Fever Hospital, and of two dispensary physicians. Still equally strong proofs have been afforded that the poison emanating from the bodies of the infected is rendered innocuous by the slightest dilution with pure atmospheric air. In the large number of cases which I have attended I never found the disease spread from one member of a family to another, no matter how close affection or duty brought them into contact; provided the house was managed with the least attention to proper ventilation and cleanliness.

I shall now endeavour to describe the leading symptoms of this disease—no easy task, seeing how much they vary in different cases. The disease is generally ushered in by rigors, though in many cases so obscure are the early symptoms that they escape the observation of the patient, and mislead the most vigilant physician. The pulse, during this time, is often little above the ordinary standard, and the heat of the skin not perceptibly raised above that of health—sometimes is below it. The tongue also misleads, as it is seldom much furred at the commencement, and sometimes not much so through the entire disease. Sometimes, at this stage, the disease has been masked under the form of bronchitis, diarrhœa, severe muscular pains, resembling rheumatism; and generally the causes which produced the fever were such as would have originated these diseases if fever did not prevail. So singular and unexpected were the transitions into fever, at times, that I was often led to think that it was a true change of disease, such as we often witnessed in cases of Asiatic cholera.

About the sixth or seventh day the disease passes into unmistakable fever, sometimes imperceptibly, but often with a sudden and alarming change, attended with vomitings, violent headache, slight delirium, and a sense of alarm to the patient. About this time the pulse ranges from 100 to 120, fever heat is established, the tongue is furred, and a whitish crupous-like exudation is often seen on the arch of the palate, at one or both sides, and sometimes on the side of the tongue, which I believe to be true typhoid deposit, as it

appears and disappears with the cutaneous rash. It might be easily brushed away, but will as quickly reappear. Now and again the whole tongue is covered with this matter, resembling the thrush of childhood. During this period of increased febrile excitement the rash makes its appearance, and, as in the exanthemata, is often followed by a mitigation of the symptoms. In the character and appearance of this eruption there is a great variety. Sometimes as early as the third or fourth day there is a dark-coloured mottling, resembling the figures of rubeola nigra, appearing and disappearing several times, and about the eighth or tenth day giving place to some more defined rash. This eruption was never seen here in the fever of 1847. In other cases we find the body covered with fiery red spots, resting on a dark-red, ill-defined base; the latter extending and becoming darker as the disease advances. Sometimes morone-colour patches, slightly elevated, are diffused over the body. In all these the rash, like that of typhoid fever, is effaceable on pressure, except in some cases towards the end, and begins to fade about the eleventh or twelfth day, even though the symptoms of fever have not yet left. The true typhoid rash has been seen but seldom, and the petechiæ of genuine typhus, so frequent in former epidemics, has been equally rare. The latter fact I attribute to the improved condition of our poor in good clothing and the ventilation of their dwellings. The absence of typhoid is not so easily explained, particularly if we are to adopt the theory that it is the direct result of the emanations from defective sewage, as Cork cannot as yet boast of much superiority over other towns in this respect. The general practice is to give the name of typhus to all fevers attended with a rash which is not of a typhoid character. Is this division useful in practice? The name typhus carries with it the idea of great prostration of the functions of the mind and body, nervous debility, and such alteration in the capillary circulation as leads to stagnation of the blood and all its consequences. In these respects the great majority of our cases more resembled in character the symptoms attributed to typhoid fever; exhibiting till the very last stage a degree of bodily and mental energy inconsistent with the blood-poisoning of the former disease. Names would be of little consequence if they did not carry with them erroneous ideas of practice both with the profession and the public, and in this case may lead to the too early and indiscriminate use of stimulants. In the subsequent part of this disease it sometimes, but rarely, assumed the character of typhus attended with great



prostration, muttering delirium, and the gradual extinction of all intelligence. In the majority, however, the disease progresses without the intellect becoming much disturbed; or, if disturbed, the delirium indicating more an excited than an oppressed brain. In unfavourable cases the pulse and breathing become extremely quick, and the former very weak. This condition of the circulation precedes, and appears to be the cause of passive congestion in the brain, and œdema of the lungs, which bring about the fatal termination when this occurs. In comparing this disease with that of 1847 we note many points of difference. In the present we have no instances of relapsing fever, which was the prevailing type in the former period, especially among the poor. The present disease terminates generally by a single crisis, about the fourteenth day. Some few cases of a chronic character came under my notice, extending in two instances, to eight or ten weeks; but such cases were very rare. In the former period, diarrhea, with ochre-colour or pea-soup-like discharges, occurred in nearly every case. In this there are few in which the bowels are not more or less confined. The biliary organs were more effected in the former, giving the skin an appearance of a yellow fever; in this the lungs and sympathetic nerve appear to be more influenced by the disease. In 1847 there was no eruption on the skin in many cases; whereas its absence in this epidemic is very rare. In the former the sequelæ were, chronic diarrhea or dysentery, cold abscesses, œdamatous legs; in this we often find great nervous debility, leading to a semi-paralysed state of the limbs, congestion, solidification, and sometimes gangrene, or suppuration of the lungs.

I would have some delicacy in expressing my own views of treatment in this complex disease; but as I have had the advantage of consultation with nearly every physician in Cork, I can state what has been the general practice in this city. When it is apprehended that a fever is about to set in, the usual diaphoretic medicines are administered, with mild aperients. Even at the earliest stage we are unwilling to give drastic purgatives, although patients frequently crave for active purgatives, to get rid of some very uneasy sensation which they complain of in the abdomen. This period is also availed of to administer some mild mercurial as an alterative. Leeching the temples, so common in former years, is seldom resorted to, and I am sure, in many cases, the omission is injurious to the patient. The great relief I have seen to arise in some cases from epistaxis induced me to apply leeches in others,

who had similar symptoms, and I feel bound to say, with the happiest effect. In the whole matter of depletion we are suffering for the sins of our ancestors who carried this remedy too far. But I believe we are ourselves yielding to a form of public opinion created partly by a few scientific physicians, but more by homœopathic and hydropathic quacks and their admirers. In my earlier days we dare not treat a case of fever without some depletion. The same treatment if adopted now would get the credit of every bad symptom which may afterwards arise in the case. In this matter I am not "*laudator temporis acti*," neither do I sympathise with the "*avidi rerum novarum*," too numerous a class in the profession at the present day. About the sixth or seventh day there is frequently a struggle of nature for the development of the rash, as in the exanthemata. Stupes to the feet, and diaphoretics more or less stimulating, according to the particular case, favour that effort; after which the sensations of the patient become less uneasy, either from an actual improvement, or from an increasing torpor of the nervous system. From this time forward, if not sooner, it becomes necessary to determine if stimulants, and of what kind and quantity, are to be used, also the amount and kind of nutriment the patient is to receive. In this epidemic there are few cases in which wine is not administered in greater or less quantity, from a tablespoonful every three or four hours, to the same quantity every hour. The object of giving wine is twofold—to act as a stimulant in sustaining the heart's action, and also by combining it with other articles of diet, such as arrow-root, that it might act as nutriment. With this latter object milk is urged on the patient in every way he can be got to take it—in the beginning in the form of whey, and in the latter stages mixed with water. Giving chicken broth in fever, is in this locality a great innovation. It was very seldom given in any former epidemic in this city till convalescence had commenced. Has the practice of the profession changed so materially, or is it the disease not the practice that has changed. I believe the latter. In most of the cases which we met in former epidemics the tongue was dry and thickly coated with fur. In the present it is moist and sloppy, showing that the stomach does not now sympathise in the disease as much as it did then. The best proof of the propriety of administering this nutriment is that it is relished and approved of by the patient. The case which is least fitted for chicken broth, that in which the patient cannot digest it, is that in which wine is most necessary as a stimulant, and *vice*



*versa*. It is where the powers of the digestive organs are so impaired as not to be able to supply new blood to nourish the wasting tissues, and where actual blood-poisoning is weakening the heart's action, that the full action of wine is required as a stimulant. At the end of a fever thus fed we find the patient little fallen away—in fact a proof that his food had been well digested; while in a case of typhus with dry parched tongue, no matter how much wine might have been used, the patient was emaciated at the time of crisis. I cannot help feeling, however, that the digestive organs have been occasionally overtaxed by the administration of nutritive food during the fever, and that the crisis is not so complete, or the convalescence so rapid as in the more emaciated cases. When wine has been administered in large quantity it is important it should be diminished when it is evident the poison of the fever has passed away, as shown by the fading of the rash, or by partial crisis, even though a considerable amount of sickness still remains. This continued illness often arises from secondary disease, which was produced during the progress of the fever, and now continues after its cause has been removed. Stimulants will only help to give this disease a chronic and dangerous character. Mild, easily-digested nutriment will carry the patient safely through this critical period of his illness. With reference to the administration of sedatives the practice of physicians varies very much. Some think a mild opiate, every night, given by the mouth, or in form of enema, useful in tranquilizing the nervous system—of course only in cases where there is no congestion of the brain, active or passive. Others are very unfond of this remedy, as tending to depress the nervous energy, and impair the powers of the digestive organs. As compared with former epidemics the cases at present, in general, may get opium with least risk of injury, as there is seldom cerebral congestion till the end of the disease; but the necessity for it is another question, and must be determined in each individual case. If the patient sleeps in snatches, be it by night or day, as much when taken together as would suffice in health, or nearly so, I would not administer an opiate; what necessity is there that sleep should take place by night rather than by day? or is it not the fact that the first part of the night is that in which the patient is least likely to sleep, as there is generally an exacerbation of his symptoms at that time; and that when nature brings sleep, it is towards morning? There is no doubt we are all liable to fall into the great error of determining, after several sleepless nights, to try an opiate,

though we may incline to the belief that cerebral congestion exists, and this on the general supposition that if he does not sleep he must die. But most men's experience will furnish them with cases in which patients have continued without sleep for eight or ten days and nights, and still recovered. It is not the loss of sleep which ever kills, but that state of the brain or other organ which produces the loss of sleep. On the other hand, there is nothing so soothing as an occasional opiate when the want of sleep arises from slight irritation of the brain produced by the febrile state. It will be seen from what I have stated, that our treatment is founded on the belief that the patient is labouring under the effects of a poison which has somehow entered the blood, and has produced changes in the animal economy, which in their progress are governed by laws more or less fixed. That we know absolutely nothing of the intimate nature of this poison but from its effects on the nervous system, the digestive organs, and circulatory apparatus, and that our treatment should be solely directed to counteract these effects, rather than to endeavour to eliminate a poison of which we neither know its nature, its mode of operation, its manner of entering or departing from the blood. There is no objection to discuss medical theories in books, but it is mischievous to let them influence practice till proved beyond contradiction.

# COSTLESS VENTILATION.

*From "the Builder," March 1st, April 19th, 1862.*

A CONSTANT supply of fresh air is so important to our well-being, and in the prevention and cure of disease, that the subject needs no comment: an attendance, however, at any public meeting, is only necessary to convince how much this axiom is ignored,—or if admitted, how unsuccessfully met;—"crowded to suffocation" indeed, being the conventional term used to express a full assemblage.

For some time I recommended to my patients the plan of opening the window-sash at the top, and stretching out on a frame a corresponding depth of tarlatan, to intercept blacks and prevent draught; but, although a modification of, but not an improvement on, this method, has the support of a popular lecturer at an institution for the diffusion of art and science, the principle is wrong and the result unsatisfactory, as the draught is directed downwards on the sitter, and not upwards towards the ceiling; the screen, too, is anything but ornamental, and becomes clogged with blacks, so as to require removal and repair.

The method I now use is simple, economical, quite free from draught, and does not get out of order. Raise the lower sash of the window, and place in front of the opening at the bottom rail a piece of wood of any approved depth,—from two to three inches is sufficient: this leaves a corresponding space between the meeting rails in the middle of the window, through which the current of air is directed upwards towards the ceiling: heavy blacks cannot ascend with the air, which is driven so high as to be warmed before it descends; light blacks are not admitted in ordinary conditions of the atmosphere, though doubtless they are in cases of violent commotion caused by very high wind,—the more the lower sash is raised, the more the difficulty of blacks entering between the meeting rails is increased. The principle may be modified in various ways, making the bottom frame of wire blinds supersede the strip of wood: in a word, open the lower sash of the window two or three inches, and block it up anyhow, and the air enters the space in the middle and is carried to the ceiling. Fig. 1.

The opening between the meeting rails will doubtless be found to admit more air than the various patented plans so erroneously applied to the top of the sash, whether of wire gauze, perforated zinc, or glass louvres; and while I am satisfied of a constant current of fresh air inwards, I am disposed to believe that occasionally there is a passage of heated air outwards, in which case the latter is always at the sides of the window, the fresh air rushing in at the centre;—however, provision should always be made for the escape of heated foul air from the ceiling, through a large valvular opening in the flue or elsewhere.

It will be seen that this simple plan is adapted for the cottages of the poor and the mansions of the rich: in the latter, however, the draperies *must be arranged so as not to interfere with the current*

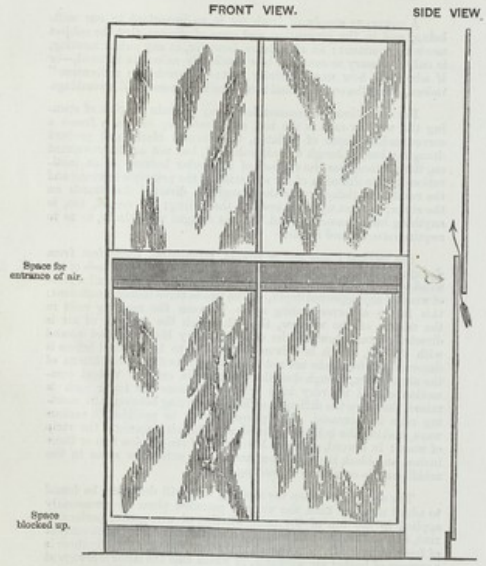



*Fig.* 1.

*of air towards the ceiling:* it may be used in any weather, day and night, summer and winter; indeed, in the house of a medical friend, to whom I had demonstrated the plan, to insure constant action, the window of his reception room has been nailed open, and the same is the case in several rooms in my own house during the milder months of the year.

But, although the above plan answers for ordinary daily ventilation, for windows without overhanging drapery,—at night, with gas in crowded rooms, it is not at all equal to the occasion: in these cases I adopt the following, also costless, very efficacious, and which may be used with overhanging draperies.

At 9 inches *above* the height of an ordinary person, say 6 feet 6, place a small hook in moulding of shutter case *furthest* from the window, on each side, and another 2 inches *below* the moulding on each side, in front of window-sill: *tightly* stretch across the window a length of linen or calico, with small loops or rings to attach to the four hooks,—leaving the calico 9 inches larger than required to hang down loosely on each side: this forms what is, I believe, technically called by architects a "hopper." Throw up the lower sash as required, and draw the blind down to the lower rail of the window sash wherever it may be. The air enters in full volume, strikes against the broad surface of the calico, and is directed upwards towards the ceiling. Here is the advantage of a window more or less open, *with privacy* and *without draught*. When not in use, this calico can be rolled up into a very small compass. Fig. 2.

The following facts may interest your readers. Before adopting these two plans, my room was generally, *at ceiling*, with four gas-jets lighted, 80 degrees of heat, when the thermometer, breast-high, stood at 65 degrees: *now*, the two thermometers are generally within one degree of each other; and in the evening, when the gas is burning and the thermometer outside at 45 to 50 degrees, with the arrangement of two openings near the ceiling (instead of at the meeting-rails), *each 5 feet by 4 inches*, and the window open 2 feet, with hoppers just described, the thermometer generally rises 2 to 3 degrees. When the thermometer outside stands at 50 to 55 degrees, I have both windows open, with hoppers in front as described, besides the two openings at ceiling,—a ventilation at such a season as this never before, by other plans, endurable. In such a wholesome atmosphere the social meal, with "the feast of reason and the flow of soul," most pleasantly runs on; probably because an *al fresco* spread is more exhilarating than one in a deleterious atmosphere. So highly do I appreciate ventilation, that I am not satisfied if I enter my home from the outside air and detect a perceptible deficiency of atmospheric purity within.

Unpatented, I with pleasure give the result of my investigations to my readers, wishing them to try the costless experiment with a piece of wood and calico, and judge for themselves; feeling assured they will find these plans recommend themselves by their simplicity, costlessness, and efficiency.

PETER HINCKES BIRD, F.R.C.S. F.L.S.

1, *Norfolk Square, Sussex Gardens, W.*

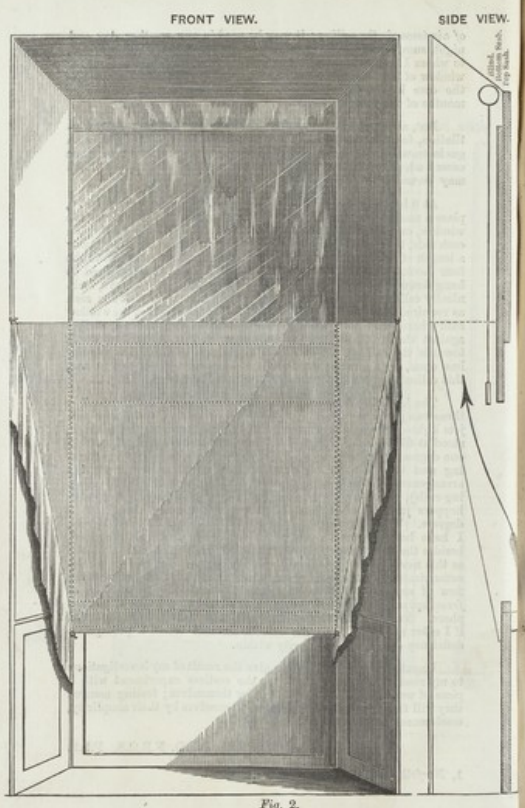



*Fig. 2.*

THE

BRITISH AND FOREIGN

# MEDICO-CHIRURGICAL REVIEW.

APRIL, 1863.

---

## PART FIRST.

## Analytical and Critical Reviews.

---

### Review I.

*The Roll of the Royal College of Physicians of London; compiled from the Annals of the College, and from other Authentic Sources.* By William Munk, M.D., Fellow of the College, &c. Vol. I., 1518 to 1700, pp. 472; and Vol. II., 1701 to 1800, pp. 429.—*London*, 1861 and 1862. 8vo.

It would be desirable, by way of preface to our notice of a work which records the biographies of all English physicians, to inquire into the history of medical science, from the darkest ages; to mark the steps by which it rose out of the most benighted ignorance; and to trace the practice of medicine, from its beginning in the monasteries, to its final emergence as a secular profession; but our limits not sufficing for such inquiry, it will be enough to observe, that at the commencement of the sixteenth century medicine had scarcely become a distinct profession. Men who had been educated in the universities, whether in this country or on the Continent, united, for the most part, the doctorates of law, medicine, and theology; and the adoption, as a calling, of any one of these pursuits was afterwards assumed or laid down at their convenience. Special medical learning occupied a very insignificant part of the education of those who practised by sanction of their medical degrees; and that learning merely consisted of superficial inquiries into natural philosophy, which was still mixed up with the occult sciences, and of empirical observation of the effects of herbal remedies. Very little intelligent study of symptoms had as yet been made; the old teachers of that line of investigation not having then become generally known by the introduction of Greek literature, and such speculations as were hazarded in physiology and chemistry were grossly delusive; so that the so-called art of medicine was little, if in any degree, removed from simple quackery.

When Linacre repaired to Padua, he entered on the usual course of mathematics, dialectics, astrology, and scholastic theology; and the beginning of his special study consisted, like that of his renowned co-temporary, Cornelius Agrippa, in the application of occult virtues to account for all phenomena. So little did he devote himself to medical subjects, that in the beginning of his professional career he published a book on astronomy.

From Linacre's companions at Padua, Dean Collet, Lilley, and Cornelius Agrippa, much may be gathered of the minute particulars of those philosophical studies which they met to pursue; they included the wildest and darkest superstitions: but before those fellow-students parted, Greek literature had been taught, and that marvellous expansion of thought had begun, which led to a signal reformation in medical science. Whilst the Epistles of St. Paul imparted to Dean Collet a new insight into Christian truth, Linacre became familiar with the works of Hippocrates and Galen, and being taught by them the vanity of applying forms of logic to wild hypotheses, was directed to the sounder study of symptomatology. No one can doubt that his previous course of study, especially that of mental exercise in the schools of logic, together with the labour of acquiring in a short time the newly-revived Greek language, must have been admirably adapted to enable Linacre to devote a well-trained as well as naturally vigorous intellect to the pursuit. Happy has it been for the promotion of true medical science that, leaving the attempt to reason from hidden causes, he turned at once to study and collate patent facts, thus opening out a course of investigation which the discoveries in collateral science of following centuries have turned to good account; and it was a happy omen for the College of Physicians that the man who may be regarded as the founder of the institution was, if not the greatest medical philosopher on record, at least the first precursor in a genuine and enlightened line of study.

We have thus briefly referred to the state of general as well as medical learning at the time of the foundation of the College of Physicians, because it was necessary to do so in order duly to comprehend the principles and objects of the founders. At the present moment, when a desire for change, in spite of large concessions, is still apparent, a work by which we are reminded of the meaning of the institution may be regarded as a valuable source of instruction. To those who like to trace the gradual development of science and its practical application, the work must be full of interest; in almost every page they may perceive how minds early trained by closest exercise were ever on the alert to seize all newly-revealed facts in collateral science, whether in chemistry, botany, or any other branch of natural philosophy, not excluding mechanics; discovering the governing laws, and applying those laws to the knowledge of disease and of its treatment; until arriving at later days, they find Sydenham eminent in classifying symptoms; Harvey pursuing the discoveries of Vesalius, till he established the greatest of physiological truths; and at length Baillie



opening out those invaluable stores of instruction to be found in the study of morbid anatomy.

Dr. Munk has not given a history of the incorporation of the College and its first charters; a brief notice on this subject may therefore be interesting to some of our readers to whom it may not be familiar.

Although the origin of the College of Physicians in this country may be referred to the general expansion of thought and the revival of letters in the sixteenth century, substituting, as that revival did, the study of symptoms and of anatomy for mere inventions and scholastic modes of reasoning, yet it cannot be immediately attributed to the progress of reformed opinions in religion. The movement in scientific institutions preceded the suppression of the monasteries, and England, in the establishment of her College, only followed the example of Milan, Padua, Bologna, and other cities, which were comparatively free from the spread of reforming doctrines. The formation of a College for the regulation and encouragement of medical learning, although it did not originate, yet aided materially in the severance of the scientific and ecclesiastic professions; and though the two pursuits were at first followed by the same persons, and the duties were afterwards assumed alternately, yet it led in time to the professors of medicine devoting themselves wholly to that calling. The English College was founded after the model of the Italian, even adopting some of the exclusive notions of the period—such as rejecting candidates for illegitimacy and other stigmas; and if the statutes were less arbitrary and less swayed by political and party prejudices, they excluded all who were not naturalized Englishmen.

The actual incorporation of the College is said by Sir William Browne to have been preceded by a statute of the 9th Henry V., relating to physicians, but as it is not contained in the printed statutes, the earliest on record is that of the 3rd Henry VIII. The wording of this statute is curiously illustrative of the times. The preamble, setting forth that the "cunning of physic and surgery" requiring "great learning and ripe experience," having been exercised by "ignorant persons," so far forth that "smiths, weavers, and women" take upon them great cures, in which they partly use "sorcery and witchcraft," &c., to the "high displeasure of God," and "great infamy to the faculties, to the hurt of the king's liege people, and of them who cannot discern the cunning from the uncunning," &c. &c., it was enacted, that no person within the City and seven miles round, physicians or surgeons, should practise till examined and approved by the Bishop of London and the Dean of St. Paul's, calling to their aid four doctors of physic, and for surgery four expert persons in that *faculties*. There was a pain of forfeiture of 5*l.* for every month they should practise without such licence. The same jurisdiction was exercised by the bishops of the several dioceses.

This statute was followed by the charter of Linacre, in the 10th Henry VIII. (1518), which, as no charter can override a statute, was confirmed by Act of Parliament in the 14th & 15th Henry VIII.

This charter was granted to Chambre, Linacre, and others, "of the same faculty," to found a college of learned men who practise physic. The expression, "*ejusdem facultatis*," when collated with that used in the previous statute of 3rd Henry VIII., proves that in that early day surgery was separate from physic; the statute running thus—

"That no person within the City of London, nor within seven miles of the same, take upon him to exercise and occupy as a physician or surgeon, except he be first examined, approved, and admitted by the Bishop of London, or by the Dean of St. Paul's for the time being, calling to him or them four doctors of physic, and for surgery four *other* expert persons *in that facultie*," &c.

Physic and surgery have *separately* the word "facultie" applied to them, from which it is clear that two separate faculties are intended, and that the word does not include more than the class to which it is applied. Hence it is plain that the words "*ejusdem facultatis*" in the charter mean purely physicians. The body thus incorporated, besides being entitled to hold lands, &c., are empowered to make regulations for the government of the College, and of all physicians ("*omnium hominum eandum facultatem*" &c.) in London, and within seven miles of the City. They had power, as a Court of Record, to fine and imprison for practising without the licence of the College, and for other offences.

There were also legal exemptions granted to the Fellows from "watch and ward," which exemptions were claimed, in 1614, to extend to the furnishing of "men or armour" for the defence of the City, and the immunity was judicially confirmed. Sir William Paddy, president, was instrumental, by pleading personally, and as it is said, with much effect, in obtaining the confirmation of the privilege. By this charter, the privileges of the Universities of Oxford and Cambridge of granting licences to practise physic were not infringed, except as regarded London and seven miles round. This charter was confirmed by Act of Parliament of 1522 and 1523, and it was this Act which created the elects, giving them power of examining and licensing physicians all over England, except the metropolis—a most important addition through the elects to the power of the College. The elects also were empowered to choose the president out of their own number.

An Act of Parliament, in the year 1553, confirmed the Act of Henry VIII., and bestowed authority to levy fines and imprison in any of the prisons, excepting the Tower of London. It appears that this last grant was added in consequence of certain governors of prisons having refused to receive persons convicted of offences by the College.

In the 15th James I. (1618), another charter was granted, defining and enlarging the penal powers. The fines were appointed for the use of the College, and the College was to pay six pounds yearly to the Exchequer. This charter, though accepted, was not confirmed by Act of Parliament. Another very similar charter was granted in the 15th Charles II. (1663); and again another in the time of James II. The last was surrendered by the College in



1685; but neither of them was confirmed by Parliament, therefore the Charter and Act of Henry VIII. are still in full force, and it is by them that the government is regulated and the privileges defined of the College of Physicians at the present moment.

The recent Act of 1858, with its amendments, did not affect Henry VIII.'s charter otherwise than by granting to certain other bodies licensing privileges throughout the three kingdoms. It may be chiefly characterized as an Act for registration, and for regulating the education of general practitioners.

One of the consequences of the enactments of the year 1858 ought to be understood. By one of the amendments was effected the extinction of a privilege not granted in Henry VIII.'s charter, but by the Act which confirmed that charter: by this amendment the office of elect, with all its powers, was done away with, and the election of the president extended to the whole college. The abnegation of this latter function of the elects was a graceful and necessary concession on their part to the general wish; but the former sacrifice was an abandonment of vested rights; and it is no doubt questioned by many among us whether the duty of resistance might not have been nobler than the liberality of concession. The legislation of 1858 was pressed forward in Parliament under the pretence of destroying a monopoly. The Legislature did not perceive that the holders of this so-called monopoly composed at any rate almost the whole talent, education, and practical knowledge of the metropolis; that it was exercised as much for the benefit of the public as for the maintenance of the efficiency and character of the profession; also they did not care to know that these functions brought no pecuniary rewards to individuals. We may incidentally remark that the expenses of the College, which had existed for more than three centuries, had been over and over again supplied by private subscription amongst the Fellows, and that the present structure, as well as the former buildings which it has inhabited, have been erected by the same means.

The nucleus of the College was established in Linacre's house, in Knight Rider-street, called the Stone House. This, which he afterwards gave to the corporation, must have been destroyed in 1666; but a house built on the site remained in the possession of the College till it was sold in 1860 for the new Probate Court. In the façade at that time was a stone which may probably be a relic of Linacre's house; but before the destruction of the latter, the College had removed (about 1625) to a house belonging to the Dean and Chapter of St. Paul's, in "Amen Corner." In 1651, Dr. Baldwin Hamey, junr., bought the remainder of the lease, and gave it to the College, to insure it from spoliation as part of Church property. We may here notice a curious instance of clerical conduct of affairs in 1662: when the Dean and Chapter granted a new lease of forty years, they stipulated that in addition to a ground-rent of five pounds per annum the College were to afford the Chapter professional aid gratis. This house in Amen Corner was also burnt in 1666, together with the library and much valuable property.

After the fire, the College surrendered their lease for 550*l.*, and instead of building on that site, erected handsome premises in Warwick-lane, the funds for which were chiefly supplied by private subscription among the Fellows. This building, which has some architectural merits, still exists; and it was not till 1825 that the present college in Pall Mall East was built, by another private subscription among the Fellows, King George IV. granting the ground. The first cost of 30,000*l.* was aided only by 2000*l.* contributed by the Radcliffe executors. The completion of this structure was chiefly promoted by the energy of the president, Sir Henry Halford, and it was not only in this that the institution owed much to the influence which he had won by his proper estimate of what belonged to the true dignity of the physician's character. Ardently devoted to practical pursuits, he was the model of an accomplished gentleman; and the estimation in which he was held by the highest classes of society was reflected on the whole profession.*

The Roll is deserving of much praise for the laborious research which has been bestowed upon it, and, as far as we can ascertain, it is also to be commended on the score of accuracy. The author has displayed considerable scholarship, and the materials are arranged with much success. Some of the records are of necessity meagre, and therefore, except for occasional reference, afford little interest for either the professional or the general reader. A more popular book might probably have been produced by tabulating those lives of which the bare existence has been handed down, by that means collecting in one view the more attractive matter of biography and anecdote. The more eventful lives of distinguished physicians abound in details which cannot fail to make the work a valuable addition to every library. We cannot commend it more effectually to our readers than by giving a short abstract of some of the more interesting biographies, noting, as the subject may suggest, a few reflections which apply to present circumstances.

The Roll opens with the name of John Chambre, M.D. Dr. Munk has placed him at the head of it, because his name stands first in Henry VIII.'s charter. His position in the charter was not due to any personal pre-eminence, but to the accident of alphabetical arrangement, the three king's physicians having been placed first and alphabetically. He affords a striking example of the combination of professions which was common at that period. The consideration of the subject is equally suggested by the biography of the great man who obtained the Charter of Incorporation, and who was the first president of the College.

Linacre was educated first at Oxford, and travelled into Italy with Selling, who had been appointed by Henry VII. Ambassador to the Court of Rome. At Bologna he received the instruction of Politian, and at Florence he was associated with the sons of Lorenzo de Medici, with permission to participate in their instructions. He then began the course at Padua to which we have already referred.

* When Sir Henry Halford opened the College in Pall Mall East, there were six Royal Dukes present, with a large assembly of men of learning and position. The Duke of York proposed the "prosperity of the College" at the collation.



He was the friend of the most distinguished scholars, and above all of Erasmus.

Returning to Oxford, he wrote the astronomical treatise, and from thence was summoned to attend Prince Arthur, and to become physician to the King. Later in life he took holy orders, but his devotion to his own profession continued unabated, and it was at the close of his career that he obtained from Henry VIII. the charter of the College.

We observe both Linacre and Chambre uniting the prizes of ecclesiastical and medical preferments. Chambre, who had previously been admitted into the priesthood, was made King's Physician on his return from Padua; he united the livings of Tychmarsh in Northage, and Bowden in Leicestershire; he was Prebend of Sarum, Archdeacon of Bedford, Warden of Merton College, Oxford, Dean of St. Stephen's, Westminster, and Treasurer of the Cathedral of Bath and Wells. In 1554 he resigned the Wardenship of Merton, and became Archdeacon of Meath. Linacre held the preferments of Prebend of Wells, Canon of Westminster, Precentor of York, Rector of Holworthy, and Rector of Wigan in Lancashire. He had been previously preceptor to Prince Arthur, and was at the same time Physician to Henry VII. Shortly after the accession of Henry VIII. he was appointed King's Physician, and practised his profession whilst his health permitted.

This arbitrary mixture of professions, and this plurality of benefices, appears still more scandalous when we observe that preferments in the Church were continually exchanged for other still more valuable endowments. It was the custom at that time to accept all that Court favour would bestow, and resign one or more in favour of some friend, on an arrangement for annual or some other mode of payment. This well-known fact is mentioned by Dr. Munk in a letter to himself, from the author of the 'Monasticon.' Dr. Oliver says that "the Crown was satisfied with these arrangements, as it was a saving to the Royal purse."

It appears from this that benefices in the Church were bestowed in lieu of payment for services done in the medical capacity. We can only remark, that if that were the case, Royal ideas about professional remuneration were far more satisfactory in those days than they are at present. The bestowal of these benefices is, however, rather to be referred to the lavish distribution of Royal favour then in vogue.

It is with the greatest reluctance that the charge of avarice would be imputed to such distinguished men as a motive for taking holy orders, especially when it is remembered that Linacre was as eminent for his moral worth as for his intellectual power and great attainments. Dr. Munk, quoting Dr. I. Noble Johnson, says:—"In private life he had an utter detestation of everything dishonourable—he was a faithful friend, and was valued and beloved by all ranks in life."

Nothing would be more unfair than to mete out censure against a transaction of a past age according to the moral standard of the present. This is too often done by superficial judges, as in the case of Lord Bacon, whose memory is still defamed for acts which he committed in compliance with an admitted custom; denounced by faction,

his very candour of confession shows that, in spite of many weaknesses, he was the victim of living in an age when certain ideas of right and wrong were still in a transition state. Dr. Munk extenuates the conduct of Linacre by suggesting that he desired to ensure a competency for the sake of exclusive devotion to the study of medicine.

Even if we should be obliged to leave the fame of Linacre unrelieved from the aspersion of personal avarice, the assertion of better principles is at least evident in the provisions against avarice in the practice of his profession, included in the charter. The first reason for incorporating the College was "to check men who professed physic rather from avarice than in good faith."

It is a testimony of his high esteem of science, that he sought to purify it from the unworthy motives which pervaded other callings—indeed, after making due allowance for the times in which he lived, Linacre seems to have been a model character for all followers in the institution which he founded; he was honourable, faithful, kind, and modest, as well as before his age in his notions of philosophy.

The first of the companions and successors of Linacre through whom we perceive any fresh principle infused into the College was Caius. Linacre had introduced some well-considered and sufficient measures of exclusion, but Caius enlarged upon them, and added, too much in the spirit of persecution, to the cautious guardianship of the principle that practice should be based on true philosophy; he withstood by legal prosecution the pretensions of the surgeons to prescribe internal remedies, having in this apparently more regard for the privileges of the College than for the advancement of science, which could but be retarded by repelling surgeons into a class of mere manipulators. These narrow views of Caius are the more remarkable when we remember his early fellow-studentship with Vesalius, whose large ideas on all other subjects, as well as on anatomy, should have saved Caius from so low an estimation of the calling of the surgeon.

We note also in the biography of Caius the first indication of opposition to what was called encroachment on the duties of the physician by the dispensers of medicines. It is now easy to perceive that this was a want of foresight as well as judgment; Caius was not sufficiently in advance of his age to anticipate that the apothecaries, when first emerging from their mere trading business in connexion with the grocers, were destined, by adding sufficient knowledge to their dispensing duties, to fill up a great want for the service of the public. He did not understand that the true calling of physicians was to consist in closest study of medical science, and the application of that science on all important exigencies; and that the aid, in simpler cases and for many minor mechanical operations, of men whose education had been less extensive, tended rather to preserve than to derogate from their interests. A subsequent act of the College to make a dispensary for the poor within its walls, which dates at the close of the seventeenth century, though directly opposed to this mistake of Caius's, was no less unwise. This step seems to have been the cause of much contention, and Garth in his satire, 'The



Dispensary,' handled the opposers of it with much severity. To undertake the duty of pharmacy even for the purposes of charity must have been a fatal departure from the legitimate functions of the College, and though there is little of detail to be found about the working of the measure, the early discontinuance proves that it was a failure. It may, however, have suggested the establishment of public dispensaries in a far more efficient form.

We turn with satisfaction to an act of Caius which we can cordially applaud. Being, by the testimony of his contemporaries, the most learned physician of his age, and having founded the college at Cambridge which still bears his name, we find him earnest in a better work than that of persecuting practitioners without the College walls—that of providing that none should come within them who were unqualified by the possession of all the learning which the time afforded. He well knew how the study of mathematics and Greek literature had lifted his immediate forerunners and contemporaries, at Padua and Pavia, above the level of the old magician quack, and it was whilst he was president of the College that an appeal was made to Oxford, insisting that the university should not grant medical degrees to any who had not gone through the full course of what has since been called preliminary training, the completeness of that preliminary training being insured by the "degree of Master of Arts, without favour or dispensation."

An amusing account of the Latinity of some persons who had been admitted to degrees in medicine at the University of Oxford, which led to this effectual remonstrance on the part of the College of Physicians, is given at pages 59 and 60 of the Roll. In the time of Charles II., the same principle of not admitting unduly educated members into the College was once more vindicated. It might be wished that the wisdom of this principle were sufficiently recognised by the present generation.

Passing by many lives which exemplify the progress of the still young College in learning and reputation, we note, under the presidency of Dr. Atkins, physician to James I., the earliest measure of collecting and classifying such remedies as were then known and most approved. When we compare the list of this first Pharmacopœia with the wild and fantastic nostrums of the beginning of the same century, we are struck with the extraordinary progress already made in the knowledge of remedial substances, as well as by the dominance of good sense over prejudice. We find in it much which might be used with advantage at the present time, and nothing absurd, although we miss the concentrated form of preparations which chemistry has furnished since.

This Pharmacopœia, published in 1618, proves this great advance to have been arrived at, that the basis of medical practice was understood to consist in the knowledge of disease rather than in the possession of a multitude of specifics. Wherever a recurrence to the old system appears, it may be traced to the idea of adding the advantage of an impression on the patient's imagination to the real

value of the remedy. Subsequent historians, forgetting the errors still in vogue in other professions, have seized on slight indications of this method in the treatment of distinguished personages, and used them as an excuse for holding up a whole profession to popular contempt. A candid thinker might have perceived that the split cock placed on the soles of the feet of Prince Henry was a poultice of most even temperature, although a clumsy one; and such a man as Macaulay might have spared his scorn about the essence of dead men's bones, administered to Charles II., if he had remembered that ammonia, a very useful remedy, is most directly derived from bones, and therefore from something dead.

In the compilation of the Pharmacopœia, we observe in the College the first organization of committees for special purposes—an effective system, but capable of much abuse, for since the time of its adoption it has been not less applied within the College walls to force the opinions of a section upon the general body than it has been in other large assemblies.

In the Life of Richard Palmer we find the first record of a contention in consultation about the line of practice to be pursued. Dr. Munk has reported of it some noteworthy particulars from the 'Desiderata Curiosa.' The attendants on Prince Henry, in 1612, were Sir Theodore Mayerne and Dr. Atkins, physicians to the King; Dr. Hamond, physician to the Prince; and Dr. Butler, who had been summoned from Cambridge. Sir Theodore Mayerne had early proposed to bleed the patient, which being objected to, he urged that if they meant to save life they must proceed in the cure "as though he was some mean person." It appears that there was not sufficient unanimity of opinion to support the moral courage of the man who wished to disregard the sufferer's rank, and we find that merely stimulants and palliatives were used. When the case became apparently hopeless, the King pressed Sir Theodore Mayerne to act independently; but the latter shrunk from the probability of a future reproach "that he had killed the King's son." Once more, however, he resumed his courage, and again proposed to bleed him; this was finally withstood. Cordials were doubled; Drs. Palmer and Gifford were called in at the eleventh hour, more and more brandy was poured in, and the patient died.

This story, which will find a parallel in the experience of most physicians, suggests some grave reflections on the moral code of the profession, and the influence of the public voice upon it.

In the biography of Sir Theodore Mayerne, just alluded to, we find an instance of compliance with a statute made in 1582. This statute provided that the King's physicians should be admitted Fellows in virtue of their office, superseding the necessity of examination, and dispensing with the qualification of being Doctors of Oxford or Cambridge and of being Englishmen. This statute was repealed in 1765, the College then nobly vindicating their function of deciding on the qualifications of physicians, not allowing either royal opinion or royal favour to interfere.

Those who like to follow the progress of medical study will find in



the same life interesting allusions to controversies then carried on at Paris, and to the strife between those who supported Galen, and those who wished to improve on Galen's mode of practice.

Mayerne had been physician to Henry IV. of France, and being rejected as a Protestant by Mary de Medicis, he afterwards settled in England. His devotion to the house of Stuart was remarkable.

In the Life of Harvey we find the admirable provisions of the Charter of Incorporation, designed as they were to encourage learning, producing the noblest of their results.

Harvey's education had been complete; he took his degree in Arts at Caius College, Cambridge, and afterwards, travelling through France and Germany, studied at Padua, then the most celebrated school of medicine in the world. On entering the University of Padua, Dr. Munk says that his teachers were surprised at the accuracy and extent of knowledge which he evinced in the examinations preparatory to his doctor's degree.

It cannot be doubted that with less intellectual training and less severe preparatory study, his great ability would have enabled him to profit more than other men by the teaching of that renowned university; but it is also certain that the habit of close reasoning, and of concentrating his mental power on abstruse subjects, helped him to the solution of the most difficult physiological problem which was ever proposed to human ingenuity, and to the greatest of all additions to the stock of medical knowledge.

The tumultuous time made it unlikely that any great scientific discovery should receive a national reward; but it is strange that the public of calmer periods have never yet thought of repairing the omission. The inscription appended to the statue erected by the Fellows in the first College of Physicians is all that was preserved when the statue itself was destroyed together with the building in the fire of 1666, and is the only memorial in existence. We recal, with pleasure, a graceful tribute to the memory of this great man by the oldest, as well as one of the most distinguished, of living statesmen. The remarks, which we venture to repeat, were spoken privately in the College of Physicians on the occasion of the inauguration of the statue of Jenner by the Prince Consort; but it is not unfair to record them openly. Speaking of Harvey's discovery of the circulation of the blood, he said "that inestimable benefit has always been appreciated by mankind, though the bestower has received no such honour as we now confer upon the memory of another." He went on to observe that all foundations for charitable purposes are transient, because all are subject to abuse and the institutions to decay, so that the intentions of the original founders are frustrated by the course of time; but that truths once discovered are subject to no change, and remain for all succeeding generations.

We are glad to record this graceful testimony to the value of true science. Of Harvey's munificence to the College we shall speak hereafter. The impulse given by Harvey to apply anatomical investigation to the furtherance of physiological discovery, was soon extended

to another branch of medical science. We find the same course promoted by Dr. Goulston, who in 1632, whilst Harvey was still lecturing, founded an annual lecture in the College, providing that a dead body should, if possible, be procured, and two or more diseases should be treated on, thus laying the foundation of morbid demonstrations.

Dr. Goulston was an eminently learned man, having, before he applied himself to medicine, taken his degree of M.A. at Merton College, Oxford, of which he became Fellow. His early academic devotion to that classical lore which was then peculiar to Oxford, resulting as it did in several critical treatises, did not prevent his adopting and furthering the most practical of all means by which light could be thrown on the nature and progress of disease.

An instance of the exercise of the judicial power which the College possessed over its own members is to be found in the biography of Dr. John Bastwick. He was expelled the College in consequence of being under sentence from the High Commission Court for calumniating the bishops. It appears also that, when the Long Parliament sent for Bastwick from his prison in the Scilly Islands, and when he, with Prinne, was received on his entrance to London by the populace as a martyr to the oppression of the Star Chamber, the College reinstated him as licentiate. In regard to his expulsion, there is no room for charge against the College of undue subservience to the Government; we should rather be disposed to applaud the act of purifying their body from a member disgraced by the law. Whether there is equal reason to uphold the College for their readiness to readmit him is not so clear, making all due allowance for the difficulty of calm judicial acts in those disjointed times, even by a scientific assembly. But the conduct of Dr. Bastwick after his legal sentence was little likely to entitle him justly to such leniency, for his violence on all occasions amounted almost to insanity. The notice of him in the Roll, viewed as a short historical episode, affords much interest for the general reader.

Continuing our rapid review of the contents of the Roll, we come to a remarkable measure adopted by the College in the presidency of Sir Edward Alston, who kissed hands at the Restoration as king's physician. The measure alluded to deserves some examination. It seems that a large number of honorary fellows were admitted into the College, paying liberal fees or fines, some amounting to a hundred pounds—a large sum for that period; this was an innovation in the practice, but not in the principles of the charter; it was a mere gathering within the pale of the corporation of those who ought before to have been its legal members, but who had neglected to apply during the period in which every institution was either neglected or abused. The College took advantage of the restoration of order in the State to recruit their diminished ranks; and men who had been fully educated, but who, having been in practice without a licence, had become too old to be examined, were admitted, a heavy fine being accepted as a composition for foregoing the examination. Thus far,



in an exceptional exigency of affairs, the proceeding cannot be condemned; but the College, taking occasion of this departure from the strict rule of the charter, and wishing to replenish their empty coffers, admitted men of rank and influence out of the profession; to the temptation of the payment was added, as we may suppose, that of being honoured by the association of men of power: this was undoubtedly a departure from the true business of the College. Even supposing that the amateur fellows were really actuated in their desire for enrolment by a pure love of science, it must be remembered that the College was bound to form a body, not of mere learned men, but of learned physicians. In regard to the amateurs, it must not be forgotten that no society existed at that time for the prosecution of general science, and that natural philosophy was studied by all men of education; those who wished, therefore, for special improvement, had no legitimate place of resort, and the attempt to be embodied into any learned corporation admits of much excuse. The Royal Society, which so soon after was established, was of course more comprehensive in respect to the pursuits of its members; but that corporation also assumed a false position in regard to the aristocracy, choosing members, not because they were learned as well as noble, but because they were merely noble and rich. It was a remnant of the old system, under which science and literature existed only by the patronage of the great.

The examination of apothecaries' apprentices, which was also resumed at the same time that the number of members was increased, requires some observation. The examinations had been, as far as we can discover, merely acts of supervision made by the College to protect the public from having medicines dispensed to them by men who could not read prescriptions; it was done simply to ascertain that those men had acquired Latin enough to do so. Neither this, nor the examination of the apothecaries after they had finished their apprenticeship, was any departure from the legitimate function of a College of Physicians; for there was no association of those persons with the members; the proceeding was a mere act of supervisson, and was analogous to an inquisitorial duty performed until lately by the censors in their visitation of apothecaries' shops; on those occasions the censors found fault with, and even destroyed, drugs which were unfit for public use. It is by no means certain that the relinquishment of this latter duty was a wise step on the part of the College. There was no remuneration for the visitation of the shops; and, as far as can be traced, there was none for the examination of the apothecaries. It is important to define clearly the distinction between the act of authority which was resumed in 1664, and the newly-assumed functions of the present day; it will be perceived that the latter, however desirable they may be, have in reality no parallel with the former.

One of the most distinguished presidents of the College was Dr. Francis Glisson, in whom was combined a discoverer in anatomical science and a great promoter of natural and experimental philosophy in general. He was president in 1667, and was one of the few who

instituted private meetings, which proved the germ of the Royal Society, incorporated in 1682.

Sir George Ent is chiefly known as the champion and friend of Harvey, for whom he appears to have acted as amanuensis. It was whilst he held the Lumleian lectureship that the high place which the College then occupied in public estimation was testified by the presence of the Sovereign. Charles II. attended Dr. Ent's lecture, and knighted him afterwards in the Harveian museum. Sir George Ent was afterwards president.

It is impossible to pass over the biography of Dr. Whistler, a man who seems to have lived respected and beloved, but whose memory is handed down in obloquy, without some serious investigation. Dr. Munk records an instance of gross peculation on the part of Dr. Whistler, and finishes the notice of his life by a sarcasm which, if the charge were true, might not be too severe. A careful examination, however, of such evidence as still exists, shows that the case will bear a more charitable construction, which would rescue the fame of Dr. Whistler from reproach, or at least leave the charge in the highest degree problematical. Dr. Whistler was registrar in 1681, treasurer in 1682, and president in 1683. Not only whilst he held the office of treasurer, but apparently up to the hour of his death, his character remained unimpeached; for at the end of his accounts the following statement is to be found, in the writing of the bedell, signed by the proper officers:

"*April the 30th*, 1684.

"We whose names are hereunder written, Electors of the College of Physicians, London, have examined the account before mentioned, and doo find the same to be true, and that there doth justly remain due from the College unto Dr. Dan$^{l}$. Whistler, the sum of three hundred eighty-four pounds seven shillings and sevenpence.

"Memorand.—The account mentioned in the verdict above doth only refer to the account given in by Dr. Whistler, which begins the 18th April, 1683.

(Signed) G. Ent.
Tho. Coxe.
Walt. Charleton.
Geo. Rogers."

There is one other memorandum to exactly the same effect signed by the bedell, but there is no allusion whatever on record to the "peculation," except what is contained in the bare minutes of two secret meetings of the 13th and 24th May, 1684, in which Dr. Whistler is named as lately dead, and some delinquency not specified is said to be the business. The minute is thus worded: "Maij xiii. Comitiis extraordinariis, Consultatio fuit de peculato insigni Danielis Whistler, Præsidis nuper defuncti, assistenti amplissimo ac prudentissimo viro, Johanne Cutlero Baronetto." The minutes of the second meeting run thus: "Maij xxiv. Comitiis privatis. Nihil actum præterea de rebus Doctoris Whistler, nisi quod ejus nummi, vasa argentea, et id genus pretiosa, coram Præside, Johanni Cutlero Baronetto, &c., in loco tuto reponebantur donec altertestamentariæ procurationi præpositus advenerit D$^{nus}$ Lowther." (Solicitor?) Showing that valuables were



taken possession of until the will could be proved. We are able to add the facts that Sir John Cutler, who was present at these meetings, was a relative of Dr. Whistler's, that it appears that as early as 1675 the College had borrowed of Sir John Cutler money on bond, and also that the numerous entries in following years show a complication of transactions between him and the College.

It is important to observe that Sir John's being present when the meeting came to the decision that money had been embezzled, he not being a member of the comitia, indicates that he was some way conversant with the affair in question. In the absence of any further evidence, it is not unfair to surmise that sums of money might have passed from Sir John Cutler to the College through his relative, the President, and that a portion being missing, the fault might with impunity be charged to the dead man's account. This hypothesis, which would exonerate a man whose reputation had been until then unsullied, transfers suspicion to another whose character proved in the end to be the reverse of honourable.

It appears that there were further considerable money transactions after Dr. Whistler's death between Sir John Cutler and the College of Physicians, and Pennant distinctly charges him with want of faith. The exact nature of these transactions is involved in some obscurity, but it is certain that although a statue was erected in the College to Sir John Cutler in gratitude for benefits received, the inscription was obliterated when his character fell into disrepute. Again, Sir John Cutler's conduct to the Royal Society was beyond all doubt dishonourable: in 1664 he founded a professorship of mechanics, endowing it with 50*l.* annuity during the life of Hooke, the first professor. In 1689 Hooke, by the authority of the Council, sued Sir John Cutler in the Court of Chancery for the payment of the salary. If, therefore, the short and mysterious allusions in the records of the College be fairly considered in connexion with the known character of the man who was involved in the transaction does not warrant a complete assumption of Dr. Whistler's innocence, it must be regarded as insufficient to defame his memory.

The author of the Roll has been influenced in his general remarks on Dr. Whistler by passages in the Athenæ Oxonienses. It is, however, well known that Wood was most untrustworthy as an historian. Specimens of his spiteful personal detractions are to be found in every page; and he gives his own evidence that in 1693 the Senior Proctor in his speech called him "scurra et calumniator." One of his ill-natured taunts against Dr. Whistler was that "he married a rich widow and died poor." This charge may have been true enough, for professional men who marry widows with large jointures mostly do die poor: during the husband's life there is a heavy drag to match the lady's contribution, and when he dies, her income does not count among his property.

An incident illustrating the proverbially bad faith of princes, and the accidents which befal suitors for court favour, is worth extracting. Dr. Thomas Wharton, who was remarkable for his anatomical know-

ledge, remained in London in the visitation of 1666, long after most of his professional brethren had fled. His constancy was almost failing, when the Government lured him by a promise that he should receive the first appointment of King's Physician, if he would remain and continue his attendance on the Guards. He did so, and in brighter times claimed the reward; the royal promise was evaded by the still current phrase about the "necessity there was to appoint another person." He received instead the gracious substitute of an "honourable augmentation to his paternal arms;" and for this favour he was obliged to pay Sir William Dugdale a fee of ten pounds.

Though some of us now have to put up with broken promises, not many have the consolation of admiring a "dodge" so clever as to enable the royal patron to help a functionary and put off a claimant by a single act. It is fair to add that Dr. Barwick and Dr. Hodges both remained at the post of duty during the plague, when most of the College officers fled into the country, leaving the treasure-chest to be robbed of its contents.

Tracing the development of medical science by the labours of the members of the College, it is impossible not to notice Sydenham, who introduced an era of fresh enlightenment. He was the most rational of practitioners, following the steps of Hippocrates in close discernment of symptoms; surpassing him in reasoning on what he saw, he rose above fanciful attachment to system and nostrums. He overset many mistaken theories of medical superstitions embodied in the doctrine of signatures and symbols. Amongst other instances, his treatment of small-pox was a happy novelty in its simplicity and good sense.

Sydenham, though Fellow of All Souls, was prevented by accidental circumstances, in the course he took at the University, from becoming Fellow of the College; we cannot but agree with Dr. Munk that his exclusion ought in no way to be referred to adverse feeling; for though he might have enemies, yet the fellows have rarely been guilty of combining for purposes of envious oppression. We cannot, after naming Sydenham, pass in silence the name of his great cotemporary, the author of the 'Religio Medici,' Sir Thomas Browne, who was as much distinguished by success in practice as he was for his great literary work. It was of his son, Dr. Edward Browne, when President of the College, that Charles II. said that "he was as learned as any of the College, and as well-bred as any of the Court."

Among those who most adorned the College, Sir Thomas Millington has a distinguished place. He was educated at Westminster and Cambridge, and afterwards became Fellow of All Souls, and Sedlean Professor of Natural Philosophy at Oxford. To many qualities which made him admirable both as a man and a physician, was added the gift of eloquence in a remarkable degree. The sketch of his character given in the Roll shows it to have been worthy of study and imitation by all physicians who, to higher aspirations, add the desire to elevate the standing of their calling in society.

It is mentioned of Sir Thomas Millington that he died of gout and stone, which is worthy of remark, on account of the great number of



his professional brethren who suffered in the same way about the same period. The fact may, perhaps, be referred to the habit of sitting for many hours in carriages, a custom chiefly adopted under ideas of professional dignity, as well as to the grossly convivial habits which even the best characters of those days indulged in; the salutary custom of an annual escape to foreign lands, or at least to a different scene and air, was unknown to the victims of sedentary habits.

In Dr. Charles Goodall, president in 1708, we recognise an ardent supporter of the institution. He devoted himself to the study of records bearing on its history and function—a study which, if not a sufficient object for a life's pursuit, is at least imperative on all who are responsible for the preservation or improvement of the laws. 'Goodall on the College' is a valuable book of reference; but it appears that the author was not a mere pedantic archæologist. His general learning and practical merits as a physician are testified to by Sydenham, who, in a dedication, amongst other praises, calls him "*arte nemini secundus.*"

Looking further down the Roll, we come to a group of Fellows, of whom Dr. Henry Sampson may be taken as a representative. Dr. Henry Sampson fell on times when nonconforming principles were rife; having been ordained in early life, he obtained, as Fellow of Pembroke College, Cambridge, one of the richest rewards which the University yet has to give. The Fellows of Pembroke appointed him to the rectory of Framlingham, worth two thousand pounds a year. His scruples about uniformity caused him to resign the living and to study medicine; he became a successful practitioner, and an honoured Fellow of the College.

The name of Radcliffe is too prominent to be passed over in the most cursory review. His character was anomalous; Fellow of Lincoln College, Oxford, and M.P. for Buckingham in 1713, he was the earliest type we find recorded of the rough-mannered physician—a race which has found, like Radcliffe, its profit in surprising rather than in pleasing, and whose time, we hope, has passed away. There are anecdotes of his rudeness which swell the facetiæ of medical biographies. We are more concerned with the records of his vast benefactions for various purposes in Oxford; these will be specified in their place.

A curious sign of lingering remains of superstition where it was supposed to be extinct, is to be found in the life of Sir Richard Mannington, son of the Bishop of Chichester, who gained much credit for detecting the imposture of Ann Toft, the rabbit-breeder, after surgeons and lawyers had been baffled. The impression made upon the public mind by such a piece of jugglery is remarkable; and it is said that Queen Caroline, when Princess of Wales, was earnest in instigation of more searching inquiries. We may flatter ourselves now that a similar cheat would be thought unworthy of grave examination, and believe thereby that we have renounced the folly which still clung to the period of the Georges. Such, however, are the vagaries of credulity, that although contempt would probably meet the pretensions of a rabbit-breeder, we find ourselves often asked,

after a century and a half of further enlightenment, to argue calmly about the cropping up of similar superstitions—such, for instance, as necromancy in the form of spirit-rapping. Any one who thinks it worth while to look over old treatises on the occult sciences, and their adaptation to Platonic philosophy, will find the germs of all the quackeries which have in later times deluded or amused the public—Mesmerism, homœopathy, and others, even craniology. The mine from which these have been dug is by no means exhausted, and a little ingenuity might easily adapt much of the remaining rubbish to supply paying baits for the appetite of lovers of the marvellous.

We perceive that the history of the College is not destitute of its own little passage of rebellion; like our own and most other political constitutions in their progress of development, it had to pass through troublous times. These occurred in the presidency of Sir William Browne, whose life seems to be full of amusing anecdotes. At the beginning of the eighteenth century, the profession having expanded, and many Scotch physicians having repaired to London, the College found it politic to admit many persons who had not been educated in the English universities. Faithful, however, to their traditions of requiring preliminary education according to the standard of Oxford and Cambridge in all their Fellows, they admitted all who had not received those advantages into the class of Licentiates, and restricted the governing power to the Fellows, making a saving clause to admit a very limited number of such Licentiates as attained distinction into the governing body. In consequence of this, those men who had not chosen, or had not been in circumstances to procure the proper qualification for the Fellowship, caballed against those who had; they coveted the oil of other people's lamps. Unfortunately for themselves, they did not restrict their outbreak to a war of words; and an account, which would have been grotesque were it less disgraceful, is given of a riotous incursion into the presence of the comitia, of the insurgents being barred out, and of a bribe offered to a smith to break open the iron gates of the College in Warwick-lane. A lawsuit at length restored order to the agitated College, and established the right of the Fellows to govern according to their charter. Again we must refer to the manners of the period. It is probable that these "rebels" had not the excuse of being conversant with the histories of the English universities, but the time was then not very long passed since it was common for the newly-appointed wardens and heads of colleges at Oxford to obtain possession of their preferment by force or stratagem in the midst of tumult.

We are sorry to add that Sir William Browne was terrified into the resignation of his office, a defeat the more to be regretted as he has an honourable place in the list of benefactors to his university.

Among the list of College authorities we meet with a group of men whose names are prominent in all literary records of the times, giving and receiving lustre in their intercourse with great contemporaries—Lawrence, Brocklesby, Heberden, Warren, and others. All these were the friends of Johnson, his companions during life, and his attendants during his last illness. Macaulay, in a niggardly tone towards men of science, which too often blemishes his writings, gives the names of many who surrounded Johnson, such as Garrick, Goldsmith, &c., and even records that "Windham disposed his pillows;" but he disposes of the rest in one lump as "HIS physicians and surgeons." The surgeon, we may observe, was the celebrated Cruikshanks. It is to be regretted that Macaulay afterwards states the fact that they gave their aid gratuitously, as if it were a notable instance of professional liberality. We must here hazard a remark, not without caution, lest we should seem to hint at a desire to deprive the medical profession of their best possession—their large and willing charity, foregoing pecuniary claims to all who would be burthened by the payment. Yet we cannot but observe that the expectations of a large portion of the public exceed all reasonable bounds. Exemption from a just debt is claimed by many who would never dream of reciprocating such terms for any good offices which they might render in their own calling.



Having thus broken a lance with the great historian, we may suppose ourselves for the moment, as reviewers of Dr. Munk's work, to be champions in defence of the College of Physicians against all the world, and in that character repel an injustice done to the name of one of the Fellows who lived shortly after Lawrence and Heberden. The sarcasms which were heaped upon Lord Sidmouth on the subject of his origin, lose, it is true, a portion of their sting when referred to the bad habits of personal invective, the result of the furious party spirit of the times. Whilst the tongue was allowed unbounded licence, it was not to be expected that any well-grounded reproach of being lowly born would be repressed. The scorn, however, with which historians allude to the parentage of Lord Sidmouth could not lead future generations to suppose that his father, Dr. Addington, had been a man highly educated at Winchester and Oxford, that he had been the friend of the great Lord Chatham, and had been employed in many political negotiations. It matters little that the young Canning, sprung himself from the meanest of the people, should have tried to aid his patron's cause* by pasquinades, making game of Addington and Addington's relations; but it was more to be regretted in soberer times, on the occasion of Lord Sidmouth's death, that the same sort of language was uttered on the floor of the House of Commons by a nobleman whose fame is as high in literature as for administrative success—a man, moreover, noted for his liberal principles and generous feelings. Lord Sidmouth could not boast the blood of all the Howards; but his father was never in a position to permit the memory of the son to be taunted with the stigma of low birth. Something bearing on the same subject, though in a lighter vein, is suggested by meeting a little further down the Roll with the memoir of Sir George Baker. It calls to mind a flippant notice of him in Washington Irving's 'Life of Goldsmith,' which is quite unworthy of a literary man. He relates, "Miss Hornecks invited Goldsmith to meet Reynolds, Angelica Kauff-

* Macaulay's Life of Pitt.

man, Garrick, &c., at the house of a Dr. Baker, a friend of her mother's." It happened to be Sir George Baker, one of the most distinguished scholars as well as physicians of the day, Fellow of King's College, Cambridge, President of the College of Physicians, Physician to the King, and a baronet; whose name, kept duly in the shade by the little prefix "a," has honour done it by the happy chance of playing host to an actor, a second-rate female artist, and Miss Hornecks; and happier still, to shine in the borrowed lustre of being friend to Miss Hornecks's mother.

Passing by such trivialities, and approaching towards the close of the eighteenth century, we find in the College list names great among discoverers in natural philosophy. There was Young, who matured and established the Undulatory Theory of Light, which has now become the favourite hypothesis: he shared with Champollion the credit of deciphering the Hieratic inscriptions; and so various was his learning, both in literary and scientific subjects, that he went by the name of "Omniscient Young." Again, we find Wollaston, who preceded Frauenhofer in discovering the lines in the solar spectrum, which are now known by the name of Frauenhofer's lines. Mrs. Somerville regrets that he had not the courage of Young and Davy to enable him to press forward his discoveries. They were left to be developed by Wheatstone, Bunsen, and Kirchhoff, whose labours, aided by "a great improvement in the optical arrangements used," have had those wonderful results which promise to reveal the material of other worlds besides our own.

The last great name which we shall dwell upon is Baillie, a man whose labours formed an epoch in the progress of that branch of learning which it was the special object of the College to promote. Tracing briefly the steps by which medical philosophy rose above the ignorance of former times, we have seen Vesalius ascertaining structure by boldly examining the dead body; Harvey, using the same mode of investigation, revealing his own wonderful discovery; and we come at last to Baillie, still, by the same means, opening out the vast field of instruction to be found in examining the progress of disease and fatal change. It is with that course of study that the true science of medicine, as a practical art, may be said to have begun. Hitherto physicians had observed and argued, and still only guessed at truth. Since then they have observed and reasoned, and have proved it. Thus the oldest and the wisest have an unfailing means of self-education which they may continue to the last moment of their practice; and whoever does not value this—whoever, after anxious watching of some obscure case, noting the anomalies, seizing the remotest evidences, and finally arriving at a full conviction—stands at the "post-mortem" without the same breathless eagerness to see the truth, the same modest willingness to learn it as he ever did when the mysteries of disease were first displayed to him, may be a popular physician, but is no true philosopher. That he may be the first, and not the second, is no vain antithesis, but a melancholy fact—a fact in which lies the fatal germ of all that is to sink the profession, should such be its future fate, below the great position it has lately held.



It will be no consolation to those who deplore the event, that the public, when they have lost the powerful aid they might have had, have brought it on themselves. It may be an inevitable consequence of a forced state of luxurious civilization, that it weakens manly courage, and makes it hard to look upon unwelcome truths. There may be other reasons for the general feeling, but it seems certain that there is a growing preference of the aid of inferior knowledge, accompanied with flattering promises, to that of sound treatment based on full information of the fatal truth. People now would rather be deceived as children than be served like men. The same want of fortitude in the public mind, combined with an ignorant, and sometimes querulous, want of confidence in medical skill, has, no doubt, an evil influence on modes of treating cases which are understood, and are remediable. It is hard for the physician, who is called in, perhaps just not too late, to leave the favourite resort to excess of stimulants, and to take that other course which his experienced judgment tells him affords, in that particular case, the only chance to stop the havoc of disease; he knows that chance may fail, and he knows that all around are ready to impute to him the failure. It is very hard in such a crisis to the bold and self-forgetting, but it is very easy to pursue the fashionable mode of treatment, and when all is over to say that no risks have been run—all has been done that can be. It would be an ungracious task to press the moral bearing of this every-day occurrence, in which the faults of society and the profession act and react upon each other; but it may be asked, ought we to blame the public for its want of confidence, or the physician for not having taught it to respect him? There is but one hope for a better state of things—that is, in a system, whatever that might be, which would ensure that the leading rank in the profession should be filled by none but men strong in moral courage as well as deep in learning.

In closing this slight review of the Roll of the College of Physicians, a few facts collected from the history of the institution may interest the statistician.

The proportion in which the College has been connected with the English Universities is apparent from the statement that in the first two centuries after the incorporation one hundred and two Fellows of the College of Physicians had been also Fellows of Colleges in Oxford and Cambridge. In the third century—viz., from 1700 to 1800—there were but thirty-six. Seven Fellows were heads of colleges in the universities. The first Fellow who was raised to the rank of a Baronet was Sir Edmund Greaves;* he was followed by two more prior to the year 1700, and there were thirteen such creations between 1700 and 1800.

Nine of the Fellows have been members of Parliament, one of

* Wood, with one of his usual sneers, which for some reason or other he was particularly fond of bestowing on physicians, said of him, "at length a pretended baronet." He is, however, mentioned by Guillim, and the patent is dated Oxford, May 4th, 1645. Wood's antipathy to physicians possibly arose from a college feud, which was organized to oppose the institution of Sir William Clayton, M.D., to the wardenship of Merton. Mr. Weld, in his History of the Royal Society, errs in stating that Sir Hans Sloane was the first baronet.

whom, Dr. Goddard, was sole representative of the University of Oxford in 1652, and was appointed by Cromwell one of four to act, during his absence in Scotland, in all matters relating to grants and dispensations which required the Protector's assent.

It was at Dr. Goddard's lodgings, in Wood-street, Cheapside, that certain private meetings were held for philosophical inquiry; these meetings were composed of four Fellows of the College, besides Dr. Wilkins, afterwards Bishop of Chester; Mr. Foster, professor of anatomy at Gresham College; and Theodore Haak, a German; and to them may be attributed the foundation of the Royal Society. On the incorporation of the society, the first list of candidates, who were to supply vacancies as they occurred, was half composed of Fellows of the College. Dr. Croone was the first Registrar, and the first council contained four Fellows of the College of Physicians out of sixteen. On the second charter being granted to the Royal Society, the same proportion of Fellows of the College of Physicians were on the council.

Three Fellows of the College of Physicians have been presidents of the Royal Society. The benefactions of the Fellows of the College to the English Universities of Oxford and Cambridge have been numerous and important; to instance a few:

Linacre established professorships both at Oxford and Cambridge.

Caius enlarged Gonville Hall, and added fellowships and scholarships, with rich foundations.

Sir William Browne founded the Browne Medals at Cambridge, as well as a scholarship in the University.

Dr. Battie founded the University Scholarships with his name at Cambridge, and several other scholarships at King's College, of which he was Fellow.

Dr. Glynn also founded scholarships at King's College, Cambridge.

Dr. Radcliffe's rich endowments at Oxford are well known—the library, the infirmary, and fellowships.

Dr. Addenbroke founded a hospital at Cambridge.

Dr. Woodward left his museum of geology, and founded a Professorship of Geology at Cambridge.

To these it may be added that Lady Sadleir, the widow of Dr. Croone, founded seventeen algebraical lectureships in the University of Cambridge of 40*l.* and 60*l.* each. The mathematical students might do well to inquire when these lectures are given.

The few benefactions which now produce an independent income to the College have all been derived from Fellows, chiefly in the form of bequests. Linacre's property in Knight Rider-street has been already named; Harvey gave his patrimonial estate in Kent; Dr. Baldwin Hamey, jun., gave an estate in Essex of considerable value.

Lord Lumley and Dr. Caldwell united to leave small rent-charges* on their estates to found a professorship.

* It would be well for those who grant benefactions, to observe the inconvenience of making them in rent-charge; the difficulty which may attend the collection in future years is very serious, for if the original property is ever sold in divided portions, each of those portions becomes chargeable with a part of the rent-charge, according to its value, therefore the bequest has to be collected from a number of proprietors. Another objection depends on the variable value of the bequest, which remains absolutely the same sum, whilst the value of money changes, and the property which the rent-charge represented, increases in value.



Dr. Goulston also left a small rent-charge for a similar purpose.

Lady Sadleir, widow of Dr. Croone, left a small property to the College and the Royal Society conjointly, to found lectureships.

Dr. Baillie, together with his museum, left a sum adequate to keep it in repair.

The Marquis of Dorchester, an honorary Fellow, left the whole of his valuable library to the College.

We have perhaps done but scanty justice to the work before us by passing over, in the short review of its contents, many amusing anecdotes and curious facts, as well as by refraining to extract some striking passages of literary merit.

The Roll proceeds no further than the close of the eighteenth century; it leaves off at a period when we perceive the corporation carrying out with honest vigour the purpose of its foundation; it was powerful in usefulness and influence. At that time every young man at the beginning of his professional career, however brilliant may have been his honours at the University, however flattering his circumstances or strong his consciousness of power to succeed, felt his admission to the Fellowship of the College of Physicians to be an honour and a step forward in his social position; it was an auspicious moment to pause in the College history. We should be grieved to have to confess that it was the moment of its zenith, still more to have the painful task of telling of a period of decadence in after years! It is not our purpose either to scrutinize its present condition or to prophesy its future; for the latter we must hope; but a reasonable hope can rest on nothing but in holding to the same principles which produced three centuries of prosperity; and though admitting cautiously as well as liberally any modification which the changing spirit of the times may call for, in doing faithfully its proper work—viz., the work of making sound and good physicians, and gathering within its pale all who are eminent in learning and experience in the profession.

---

## Review II.

*A Practical Treatise on Phthisis Pulmonalis; embracing its Pathology, Causes, Symptoms, and Treatment.* By L. M. Lawson, M.D., Professor of Clinical Medicine in the University of Louisiana, &c. —*Cincinnati*, 1861.

The comprehensive nature of this work, as well as its logical arrangement, is well shown by the table of its contents. It is divided into four parts, and each of these into a certain number of chapters and sections. The pathology of the disease constitutes the first part, its etiology the second, and its semeiology and therapeutics the third and fourth.

The analysis of it as a whole, extending over 537 pages, comprising a well-arranged and useful index, we shall only partially attempt, the subject of phthisis having been so often and so recently brought under the notice of our readers. We shall comment chiefly, and that briefly, on those portions of it which are most novel, or which on other considerations appear to be most deserving of attention.

Dr. Lawson begins with a well-sustained proposition, that there is a predisposition to the disease in those who are subject to it, and that predisposition is, however obscure it may be, a morbid state the opposite to a normal healthy condition perpetuating itself.

In the first section—that on "the Physical Conformation"—he shows the independence of his views in not recognising any well-marked form of body distinctive of future phthisis. We quote the following remark, according as it does with our experience, and founded as we believe it to be in truth. After referring to contradictory statements, he proceeds:

"Each observer must be left to decide in accordance with what passes under his own immediate observation; and guided by this rule, I have long since reached the conclusion that there are no certain and infallible external indications of the tuberculous constitution. It is true certain inferences may be drawn from incomplete, irregular, or preternatural development of the organization; it may become a fair conclusion that in such systems premature decay, or the development of disease, acute or chronic, will more often supervene than in well-developed bodies, but, at the same time, it is impossible to know that such persons will become scrofulous or tubercular, or whether they may not fall victims to other forms of chronic disease. If we meet with a person exhibiting the conformation of the chest described by Fournet, *and we know that he comes of a tubercular family*, we might safely predict the occurrence of the same form of disease; but if we observe a similar condition of the thorax independent of a known hereditary taint, we would not be authorized in the present state of knowledge to declare such a person to possess a tuberculous constitution."

Further, he rejects the too commonly entertained idea that a contracted or ill-formed chest is, one or other, the accompaniment of phthisis. On the supposed marks of the tubercular constitution, he expresses doubt as to their reality, well observing:

"We must not always expect to find the full development of the external signs said to characterize this peculiar constitution, nor in their absence are we authorized to conclude that a predisposition to disease does not exist."

We attach importance to these preliminaries, both for the value of the remarks in themselves, opposed to popular views and to the views of many respected authors, too hastily, as we think, adopted; and, on another ground, as showing that excellent attribute of independent thought without which no science can make an advance.

Relative to the primary morbid changes which, Dr. Lawson is of opinion, precede the production of tubercle, we think, as we have stated in a recent number of this Review, when commenting on Dr. Edward Smith's work on consumption, that there is room for doubt, believing as we do that the existence of tubercle in its earliest stage



is hardly to be detected, and is not incompatible with such an amount of vigour and health as to excite no suspicion of the organic mischief that is latent. To this subject we shall have an opportunity of reverting under the head of Symptomatology.

Dr. Lawson's several sections on tubercle, comprising its physical character, varieties, histology, and chemistry, will well repay perusal. He meets it in all its obscurities and difficulties, satisfying us, if we had not been persuaded before, that notwithstanding all that has been made known by microscopical and chemical research, much remains to be ascertained before we can say what tubercle precisely is. Our author's own view is an eclectic one, that it owes its origin to exudation, and its increase in bulk to imperfect cell-growth; that it is a formation *sui generis*, is composed of a modified albuminous and fatty matter, and is destitute of phosphorus and sulphur. Of the two kinds, the grey and the yellow, he considers the latter as most deserving of the title of true tubercle, being the kind prone to undergo softening, giving rise to excavations; whilst the grey, he is of opinion, is subject to a different change—that of conversion into a cretaceous mass. This view of the last-mentioned tubercle we cannot but consider as belonging to the hypothetical class, and wanting the support of exact pathological evidence; he admits that occasionally it softens, much in the same manner as the yellow accretion.

On the condition of the blood in phthisis, the information afforded by Dr. Lawson, derived from his own researches and those of other pathologists, is hardly more satisfactory than that on tubercle. All the experiments hitherto made, of which the results have been published, have been on venous blood. According to him, its peculiarities are chiefly the following (that is, when the disease is fully established),—a deficiency of red corpuscles, a slight deficiency of fibrin, an increase of albumen, of white corpuscles, and probably of fats and salts—altogether indicative of a depraved state of the circulating fluid, and a low state of vitality.

Relative to the secretions, the information brought together is anything but satisfactory, owing not to any want of inquiry on the part of our author as to what has been done, but to the little accordance in the results of those pathologists who have given their attention to the subject. Neither the state of the bile nor of the urine appears to be materially modified by the disease, their character seeming more or less in accordance, when dilute, with the anæmic state of the system, and when otherwise than dilute, with a febrile or inflammatory exacerbation.

On the growth of tubercles, Dr. Lawson holds the opinion, that though they be, as he views them, an extra-vascular formation, they possess a low vitality, and are subject to laws which govern vital actions, cells being their epigenesis, granules their elements, and an exudation their initial blastema. He consequently rejects the idea, supported by some high authorities, that they consist of metamorphosed epithelia or of any form of retrograde morphology. And he assigns, we think, good reasons for his preference.

The obscure nature of tubercle is further well displayed by Dr. Lawson's remarks on the two kinds of these products—that which he designates the yellow, though not always yellow or of a distinctive colour, according to our experience, and the grey and granular, which, contrary to the opinion of many pathologists, he considers as essentially distinct. The difference between the two he places in a lower degree of vitality belonging to the yellow than the grey, and in the formation of the one (the grey) being attended by an inflammatory act, feeble, indeed, in degree, which is absent in the production of the other.

On the seat of tubercle and the mode of its deposit, Dr. Lawson gives the views of different authors. His own, as a fundamental portion of the theory of the disease, we shall quote, and the more willingly as it seems to us most in accordance with what is best known of the disease:

"In reviewing all the facts which have been developed, it seems to me sufficiently evident that the process of tubercular exudation or formation bears no direct relationship to inflammation. Nor is the evidence sufficient to prove, notwithstanding the high authority of Virchow and Schroeder Van der Kolk, that the process consists of a transformation of the epithelial cells into tubercle, or that they are in any sense connected with the formation of that substance. In relation to the analogy existing between inflammation and the tuberculizing process, the microscopic and chemical constitution of tubercle afford abundant evidence that it is not a product of a high degree of action, or, in other words, that it is not of inflammatory origin. For, notwithstanding the declaration of Dr. Sieveking, that he observed exudation-corpuscles to be present, they do not enter into the composition of tubercles, and therefore must be regarded as purely accidental. Indeed, making all due allowances for the constitutional influence, it must still be admitted that if inflammation were truly present, as the basis of the process, there would necessarily occur more definite signs of the existence of that morbid state than the presence of a few bodies bearing the form of exudation-corpuscles. The only conclusion, it seems to me, which can be deduced from the known facts is, that the exudation is a *specific* act, and the product a compound *sui generis;* and hence, that it is neither the legitimate result of inflammation nor congestion, and that it is not necessarily accompanied by either of these elementary lesions of circulation. The mode of deposit, therefore, in its elementary character, bears a closer relationship to glandular secretion than to any known action; but the whole process, as well as the resulting deposit, I regard as essentially specific, and therefore unlike all other actions and products." (p. 77.)

He further states:—

"It appears to be a fair inference that the tubercular material is secreted from the capillaries of the pulmonary artery. The relation of these vessels to the air-cells, and the chief deposits occurring in these structures, favours the belief that the pulmonary vessels furnish the morbid material; and if this supposition be true, it disproves the opinion that tubercle is simply a lesion of nutrition, for the nutritive function belongs essentially to the bronchial arteries. The function of the pulmonary artery is to convey venous blood to the air-vesicles; and as this variety of blood is not destined to perform nutritive acts, it becomes impossible to connect the physiological textural changes with the capillaries belonging to this system of vessels. And hence the deposits of tubercular matter must be regarded as a new act, and not a perversion of an ordinary function."



This statement, however, he qualifies, for he adds:—

"We are not authorized to conclude, however, that the capillary vessels of the bronchial arteries are incapable of depositing tubercular material; for the fact that the morbid deposits are met with in the bronchial glands, which are supplied with blood by these vessels, is conclusive that these arteries may furnish the material. It seems sufficiently evident, however, that the great mass of morbid material is received through the medium of the venous blood, and is thus eliminated by the pulmonic capillaries."

The chapter which relates to the changes that tubercular deposits undergo is marked by much ingenuity of reasoning, and is supported by minute clinical observation; and yet, from the very nature of the subject, it partakes more of the character of conjecture than of demonstration; and this indeed might be expected from the mere titles of the sections: 1. Absorption prior to Consolidation. 2. Absorption after Softening. 3. Contraction, or a Stationary Condition. 4. Softening with Elimination. 5. Cretaceous Transformation.

The chapter on the changes following the softening and elimination of tubercles, including those of the pulmonary tissue, the condition of the bronchi and that of the pleura, is an excellent example of descriptive pathology, brief, and yet exact; and the same commendatory remark applies to the chapter which follows it, on the distribution of tubercle. His conclusion as to locality, from a wide induction of observations, is, "that tubercular deposits are most frequent in the *right* lung; but the difference is too inconsiderable to render the observation of any material service either in diagnosis or treatment."

The chapter on the secondary and intercurrent lesions, such as pneumonia, pleurisy, bronchitis, emphysema, pulmonary œdema, pulmonary hæmorrhage, pulmonary gangrene, is written with critical discrimination. In some of his remarks, he seems to us to refine beyond the warrant of facts. He lays, we think, too little stress on inflammation in connexion with tubercles; indeed, in one or more passages, he seems to imply that tubercle and inflammation are antagonistic and in some way incompatible—a doctrine to which we must at least suspend our assent, especially where coupled with the bold conjecture that inflammatory action in tuberculosis may be a curative process.

The chapter on the tertiary lesions, those affecting the organs of circulation and digestion, and the condition of the fluids, the blood, lymph, and chyle, is a brief one; and the observations it contains are less precise than we should have expected, especially considering the importance he justly assigns the subject in relation to treatment. He expresses a decided opinion that the heart in phthisis is more prone to atrophy than to the opposite state. Our own observations accord best with those of Dr. Boyd and of Hasse, quoted by him, that this organ, under the influence of tuberculosis, and the obstructed pulmonary circulation the consequence of tuberculosis, is oftener heavier than of normal weight.

In his chapter on the varieties and forms of phthisis, setting aside other classifications, he reduces them all to two, the inflammatory and non-inflammatory. We shall not stop to express an opinion on this

matter, one that is so open to objection, is involved in so much difficulty from the essential obscurity of the disease in its complications, and which, in relation to treatment, we cannot consider of the first importance.

In the chapter on the nature of phthisis, he criticizes the principal modern theories which have been advanced on the subject, these no less than ten in number. We shall name them, as they well display how widely inquirers have differed in their views, and consequently, how great is the obscurity in which the disease, from this point of view, is enveloped. His enumeration of them is the following, and in the following order:—1. Impaired digestion. 2. Imperfect development of chyle. 3. Morbid states of the lymph. 4. Defective respiration. 5. Morbid states of the blood. 6. A specific poison. 7. Changes in the condition of the albumen and fibrin. 8. Retrograde morphology. 9. Derangement of the organic nervous system. 10. Inflammation. All these views, and certain others which have been formed from the time of Aristotle downwards, he considers unsatisfactory, as founded on no wide induction—on the substitution too often of effects for causes. Our prescribed limits will not allow us to follow him in his remarks on them. They are acute, and well deserving of a careful perusal. His own conclusions, which are at least sufficiently comprehensive, and which he considers as fairly deducible from the statements he has given, are the following:—

"1. The tuberculous element originates in the metamorphosis of the tissues.

"2. It seeks elimination through the lungs, and may continue to pass in certain quantities for an indefinite period, without inducing local deposits.

"3. When the morbid element reaches a certain degree of concentration, or when, by long-continued action, it produces a morbid effect on the lungs, a local deposit takes place.

"4. The first deposit is the elementary morbid substance known as the amorphous stroma; this is followed by the development of molecular granules and peculiar cells, which constitute tubercle.

"5. After the existence of solid tubercle for a given period it softens, and the *débris* seeks elimination through the bronchial tubes.

"6. The morbid action extends to the adjacent tissues, causes inflammation, softening, and disintegration, too often resulting in fatal disorganization.

"7. The perfect uniformity of tubercle throughout the body, in whatever tissue or organ deposited, exhibits strong evidence of the specific character of the disease, and that it could not originate from the ordinary derangements of nutrition.

"8. The chemical and histological character of tubercle favours the opinion that the whole process is specific in origin and development." (p. 179.)

Comprehensive as the preceding is, and consistent with the general phenomena of the disease in its various forms, we must view it still as an hypothesis; indeed, how otherwise can it be viewed, so long as the *materies morbi*, his specific substance, produced by a specific action, cannot, as he admits, be demonstrated, and is known, as he says, or inferred, as we would say, by its analogies and effects? As an hypothesis, it reminds us of portions of the history of astronomy and chemistry, of the cycles of Ptolemy and the phlogiston of Stahl, which, whilst they sufficiently explained or brought into accordance the known facts,



were unfounded in reality. As a provisional scheme, this of Dr. Lawson we think highly of, and the more so as it is well fitted to incite to further research, by which its fundamental truth or erroneousness can alone be established.

On the very important subject of the etiology of phthisis, we cannot do better than transcribe the author's introductory remarks, they are so just, so well expressed, and so informing.

"In attempting to estimate the influences which operate in the production of phthisis pulmonalis, we necessarily direct our attention to those causes and conditions which are natural or hereditary, and those which may be considered accidental or acquired. The concurrent opinions of the entire profession fully establish the fact that the tuberculous predisposition is capable of transmission from parent to offspring; nay, more than this, that in some examples the actual disease itself is thus communicated, tubercles having been formed in the fœtus *in utero*, and therefore strictly congenital. In a majority of cases, however, it appears to be only the *predisposition* which is transmitted, and the open disease becomes subsequently developed. The intensity of this predisposition, and the certainty of its development, are quite variable; in some examples the hereditary taint is so decided that, even under the most favourable circumstances, or at least without the application of any obvious exciting cause, the disease becomes fully developed; whilst in other instances the tendency to local disease is much less intense, and requires some of the usual exciting causes for its development. We are not permitted, however, in the present state of our knowledge, to assume that *all* cases are of hereditary origin; for examples are sufficiently numerous in which no *known* hereditary taint existed, while the development of the disease can be traced to some evident special cause. The causes of phthisis, therefore, are necessarily divisible into those which are natural or hereditary, and those which are accidental. But this statement requires greater precision, in order to bring clearly to view those conditions and agents which seem most likely to develop the disease, and hence we must take into consideration the predisposing and exciting causes. As already intimated, we are not prepared to assign an hereditary taint as the universal cause of phthisis; and when even this predisposition does belong to the constitution, it is often requisite to apply an exciting cause to bring the disease into activity. Again, a predisposing cause, if sufficiently intense and prolonged, may be competent, without any pre-existing natural tendency, to develop the disease.

"It is probable, also, that the tuberculous constitution may be congenital, while the ancestors were altogether free from that form of disease. That is, an imperfect organism may be transmitted from parent to offspring, which tends to the development of phthisis, while the parents were free from that disease, although exhibiting other defects." (p. 184.)

In the chapter on congenital predisposition to phthisis, he gives many valuable statistics, and arrives at the following conclusions:—1. That there is a greater frequency of transmission of the disease from mothers and grandmothers than from fathers and grandfathers; and further, that fathers probably transmit it more frequently to sons, and mothers more frequently to daughters. 2. That when an hereditary predisposition is transmitted by non-phthisical parents, it is not a transmission of a specific disease, but merely a weakened vitality, in which the ultimate affection is readily engendered.

In the chapter on internal causes, he lays it down as a principle, that when the tubercular diathesis prevails, these causes act more

speedily and with greater certainty than in a perfectly sound state of the system, so that in the hereditary class the influences operate merely as exciting causes, whilst in those not hereditarily predisposed to the malady, they act both as predisposing and exciting.

On the geography of phthisis—its proportional frequency in different regions of the globe—Dr. Lawson has collected much interesting information.

European countries appear to be its special habitat; generally throughout Europe, he estimates that the disease affects one in from every two hundred and fifty to three hundred persons living, and causes about one-sixth of the total mortality. In Asia, on the contrary, including Persia, Syria, China, India—indeed, wherever in that continent we have any reliable statistics to refer to—it is comparatively rare and little destructive. The same remark applies to those few regions of Africa which are best known, such as Egypt, Algeria, the Gold Coast. Respecting its degree of frequency in the southern hemisphere, the evidence hitherto collected is too scanty and contradictory to allow of any other conclusion than the probability that it is more common there than in the corresponding regions north of the equator. As to the vast country included once under the United States, it would appear from careful statistical research that phthisis progressively increases from the south to the north, gradually diminishing from Maine to Florida, being three times greater in the northern than in the southern divisions; and this, which is opposed to previously conceived notions, is the more remarkable, inasmuch as pneumonia is statistically shown to prevail more in the south than in the north; the seeming anomaly Dr. Lawson attributes to the predisposing influence of malaria in the former region.

As regards mere temperature, apart from various disturbing causes, the conclusion our author arrives at is in conformity to what he has stated under the geography of the disease—viz., that the two extremes of heat and cold, of an arctic and tropical climate, and of regions approaching in character to them, are nearly equally opposed to the production of tubercle. His explanation is founded on the supposition that extreme heat and extreme cold act similarly, the one by diminishing the transformation of tissues by the protecting agency of carbon; the consumption of carbon in respiration being less in a warm climate than in a cold climate; the other by the depressing effect of intense cold retarding, as he supposes, organic movements. We will not stop to criticize this hypothesis, which, we must confess, to us appears far from satisfactory. Were we to speculate on the subject, we should be disposed to adopt one part of his inference and to reject the other, and attribute the effect of a very cold dry air, such as that of the Arctic regions, to its depurating influence, connected with high vital and healthy action, and a rapid disintegration of tissue, such as under the circumstances seems essential to sustain animal heat and life itself.

Relative to atmospheric moisture and dryness, he concludes from his statistics that the former, *per se*, is an unimportant agent in the production of consumption; but that extreme dryness, such as that of



Upper Egypt, of New Mexico, and Arabia, has a salutary preventive influence. He extends this latter inference to the rare atmosphere of mountainous regions. We need hardly remark, that in accordance with common consent, he holds atmospheric impurities to have a prejudicial influence and to conduce to tuberculosis, with the reservation, however, that the presumed tendency is exaggerated, and that mere increase of carbonic acid in an ill-ventilated room does not clearly produce the consumptive or scrofulous diathesis.

On the question of temperaments as predisposing to consumption, he rejects a commonly-received opinion that the lymphatic temperament ranks foremost; it is the feeble constitution, whatever the temperament may be, which, according to his experience, is most subject to the disease.

Age he considers merely in the light of a predisposing cause; an inference which, as it seems to us, hardly accords with the preceding deduction, inasmuch as the disease affects most those in the vigorous period of life, from puberty upwards, and especially from the age of twenty and twenty-five to thirty-five years.

On the disputed question, as to the relative frequency of phthisis in the two sexes, he is of opinion that it is definitely settled that the preponderance is to females. The various statistical results which he has collected bear him out in this conclusion. He attributes the difference not so much to a greater natural predisposition in women to the disease, as to their in-door occupations and sedentary habits.

On occupations in relation to consumption, Dr. Lawson makes many interesting remarks, which are supported by statistical results. The *general* elements which run through most, if not all, the unfavourable occupations, he holds to be the following—"The inhalation of irritating vapours, constrained positions, want of exercise, impure air, deficient light, innutritious food, mental depression;" and the last, mental depression, of all bad influences most. Some other elements, he is of opinion, act chiefly on the predisposed, such as the inhalation of irritating substances. No professions, he thinks, afford actual protection from the disease; those supposed to do so, affording immunity only in degree, such as that of butchers, coal-miners, fishmongers, tanners.

The subject of ingestion Dr. Lawson treats with his usual caution. Starting with the question, whether the disease can be transmitted in the nurse's milk, he comes to the conclusion that there is a want of scientific evidence to establish the fact of such a transmission, as there is equally regarding the influence of the milk of diseased cows. Nevertheless, he points out the danger to which an infant is exposed from the use of the milk of an unhealthy nurse or of a distempered cow; the mother's milk being the proper food of the child, accompanied with the mother's loving care. Extending the inquiry as to diet generally of the different races of men in different climates, he finds insurmountable difficulties in his way inferentially considered. The only inference he can arrive at is, that "diet occupies a much lower position as a cause of tuberculosis than has been usually assigned to it"—that is,

in creating the essential diathesis; but that where that diathesis pre-exists, then, *cæteris paribus*, a poor diet will favour the development of the disease, especially when associated with impure air and mental depression.

As to alcoholic drinks, the conclusion which he comes to after careful inquiry is—he states it as a general law—

"That while persons addicted to the use of ardent spirits have an abundant supply of nutritious food, the appetite and digestion remaining good, there will be but little danger of the development of phthisis; and that the evil effects arising from the intemperate use of ardent spirits are not manifested in the production of tubercle, but that their morbid effects are witnessed in the development of functional and organic diseases of the stomach, liver, kidneys, and brain. When, however, intemperance is conjoined to scanty food, ill-ventilated habitations, exposure to all the incidental evils of want and poverty, tuberculosis may readily be developed in those predisposed to that form of disease."

His conclusion regarding the influence of impure water is very similar to the preceding—viz., "that various impurities may be capable of deranging the stomach, and will therefore prove injurious to those predisposed to phthisis."

In the chapter on the "Pathological inducing Causes of Phthisis," he treats of the influence of pneumonia, pleurisy, pulmonary congestion, pulmonary hæmorrhage, of influenza, pertussis, asthma, and typhoid disease. The subject he admits is full of difficulties. Some of these diseases, he thinks, favour the development of tubercles, such as low pneumonia and typhus; and that others do little more than promote its outbreak when there is a pre-existing diathesis. Even in the instances of pneumonia and typhoid disease when apparently acting, as he presumes, we should not forget that not only the diathesis may be present, but, as we believe, even tubercles may be latent in their earliest stage.

Malaria he views as antagonistic to consumption, and as decidedly retarding or preventing the appearance of the disease. The facts he brings to bear on this disputed question are numerous, and to our minds convincing.

On the influence of eruptive fevers, of secondary syphilis, of diabetes, gout, rheumatism, cancer, of diseases of the heart, not omitting the question of the influence of pregnancy, Dr. Lawson exercises his critical analysis with great judgment, oftener expressing doubt than conviction, and when admitting their action, commonly qualifying the mode of it, as favouring, as conducing to the development of the disease, not creating its diathesis. His remarks on the subject are very deserving of careful perusal *in extenso*. Of the diseases which have most influence in producing consumption, the diathesis, as he supposes, not pre-existing, he ranks secondary syphilis highest. Diabetes he views as having an inducing tendency, by its debilitating influence; and accordingly it is remarkable for not following, but always preceding, phthisis. Of the influence of pregnancy, and of the puerperal state, he writes with qualifications. Under favourable hygienic conditions, he is of opinion that the growth of tubercles in their early stage is



arrested by pregnancy; but that in their advanced and softened state the progress of the disease is accelerated, and this by lactation as well as by gestation. Lastly, regarding gout and cardiac disease, and certain other ailments supposed to exercise an influence favourable or unfavourable on tuberculosis, he expresses his opinion mostly with reserve for want of sufficient data. Regarding gout he remarks, that as tubercular persons are not prone to gout, so gouty persons cannot have a phthisical constitution. Cancer, he is inclined to think, is antagonistic of tubercle, and that of diseases of the heart, cyanosis may be in the same relation; whilst ordinary diseases of the heart, according to the statistics, are rarely associated with consumption.

Dr. Lawson concludes his chapter on the etiology of consumption with the remark, that "we have much to learn in relation to the affinities and antagonisms of phthisis and other forms of disease;" from his point of view, tubercle is a substance *sui generis*, possessed of specific properties.

On the semeiology of phthisis our author is very elaborate, and all his observations are deserving of respectful attention. Commencing with the disease in its chronic form, he recognises four stages—the precursory, the stage of tubercular deposits, that of softening, and that of excavation. His remarks on the symptomatology of these several stages extend over seventy-eight pages. The following is his brief *résumé* of the subject, restricted to the most prominent features, in the order of their relative importance:

"1. Precursory Stage. *Symptoms.*—Diminution of strength and weight (often slight); lowered calorific power; chills and febricula; slightly impaired vascular action; disease of the fauces and tonsils; occasional slight, nearly dry cough; occasional hæmorrhage, which may become copious.

"*Physical Signs.*—Slight restriction of movement, overcome by forcible inspiration; diminished resonance; weak and jerking respiration.

"2. Stage of Consolidation. *Symptoms.*—Increase of all the preceding general symptoms, except hæmorrhage, which is often more frequent, but less copious, than in the first.

"*Physical Signs.*—Diminished and partial expansion; depression; dulness on percussion; feeble, harsh, blowing, or bronchial respiration; intensified expiratory sound; jerking respiration; dry crackling; sibilant rhonchus; tubercular crepitus.

"3. Stage of Softening. *Symptoms.*—The constitutional symptoms all rapidly increase.

"*Physical Signs.*—Humid crackling; increase of sputa.

"4. Stage of Cavities. *Symptoms.*—The constitutional symptoms become greatly aggravated.

"*Physical Signs.*—Cavernous rhonchus; respiration and cough; pectoriloquy; purulent sputa." (p. 380.)

He well remarks, that the facility with which the diagnosis of phthisis may be made depends greatly on the stage; thus few (he says)

"Would mistake the stage of excavation, while a still smaller number would detect the disease in its earliest manifestations."

And further on he observes:

"If the physical signs are fully developed, the diagnosis can at once be safely made; but in the absence of clearly-defined signs, what class of general symptoms afford evidence of tuberculosis? This," he continues, "is a difficult question to answer; nevertheless, the experienced practitioner in whom the *tactus eruditus* is well developed may often detect the existence of phthisis when the physical signs are indecisive. But this will not avail the inexperienced physician; and the question recurs, what amount of general and local symptoms, unaided by decisive physical signs, justify the diagnosis of phthisis? I would answer the question thus: if the history reveals an hereditary taint, and the present symptoms show gradual loss of weight, a persistent non-catarrhal cough, sputa (purulent or not), with more or less hæmoptysis—the condition having persisted for at least three months—I would not hesitate to diagnosticate phthisis, although the physical signs might be negative. It must be remarked, however, that obscure cases will often arise in which all classes of phenomena are too indefinite to admit of positive and unconditional conclusions. In all such examples the only practicable course is to give due attention to the history of the case, analyse carefully all the symptoms, present and past, note carefully the results of auscultation and percussion; and then, as a matter of judgment, decide in the most enlightened manner possible, according to the probabilities of the case, or as the weight of testimony may incline, in favour of or against phthisis. With this kind of cautious and philosophical investigation, the enlightened physician will seldom fall into serious error." (p. 388.)

We have expressed already the doubts we entertain respecting the symptomatology of the precursory stage, as defined by Dr. Lawson; and we must confess that these doubts have been rather strengthened than removed by the fuller account of it given by our author. And may we not refer to the extracts we have just given in support of our scepticism? At the same time, we cannot but appreciate Dr. Lawson's attempt to diagnosticate this early and most important stage, and to express our opinion that his description of it is deserving of attention—as, indeed, is his clear and very satisfactory account of the other stages, the symptoms and physical signs of which *commonly* are so much less ambiguous. We lay stress on the word "commonly," inasmuch as even when tubercles have formed, provided they are not numerous, nor superficially situated, they may, we are persuaded, escape detection so far as physical signs are concerned, and have (as already stated) no appreciable effect on the general health. More than this, we believe that the softening of tubercle, under the same circumstances, may take place without being discovered or even suspected.

The duration of phthisis—that is, of the disease in its chronic form—he estimates to be from nine months to three years, making the calculation from the beginning of the stage of tubercular deposits; "the variable character and manifestations," he remarks, "of the precursory stage being such that no computation of its length can be more than conjectural."

From the chronic disease, the main subject of his work, he passes on to inflammatory phthisis, including the acute form of tuberculosis, owing its intensity and rapidity of progress to the quantity of tubercular matter deposited, and as complicated and accelerated by pneumonia, bronchitis, and pleurisy.



This portion of the work is least elaborated, and least marked by original observation. It needs not special notice in the way of analysis. The only remarks we shall offer are, that we are not so fully satisfied as is our author that the grey miliary tubercle is the result of inflammation, or that laryngeal phthisis is a primary disease, and not commonly the sequela or epiphenomenon of pulmonary tuberculosis.

Dr. Lawson, in introducing that part of his work which treats of the therapeutics of phthisis, justly censures the want of discrimination displayed by certain practitioners, who prescribe for all stages of the disease alike, trusting to some imagined panacea—satisfied with giving cod-liver oil from the beginning to the end of the malady. He, of course, recommends a treatment varying with the stage—the four stages already mentioned, with the addition of a fifth, the stage of complications.

In the first stage, which he views as a state of lowered vitality, he trusts chiefly to hygienic measures, to the due regulation of the exercise, to diet, clothing, change of climate, not omitting, in certain cases, a general tonic course of medication. In a hygienic point of view, he deprecates the excessive use of tea and coffee, and the abuse of tobacco. In relation to climate, he thinks one that is warm, dry, and free from malaria should have the preference, in the instances of northern patients, such a climate being commonly most marked for the infrequency of the disease amongst its native inhabitants; whilst for southern invalids he is of opinion that a change to a northern climate in summer is best, on account of its invigorating influence. When medical treatment is needed as an auxiliary and of the tonic kind—other being rarely applicable—he recommends preparations of iron, cod-liver oil, and alcoholic stimulants, these varied, as to kind, according to circumstances, and restricted more or less according to the period of the stage.

His comments on hygiene, climate, medication are always judicious, and mark the experienced, accomplished, and discriminating physician. His attention is not confined to the constitutional symptoms; it is extended to the local, especially of the throat, to which he attaches much importance in the earliest stage. Nitrate of silver is his chief remedial means for this ailment, applied to the affected parts; and if the tonsils be diseased, he recommends their excision.

The stage of tubercular deposits he divides into three periods—that of the deposit in its solid state, that of its softening, and that of excavation—each needing its special treatment. The treatment in the first of these conditions he considers most difficult, on account of the different phases of morbid action, general and local, to which it is subject: on one side, he thinks there may be a hope of retrograde action; on the other side, the certainty of softening after the attainments of a certain point. The indications which he lays down for the treatment of tubercular deposits are—

"First, to suspend the constitutional disease, and render the tubercular deposits inert; or, if the disease be gone too far to admit of the tubercles being absorbed or rendered inert, the second indication is to *limit* the morbid action, and keep it within curable bounds."

We raise a sigh in transcribing this short paragraph; well may the author speak of the arduousness of the attempt. For the means which he proposes to carry out his indications we must refer to the work itself, in which the subject is at least ingeniously reasoned. What he most trusts to is climate, with hygienic influences; and as medical agents cod-liver oil, and preparations of iron and quinine, the last in conjunction with other nerve-tonics and alcoholic drinks. His remarks on this medication and on hygienic treatment, comprising diet, clothing, exercise, conditions of the atmosphere, appear to us judicious. Our only doubt is, that he refines and discriminates too much—i.e., beyond the limits of well-established facts. This our criticism more especially applies to the means recommended for the elimination of the tubercular matter when liquid, as he infers it to be, when first exuded; to be carried off through the depurating organs of the skin, the liver, and kidneys; and next, for the removal of it by absorption when solid; the recognition of both which even our author, as we have seen, admits to be difficult.

On the treatment proposed for the other stages of the disease, that of softening, that of cavities, that of incidental symptoms, of complications, of acute and inflammatory phthisis, followed by special questions as to medication, including the special consideration of climate, our restricted limits compel us to be silent, except so far as to say that each of these sections is deserving of, and will repay, a careful perusal. Would that we could add, that we can adopt his remedial suggestions even with the moderate confidence with which they have been given by him. We are checked by the terrible fatality of the disease, and the doubt whether, though certainly capable of alleviation, it is ever, or if ever, completely curable.

We would specially recommend attention to Dr. Lawson's observations on the climate of different regions of America in relation to phthisis, and to his very judicious remarks on the relation of pregnancy to tuberculosis, and on the question of sea voyages. In the consideration of the last-mentioned, he very properly throws out of account the experience obtained in ships of war and the commercial marine, the condition of sailors, as of soldiers, being such as specially to promote the production of tubercles; and consequently the degree of prevalency of tuberculosis at any station amongst the troops there serving, or in the crews of ships, is no just criterion of the rate at which the native inhabitants suffer.

The last part of Dr. Lawson's work is entitled "*Prognosis—Conclusion.*" We shall make some extracts from this portion. He says:

"In accordance with my own observations, I am fully satisfied that in the favourable class of cases and with judicious treatment, a fair proportion may recover; and further than this, I am equally assured that in examples presenting even more unfavourable elements of prognosis, a smaller but still encouraging number may secure either temporary suspension of disease, or even permanent relief."

The conditions which justify a favourable prognosis he states to be the following:



"1. When the tubercles are limited to one lung, are not very extensive, and have not been associated with inflammation, either as a sequence or an inducing cause.

"2. The general health remaining in a fair condition, without rapid emaciation, fever, or derangement of digestion.

"3. A hereditary tendency to phthisis being slight or entirely absent.

"4. The patient possessing naturally a good constitution with a sanguineous or nervo-sanguineous temperament.

"5. The occupation being favourable, or at least not of a character to induce phthisis, or the patient being in a condition to make a change to a more suitable business.

"6. The patient having confidence in his medical attendant, and a willingness to submit to treatment, and the ability to avail himself of all incidental means and conditions capable of favouring his recovery, including a change of climate.

"7. A cheerful and hopeful mental constitution, and a desire to contribute his share to the successful treatment."

The unfavourable elements, according to him, are the following:

"1. When tubercles occupy both lungs to a considerable extent, or involve a large portion of one.

"2. When the disease has advanced to the stage of softening, with extensive disorganization of the pulmonary structures.

"3. The general health being greatly impaired, as shown by the existence of extensive emaciation, deranged digestion, hectic fever, and night-sweats.

"4. A decided hereditary tendency to phthisis, and especially if received by a son from a father, or a daughter from a mother.

"5. A naturally feeble constitution, with a phlegmatic or bilious temperament.

"6. The occupation being unfavourable, and the patient not able or willing to make the proper change.

"7. The patient being of a fickle disposition, wanting in confidence and perseverance in medical treatment, and unable or unwilling to secure the advantages of a change of climate and other incidental means of relief.

"8. A desponding and gloomy cast of mind, with a presentiment of a fatal issue." (p. 548.)

In opposition to his sanguine hopes of favourable results, of many recoveries under the first class of conditions, and of not a few under the second, he feelingly and eloquently writes:

"But, unfortunately, a large (perhaps the larger) number, at least in this country, do not seek reliable aid until they have passed the period of cure, or even of palliation. Our country abounds with designing charlatans, who falsely proclaim their ability to cure consumption with certainty and facility, and the press teems with alluring advertisements and inspiring certificates, proclaiming the discovery of specifics before whose magic power disease recedes as the night before the rising sun. And pale victims crowd these halls of false promises and heartless deceptions, eagerly grasping the gilded bubbles; but, alas! the dream is not realized, and the deluded victim finds relief in his narrow house, while the heartless mountebank goes on dispensing false promises and reaping a golden harvest. What a retribution must come upon the deceiver who thus makes merchandize of human life! and scarcely less is the responsibility of those who, from reprehensible design or mistaken philanthropy, lend their names to certificates in relation to subjects of which they have no competent knowledge. Let prudent men, and public functionaries generally, whose influences are too often surreptitiously obtained, ponder well these

terrible truths, and act as wisdom, justice, and humanity dictate. Finally, when these palpable evils shall have been abated, and patients learn to seek the aid of enlightened physicians during a curable stage of disease, the proportion of recoveries will be largely augmented, and phthisis will no longer be regarded as the opprobrium of our profession." (p. 549.)

In parting from our author, though we cannot enter into all his hopeful views of the cure of phthisis, yet we can most willingly express the satisfaction we have had in the study of his work: our analysis of it, imperfect as it is, would not otherwise have been so lengthened. No subject in medical science has been more productive of monographs of high ability than this disease—of monographs which have become classical. We have some confidence that this work will rank amongst them. For acuteness of observation, for sober discrimination and sound judgment, and fair criticism of the writings of others, and especially of contemporaries, and for the wide knowledge which it displays of the literature of his subject, we know few books superior to it. We bestow our praise the more readily, our author being an American; yet though an American of Anglo-Saxon race, as his name implies, and one who we trust will, with all his right-minded countrymen, still cherish a love of the stock from which he has sprung, abhorrent of the vulgar clamour sadly now prevailing against England, as if the American States, whether united or separated, Federal or Confederate, had not with our country a common interest, apart from the community of blood, that of language, of literature, and of laws.

---

## Review III.

*On some of the more Important Diseases of the Army; with Contributions to Pathology.* By John Davy, M.D., F.R.S. Lond. and Edinb., and Inspector-General of Army Hospitals.—*London*, 1862. pp. 438.

Two classes of men, if not absolutely opposed to each other, at least strongly discriminated in their mental characteristics, stand prominently out in the cultivation of medical science; the one eager, ingenious, and speculative—the other cautious, sober, and scrupulous. In some few the qualities that form these descriptions of intellect are found in abounding measure and in rare and happy combination; but in most men, even of superior endowments, one class of mental qualifications predominates over the other. We could not do without either of them: one class is needed to urge on our progress, the other to assure us of its soundness; and if we follow the former in their speculations with most interest, we certainly rest in the views of the latter with the feeling of greatest security. It is to the latter class of intellect that we would be disposed to refer the author of the valuable work of which we propose at present to offer some account.

Nothing can exceed the scrupulous exactness of Dr. Davy's statement of matters of fact, while his freedom from anything approaching



to dogmatism or undue zeal for a preconceived opinion, and the cautious modesty with which his deductions are offered, are equally remarkable and praiseworthy. We are constrained, however, to mention, that suggestions for the improvement of strictly medical practice, and even the remarks on general hygiene, are much less full and explicit than we should have liked to receive from one whose high standing, long experience, and previous contributions to science would have led us to expect. The resolute determination of the author, moreover, to limit himself to his own personal experience has prevented him from entering fully into some subjects which we should have been happy had he discussed at more length.

Dr. Davy has lived and served during the times when heroic practice was the order of the day. Are we altogether wrong in imagining that the erroneousness of some of the views on which that practice was founded, the extravagant length to which it was carried, and the indiscriminateness of its application, have produced a painful reaction in his mind, and led him to adopt somewhat desponding views as to the future progress of his art? If it be so, we can, to a certain extent, sympathize with him; but the feeling may go too far, and is, we believe, essentially unfounded: it is a feeling depressing in the highest degree to a good man, or to an earnest votary of his profession; while to an indolent or unconscientious practitioner it is productive of consequences still more injurious, leading him to indifference regarding the remedial measures he ought to pursue, seeing that, do what he may, things will take their own course, either to recovery or death, influenced little or not at all by any procedure he may adopt. Now, without going very deeply into the controversy, keenly agitated lately and even yet by no means composed, regarding the merits or demerits of the depleting practice which held sway during the earlier part of Dr. Davy's professional life, we think he might, even in his own statistics, have found proof that it was not so radically and universally injurious as its opponents now allege, and as he himself, judging from the tenour of some of his remarks, is inclined to believe.

His statistics of pneumonia (if we read them aright) give an average mortality in round numbers of about 1 in 23. This result compares by no means unfavourably with the results obtained in more modern times from the expectant practice, as fully carried out by Dietl and in the homœopathic hospitals, where we have no reason for doubting that the general hygienic regulation of the patients is minutely and skilfully attended to. Now we are perfectly aware of the fallacies that may arise from such comparisons as this: we have no wish to strain our facts or our reasoning, but if the mortality of the military and of the *expectant* hospitals be equal, and in fact the balance is in favour of the former, it is proved demonstratively that the military practice was not lethal, indeed, not in any degree injurious. And we certainly are entitled to regard it as improbable that remedies so violent and disturbing to the processes of nature as were ordinarily employed at that time should have failed to produce very mischievous consequences indeed, had there not been something in the character of the morbid

process going on *then* which we never or very rarely see now. Nor does a supposition of this kind involve the apparent contradiction, or at least very serious difficulty, that Dr. Davy seeks to deduce from it. He says—"The average of life *now* is admitted to be greater than in preceding ages; how remarkable this would be were it associated with a diminished *vis vitæ*." The maintenance of the opinion we have stated above does not necessitate any such contradictory assumption; all that is required is to believe that the morbific influences to which mankind are now exposed (of whose nature Dr. Davy most strongly affirms our perfect ignorance, whilst of their existence and potency as manifested in their effects no doubt can be entertained) produce a pathological condition different from what they did in former times, and of a more asthenic character. And when we consider the stress that our older writers lay on what they call the epidemic constitution of the atmosphere, the accounts they give of what they describe as typhoid pneumonias, and the constant and anxious reference of all—Sydenham especially—to the importance of determining the varying character of the same disease from year to year, or from one series of years to another, we shall see that this view is no afterthought devised to escape from a present difficulty, but simply the application of an old opinion held by the best and soundest observers in our profession, and supported by the strongest analogy. It must not be supposed from these remarks that we seek to apologize for the unjustifiable and injurious extent to which depletion was carried during the period we refer to; we do not seek to deny or extenuate the mischief resulting from it, nor have we any doubt that the prevalence of erroneous or defective or premature medical theories have had a share in causing the application of this practice to cases for which it was unsuited, and in maintaining it after it should have been abandoned; but when Dr. Davy intimates his opinion that this is the sole account of the altered practice of the present day, we cannot help thinking that he has fallen into an error, and this error has given a tone of despondency to his remarks on the treatment of disease which we are sorry to meet with.

There can be no doubt that very exaggerated views at one time prevailed of the power of mere medication. There can be as little doubt that these views rested upon a pathology unsound and erroneous, inasmuch as it took no account of the restorative powers of nature; but juster views now prevail, and are held not only by a few enlightened men, but by the mass of the medical profession; and considering the tendency of the human mind to pass from one extreme to its opposite, it is only what we might reasonably expect, that opinions of a nature greatly too depreciatory of the usefulness of medical practice should be expressed sometimes by the more thoughtful section of the non-professional public, as well as by a host of frivolous and scoffing pamphleteers.

To proceed with our notice of Dr. Davy's work. After an introductory chapter containing remarks on the average weight of different organs, their colour, consistence, and some points not decisively ascertained, such as the temperature of the body after death, the condition



of the blood after death, &c., which, from Dr. Davy's exactness and caution, we strongly recommend to the study of all engaged in pathological researches, he proceeds to the consideration of fevers, intermittent, remittent, common continued, and yellow. Typhus he excludes, as being a disease of climates colder than those in which his professional life has been spent. All these forms of fever Dr. Davy is disposed to regard rather as varieties graduating into one another, and that often by degrees not very definitely marked, than as distinct species. So far as our present knowledge extends, we are inclined to agree with Dr. Davy, but with him we would hesitate before committing ourselves to an absolute opinion, for however painful to the mind a state of doubt may be, it is safer and more philosophical to admit the uncertainty of opinions rather than prematurely to regard them as established. The affinities and convertibility of febrile diseases is a most interesting subject, and one that perhaps has not been sufficiently studied. We ourselves have, among others, notes of a case of clearly-marked influenza, in which, during the convalescence of the patient, first, two of her relations, and then several members of a neighbouring family (the only other in the hamlet), became successively affected with ordinary continued fever. A female attendant, who had come from some distance, sickened, and was sent home, where she died with the usual symptoms of malignant typhus. Several members of her household had the disease after her death, one of them recovering with great difficulty. Dr. Davy's observations on the etiology, pathology, and treatment of fever lead to conclusions almost entirely negative; he regards it as impossible to connect, as cause and effect, the lesions discovered after death with the symptoms exhibited during life, and while evidently leaning to the view we mentioned above, he very candidly admits that "there are not wanting arguments in favour of a certain distinctness of species;" which arguments he finds especially in the habitats of different fevers, and the distinctions observed in their sequelæ. One important remark coming from so careful and experienced an observer (though still of a negative character) is, that there are on record no observations which warrant the opinion that the fluids are primarily concerned, and that his observations on the blood-corpuscles in yellow fever failed to discover any deviation from their normal appearance at whatever stage of the disease they were examined.

On the important and mysterious subject of malaria, Dr. Davy's conclusions are still almost entirely negative. He considers an elevated temperature as the only condition that can be justly regarded as uniform, or standing in the relation of cause and effect; a low temperature favouring the production of typhus, a higher the appearance of intermittents, and a higher still, continued, remittent, and yellow fever. But even this relation, he says, is only general, not precise or regular. From a table of fever cases in the Ionian Islands classed per mensem, it appears that whilst the total number was greatest in the hottest month (July), intermittents were most numerous in April, continued fevers in July, and remittents in August. Hence, something else besides

a high temperature is required for the production, especially of fevers of a remittent type, this something, cognizable only by its effects, has been called in modern times malaria. Of this mysterious agent, whose presence and efficiency we are compelled to assume, we know absolutely nothing, and there are difficulties and anomalies apparently insoluble in all that relates to its production. Among these are the extreme irregularity and capriciousness of its appearance, or at least of the diseases ascribed to its operation; whole districts in the West Indies, in Ceylon, and in the Ionian Islands being sometimes decimated by remittent fever for months, and then its ravages ceasing without any appreciable climatic or other external conditions having preceded or accompanied its origin and abatement. The prevalence of agues and remittents in the Pontine Marshes is notorious. In the south-west coast of Ceylon, where the ground is similar and climatic conditions favourable to the production of malaria, its effects are scarcely felt. Certain districts where vegetable exuviæ are rapidly and abundantly undergoing decomposition are free from malaria fever, while it prevails in the hill districts of Zante, in the little island of Meganisi, and in the still smaller one of Vido, where there is little moisture, the soil is extremely dry, and vegetation very scanty, the two Ionian Islands referred to being little else than rocks. The origin, too, of malarious fevers limited to circumscribed spots, with the exemption of others in all respects similarly circumstanced, as in one of the rooms of the barracks in Vido, where a large proportion of the soldiers were attacked, whilst the occupants of another room, separated from the former only by a narrow passage, remained free from disease, increases our difficulty in arriving at positive conclusions on the subject of malaria.*

From this statement of facts, Dr. Davy deduces the following conclusions—viz., that we are entirely ignorant of the nature of malaria; that the causes are independent of luxuriant vegetation, or of the decomposition of vegetable matter; that they cannot be referred to the action of the solar rays on moisture, superficial or underground, and that they are independent of the intermixture of fresh and salt water, or the alternate inundation and exposure of muddy surfaces. Our investigations respecting malaria must begin with an admission of entire ignorance. That it is a substance *sui generis* Dr. Davy seems to have no doubt; it may possess properties peculiar to itself, and to discover these, new instruments and methods of research may be required. Could processes analogous to those by which iodine and bromine were discovered in the ocean be brought as easily to bear on the mass of aerial fluid that surrounds us, new substances might possibly be discovered in it, for doubtless it contains in amount, however minute, a portion of everything volatile. And the matter of blight wafted by the winds, the spray of the sea, carried inland for miles, and showers of dust falling over a considerable extent of surface, give credibility to the view that solid bodies exist in it in a state of extremely minute subdivision. One conjecture Dr. Davy throws out after the remarks we have thus endeavoured to condense, that there are various species of malaria, a notion, he says, countenanced by the analogies of nature and the character of epidemic diseases, resulting probably from atmospheric influences. While thus strongly affirming our utter ignorance of the malarious poison, Dr. Davy insists on the lessons taught by a dear-bought experience as to the best means of escaping its effects. These may be summarized under the heads of exposure, diet, and clothing. It seems to admit of no doubt that the noxious influence is by far most potent when the sun is below the horizon. On this head Dr. Davy's facts are clear and unequivocal, and in unison with all we know on the subject; hence the great importance of never sleeping in the open air, and of not imposing upon troops nocturnal duty except when it is rendered unavoidable by an imperious military necessity. Hence, also, the importance of so constructing the sleeping apartments of soldiers that they shall not be under the temptation to escape from an over-crowded offensive room, by exposing themselves to the even more pestilential influence of the night air, and that probably while bedewed with perspiration. On the subject of clothing Dr. Davy is, we think, not very clear, mixing up the effect of night exposure with defective clothing, and the influence of malaria with the effect of atmospheric variations. He seems to approve of flannel, or of coarse soft cotton, as underclothing. He advocates a generous diet, expressing his belief that the mischiefs of intemperance have been somewhat exaggerated, at least so far as malarious diseases are concerned, stating the apparent paradox that many of the soundest constitutions are most liable to malarious influences, and accounting for this by the somewhat extraordinary assumption that organic disease acts as a preventive against it.

In the choice of sites for public buildings, barracks, &c., Dr. Davy holds that the only safe guide is experience of their salubrity from the healthiness of the neighbouring inhabitants. When this cannot be ascertained, we must be guided by the probable salubrity of the spot selected—a point concerning which, considering the inherent difficulties of the subject, it would be somewhat difficult to come to a conclusion. We have epitomized this part of Dr. Davy's book because he is, we think, the latest writer on the subject, and has gone into it more at length than perhaps any other, and because it is interesting in itself, most important to the military establishments of the country, and closely related to the sanitary movements and speculations now so much agitated.

In perusing this book, it is impossible to avoid being struck by the numerous hints dropped of the extreme injudiciousness of many prevalent arrangements respecting the soldier's health, and the apparent want of power on the part of the medical officers to correct or improve these. His occupations when off duty, his lodging, his food, his clothing, indeed, all the details of military life, seem to be devised and carried out with little or no regard to their effect upon health, sometimes without consultation with any medical

* We should have been glad to know in this last case the condition of the room as to crowding, or the possible evolution of human emanations.

authority, sometimes in direct contravention of medical opinion. Abundant proof, indeed, of this is afforded not only by our author, but by every other writer on military medicine. We rejoice to admit the very great improvement that has taken place in many respects since the dear-bought experience of the Crimean war, the "hideous and horrible" exposures of which thoroughly aroused public attention to the subject.* But all such efforts as were made at that time are apt to be somewhat spasmodic in character, and followed by a period of inertia and languor; we would therefore consider it a matter of great importance that the subject of military hygiene should be kept steadily before the eye of the educated public. Without insinuating any special blame, we know how strong the tendency is in all departmental action to degenerate into a matter of routine, and to lag behind the requirements of the time. We would therefore earnestly wish that all qualified like Dr. Davy to speak on such subjects should make their observations known and felt so that public opinion may bear intelligently and effectually on those in high places. One fact clearly brought out by Dr. Davy is equally apparent in the writings of Sir John Pringle—this is the comparatively small proportion of officers who are either attacked by fever or die of the disease in relation to an equal number of private soldiers; nearly three times as many out of equal numbers of the two classes die among the latter. This difference is due, undoubtedly, to the smaller exposure, better diet, clothing, and lodging of the officers; and while it may to a certain extent be unavoidable, it is surely possible, we would think, that it should be somewhat diminished.

The doubt which even yet hangs over many points connected with the origin and causation of malarious diseases ought, we think, to suggest caution in their reasoning to some of our zealous sanitary reformers. The importance of sanitary inquiries, and the benefits to be derived from them, cannot well be exaggerated, but we think there is occasionally a haste to arrive at conclusions which may lead to partial failure, and this again to discouragement. The whole of medical history presents a contrast to that of the purely physical sciences in the slowness of its progress and the uncertainty of its conclusions; this arises from the want of uniformity in the sequence of phenomena in medicine when compared with the invariable relations discovered in these sciences—the first step, even the observation of matters of fact—is beset with great difficulties in medicine. Facts may be recorded partially or defectively, or with a multitude of casual adjuncts that obscure their meaning and distract attention. So observed, their arrangement or classification becomes either of no use or of extreme difficulty, and the discovery of their true relations, especially the relation of uniform antecedence and sequence, almost impossible. Even

* While we give full credit to the late lamented Lord Herbert for his efforts to promote the well-being of our soldiers, it is right that the public should be reminded that he was preceded in the same course by the present Earl Grey (at that time Lord Howick) when in the War Office—a man whose rare ability, indefatigable industry, and unspotted integrity have scarcely yet attained that place for him in the estimation of his countrymen to which he is justly entitled.



when some progress is made in this respect, our application of the knowledge we have acquired may be rendered fallacious by the intervention of a new series of unknown causes. But while bearing this in mind, it is not the less our duty as reasoners and inquirers to act on such presumptions as are within our reach; and surely, after all the admissions demanded of us by Dr. Davy, our ignorance is not so absolute but that we may act with some degree of assurance. Though we believe it is scarcely possible respecting any given spot in tropical countries to say, *à priori*, that it will not be subject to malarious influences, there are certain features in a locality, and these having reference chiefly to moisture and vegetable exuviæ, which enable us to conjecture with more or less probability that it will be the seat of fever. Moreover, some of our author's statements are, we venture to think, scarcely so full and precise as to warrant determinate conclusions. We would inquire what is the character of the whole surface of these islands described as "barren rocks," where malarious fever shows itself. And further ask, if in those exceptional districts where malaria might be supposed to exist, yet does not evince itself, there may not be some unknown cause at work, the laws of whose operation prevent or modify the noxious agency?

We have dwelt so long on our author's first section, that we must pass very rapidly over the remaining portion of the volume. The chapter on Dysentery, Acute and Chronic, which follows that on Fever, is one of the most definite in the book; Dr. Davy's views, as to the causes and treatment of the disease, being given more unhesitatingly than usual. In addition to a high temperature, he refers it to indigestible and innutritious food, especially the immoderate use of salt provisions, and to the drinking of impure water. The lesions Dr. Davy discovers in his autopsies are well described, the primary ones being the ordinarily recognised results of inflammation and ulceration of the large intestines. Among the complications we were struck by the very small number connected with the liver. In 15 cases of acute dysentery, only one case of hepatic abscess occurred; in 19 cases of chronic dysentery, only 5, a result which, we think, justifies the disapproval expressed by Dr. Davy of a mercurial treatment in this disease, both in the acute and chronic form, especially the latter, in which it seems often to have been carried to a most injurious extent. Calomel in moderate (not heroic) doses, ipecacuanha, and, above all, opium, are the remedies on which Dr. Davy depends; expressing also an approval of occasional leeching, but, unless in very exceptional cases, condemning general bloodletting. On comparing Dr. Davy's views with those of our old authority, Sir John Pringle, we cannot fail to be struck by their almost perfect similarity. We have only to imagine the causes operating in a higher state of activity, and Sir John's account of the disease and its post-mortem appearances, as witnessed by him in the Low Countries, might apply perfectly to tropical dysentery, while as to prevention and treatment the ancient and modern authorities are nearly one. Sir John lays more stress on alternations of temperature, from the men lying on the cold, damp ground after toilsome marching under a hot sun, and strongly affirms

the contagious nature of the disease, which Dr. Davy is more than half inclined to deny. The similarity of pathological and practical views between Dr. Davy and Sir John Pringle, instead of being discreditable to medicine as implying a stationary character, affords a gratifying proof of the stability of medical conclusions when the observations on which they rest are on subjects fairly within reach, and have been carefully made under circumstances sufficiently varied to admit of the elimination of error. Both authorities dwell on the vast importance of hygienic precautions, and on the great difference between the frequency and mortality of the disease among officers and men. And here we may be allowed, in justice to our profession, to point out, that the various military reforms for which recent administrations have obtained so much and such well-deserved credit, are little more than the carrying out of suggestions, and listening to representations that have been urged by the highest medical authorities in the army for the last century. These improvements, it may be said, are, after all, only the dictates of common sense; be it so; then, in this most useful and important commodity, the doctors have been in advance of all our higher officials, and common sense, be it remembered, does not mean that sense is common to all or most men, but it means sound judgment and just reasoning applied to common things.

We must now draw our remarks on this interesting volume to a close. On several of the chapters, comprising cholera morbus, hepatitis, consumption, and other thoracic maladies connected with it, we do not intend to enter. They are all characterized by the author's exemplary fidelity and diligence; but the examinations we have found it impossible to condense, or to arrange so as to deduce from them any general principles, which, indeed, Dr. Davy himself does not attempt. We may note, however, that the chapter on phthisis concludes with some very strong remarks, especially from a writer so guarded as Dr. Davy, on the utter disregard shown to the soldier's sanitary condition.

But there is one chapter on the coagulation of blood in the vessels during life, to which, however shortly, we wish to point attention, as specially interesting from its relation to tubercles on the one hand, and embolism on the other. Of this phenomenon Dr. Davy has observed forty-three examples, and records twenty-three. In all his cases the patients laboured under disease of an asthenic type, and were of a cachectic habit. The coagulum appears to lose its colouring matter first; the remaining fibrinous clot, while firm externally, exhibiting, like tubercle, a central puriform softening. The blood, when mixed with hydrate of lime or potassa, yielding stronger traces of ammonia than usual, and when agitated with air disengaging gas, not absorbing it, both circumstances indicating, in Dr. Davy's opinion, a morbid state of that fluid. The relation of the formation of cogula to cases of sudden death, to the progress of tubercle, to the production of unhealthy suppuration round the anus, and even to otherwise inexplicable internal hæmorrhage, Dr. Davy indicates as interesting and important subjects for future inquiry.



We have now exhausted the space we can afford to give to this volume. The pathological facts, detailed with great care and accuracy, we can only recommend to attentive study and consideration; and we conclude by expressing our gratitude to Dr. Davy for the laborious and faithful account he has here presented us of his long and ample experience.

---

## Review IV.

*Notice Historique sur l'Établissement de Pisciculture de Huningue (Département du Haut-Rhin), appartenant au Gouvernement Français et placé dans les attributions de l'Administration des Ponts et Chaussées.—Strasbourg*, 1862. pp. 143.

*Historical Notice on the Establishment for Pisiculture at Huningue, belonging to the French Government, &c.*

This is a very valuable document, and highly creditable to the Imperial Government; one merit of which, at least, is that, however much it curtails the liberty of the citizen, it spares no pains or cost to promote his material prosperity. Considering the importance which, in a sanatory as well as in an economical point of view, pertains to the question of supplying fish as an article of food in large quantities, and having in a former number of our Review given an account of the salmon and its congeners in connexion with the new Salmon-fishery Act, we are led to bring to the notice of readers the great experiment which has been made in France, and is still in progress, on pisciculture, and with such success, that the results, we think, only require to be known to encourage more exertions of the same kind than have hitherto been made in our own country, where, in truth, they are almost as much needed as in France, as we endeavoured to show in our former article.

The history of the pisciculture establishment at Huningue is not without interest. A few years ago a humble French fisherman, of the name of Remy, employed the process for breeding fish propounded and practised by Jacobi more than a century before, probably ignorant that he was following in the steps of another, and with such success—stocking rivers before barren of fish—as to attract the attention of the Government, marked by a well-merited reward which it conferred on him. The subject had next the attention of the naturalists, and under Government auspices varied experiments were made by M. Coste at the College of France. M. Coste's report was of a very satisfactory kind, proving to demonstration the practicability of the artificial method of propagating fish, and the great advantages which might accrue from pisciculture.

In 1852 the trial was begun, and in 1854 it was continued on an enlarged scale at the recommendation of the Director-General of Agriculture and Commerce, and under the Département de l'Administration des Ponts et Chaussées. Up to the present time the sum of about 265,186 francs has been the outlay on the necessary works.

These, as now completed at Huningue, occupy a space of about seventy statute acres, and consist chiefly of tanks and ponds, of sheds, and other buildings, the former supplied with water partly from a spring, the temperature of which is nearly constant at 10° Cent., partly from a rivulet, and also from the Rhine, with the adjuncts of a marsh adjoining for the breeding of food, such as tadpoles, for the young fry. We particularize the supply of water, inasmuch as that is of the first import in relation to the success of the process; the conditions requisite being that it should be unfailing, securing against drought, and of a certain degree of coolness, pure and well aërated cool water of about 10° Cent., equivalent to 50° of Fahr., being most favourable to the vitality and hatching of the ova. The spot finally chosen—Huningue, in the neighbourhood of Basle—has the recommendation of being near the frontiers of the countries, Switzerland and Germany, from whence the impregnated ova of the different kinds of fish the subjects of the trial, are to be obtained.

The fish, the ova of which have been experimented upon, were of two kinds as regards the season of spawning, such, namely, as shed their ova in the beginning of winter, as the salmon, sea-trout, common and great lake-trout, and charr; and those which shed them at a warm or milder period in spring, such as the hucho of the Danube and the grayling. Operating on the first, the success of production has been great; but hardly so on the second—the ova of these, for prevention of failure, requiring precautions of a kind yet to be ascertained.

We shall briefly give some of the results obtained in one year, that of 1861. Of the first class of fish, 6,382,900 ova were procured, of which 2,602,400 perished or aborted, equal to 41 per cent.; 3,360,000, equal to 53 per cent., were sent away, variously distributed in a healthy state; and 420,500, equal to 6 per cent., were hatched on the spot. Of the hucho (the *huche* of the French), 43,500 ova were obtained; 35,450 aborted, 81 per cent.; 200 were distributed, and 6050 were hatched. Of the grayling, 1,028,000 ova were procured, of which 550,500 aborted, 54 per cent.; 251,500 were distributed, and 221,000 were hatched at the establishment.

There is another fish the ova of which have had a trial, the fera, a species of coregonus, a lake fish, extremely prolific, and highly spoken of. Of its ova 11,995,000 were collected, 12,000 were lost or aborted, 9,519,000 were distributed, and 2,464,000 were hatched on the spot. There can be little doubt that this fish might be naturalized in our lakes. Should the feed which they afford agree with it as well as that of the Lake of Geneva, it would prove a valuable addition to our table. There it attains a size from half a pound to a pound, and in the Geneva fish-market it is always in request.

We have made mention of the total outlay on this establishment: the annual expenditure is stated to amount to the moderate sum of about 55,000 francs—this including the pay of the persons employed and all the charges attending the collecting, nursing, and distributing the ova and the young fry. The latter, it may be remarked, have been forwarded to a very limited extent only, the ova having been found to have a greater chance of success than the very young fish, and the cost and trouble of their conveyance being very much less.



We cannot here enter into a detail of all the means employed in furtherance of the hatching process. The chief precautions to be observed are the securing an ample supply of running water; the removing the aborted eggs, the death of which is denoted by a loss of transparency and their becoming of an opaque white; and the selecting for transport only such ova as are well advanced. Two persons constantly resident are competent to the ordinary work of the establishment. Some idea may be formed of their labour from the fact that, during the year 1861, ova and fry have been sent to as many as 335 applicants, of which 296 were French, 39 foreign; the former from 76 departments, the latter from 17 countries. Of the foreign, the Prussian rank highest, having been 26; the English only 11.

The rule of the Administration is to receive favourably every request for a supply, on security being given that care will be taken of the ova and fry, and that the results obtained be recorded and reported on. Appended to the Historical Notice are elaborate tables, specifying results, which, taken as a whole, are of a very encouraging kind, inasmuch as they afford proof that in the short space of less than ten years a large number of the rivers of France are, to a certain extent, stocked with valuable fish—rivers before either barren or little productive. Nor is this surprising when we consider how prolific all fish are, and how rapid is their growth.

Incidentally many interesting particulars are given respecting the several kinds of fish under observation, especially regarding the time required for the hatching of the ova and the season of spawning. These are specified as follow. Of the common trout, the great lake trout, and the white or salmon-trout, the spawning-time is from the end of October to the middle of February; the time of hatching is from one hundred to one hundred and twenty days. Of the ombre-chevalier, or charr, the one is from the beginning of November to the beginning of February; the other, the time of hatching, is completed in seventy days. Of the salmon of the Rhine, the spawning-time is the same as that of the charr; the time requisite for the hatching fifty-six days. Of the fera, the spawning lasts from the middle of November to the beginning of January; the hatching occupies a month. Of the grayling, the one operation, the spawning, extends from the end of March to the middle of May; the hatching-time is reported as variable,—from two weeks, strange as it must appear, to two months. Of the hucho, the time of spawning is from the beginning of April to the beginning of May; the hatching-time variable: commonly from two to three weeks. We have thought it right to give this statement, as it may be some kind of guide to those who may wish to apply for ova, keeping in mind the remark already made, that they all bear transport best, not as soon as shed, but in their advanced stage of development, when the embryo has become visible through its transparent membranes. Temperature of course is greatly concerned in their development: the cooler the weather and the water, the later will be the hatching, and *vice versâ*.

Apart from the 'Notice Historique,' the able author of it—M. Courme, l'Ingénieur-en-Chef des Travaux du Rhin à Strasburg: this is his address—has issued a circular paper relative to the form to be observed in making an application for a supply of ova or fry, and the precautions to be taken on receiving them and their after-treatment. We shall notice merely those most requisite. The applicant, besides his name and exact address, should state his profession, and should specify the kind of ova he wants, and the exact quantity. The only expense he will have to incur will be that of the conveyance. The ova, packed in wet moss or in aquatic plants, as soon as received should be carefully taken out of the box in which sent, and this under water, and immediately transferred to water suitable to their hatching—i.e., either to a tank with a bed of gravel through which there is a current of water, or, as we would recommend, if the ova are few, to a shallow vessel of porcelain, the water in which, three or four inches deep, on clean gravel, should be changed at least once daily. A precaution is given, about the propriety of which we entertain some doubt—viz., that if the ova happen to be frozen *in transitu*, they should be put into water only a degree or two above the point of congelation, so that their thawing may be slow. According to our experience, the freezing of the ova is fatal to them; they may indeed be included in ice without a loss of vitality, and then the precaution in question may be acted on with advantage. After the hatching, no food need be supplied for a month or six weeks—that is, not till the yolk-sac at first pendent externally disappears, its contents affording the first nourishment to the young fish. After its exhaustion, if the fry are not set at liberty where, in lake or river, they can find their own food, they require to be fed. What has been found to agree with them best has been the muscle of any kind of animal, mammal, fish, or frog, broken up small, and given in small quantities twice or thrice a day in its raw state, care being taken, if the water is stagnant, to keep it free from polluting *débris*.

We must not conclude without expressing our thanks to M. Courme for his very able and instructive memoir. The administration of which he is the chief may well pride itself for the initiative which it has taken in pisciculture on a scale worthy of the Government under which it acts. Before 1850, the process of artificial breeding had been tried in Great Britain and Ireland, and with a perfect success; but then, only in a very limited way, and by individuals or angling associations. The merit of the French Government lies in the magnitude of the enterprise and the liberality with which it has been conducted. The author, in the section of his memoir relating to the stocking of public and private waters, remarks, summing up the advantages of the undertaking:

"First of all, it is for the honour of France to contribute to foreign countries information obtained by our experience, casting a light on a question of high social economy. Secondly, that the relations formed with establishments in foreign countries, similar to ours, promise ultimately to lead to an exchange of products, and to aid in the acclimatization with us of fish on which the process



of artificial fecundation has been effected in their proper habitats. And, thirdly, that the French Administration receiving supplies from abroad, will feel it to be for its interest to oppose the prejudices which too often have threatened its proceedings. It will be necessary to prove that the number of adult fish needed for each *récolte* is not large, and that the taking of them need not be attended with any loss of the individuals, and that above all things, that the proprietors and lessees of fisheries should be convinced that the removal of the mature milt and roe, in place of injuring their revenue, can only augment it, as they can return the fish alive and unhurt after the operation."

Happy would it be for nations were rivalries, instead of being exercised in feats of arms and destructive war-struggles, more frequently directed to works such as we have been considering, conducive to the common good to a vast amount, in increasing and cheapening supplies of articles of diet as agreeable as they are wholesome, from which almost all but the wealthy are at present excluded. The cost of one ship of war, or of one regiment, how enormously does it exceed the expense of this beneficent establishment of Huningue! As to results, we abstain from making a comparison.

In another point of view, fish, as a diet, is not without interest; we refer to its medicinal use, which hitherto in this country has received so little attention. We are assured by a writer on Siberia,* that there it is had recourse to, especially in chronic ailments, when other means fail, and that cures, even of cases despaired of, are often effected by means of a *raw-fish diet*—sea-fish—persisted in for some months. Iodine, and probably bromine, enters into the composition of sea-fish, and also into the migratory kinds of the salmonidæ—the salmon and sea-trout, on account of which it may be inferred that they are most wholesome when fresh from the sea, and in their highest condition.

---

## Review V.

*Reports of the United States Sanitary Commission.* Series, from 1 to 59.—*New York.*†

In the last number of our Review we gave a brief account of the origin, organization, and working of this patriotic commission; at the same time expressing our admiration of the public spirit to which it owed its creation, and of the judgment and science with which its operations had been conducted.

In this article we propose to resume the subject, and to give as much information as our restricted limits permit on some of those topics contained in the Reports which we thought it advisable then to pass over.

This American civil war, though not unprecedented as to kind—for what country has not experienced like struggles of great parties?—is at least almost without parallel as to magnitude, and entirely so in modern times. Hence much of its interest; and, considering the

* Revelations of Siberia, edited by Colonel Lach Szyrma, vol. ii. p. 191. London, 1853, second edition.

† The various documents issued by the Commission, varying in length from two or three pages each to one hundred, collected, would form a thick 8vo volume. We have before us as many as sixty-nine.

races engaged, men of our own blood, and how the vast armies brought into action have been extemporized, their history, brief as it is, should be full of instruction and warning.

The quantity of materials before us, having been favoured with fresh documents, is so ample, that we hardly know how to begin, or how, without exceeding our limits, to communicate what we wish to give, so as to convey clear ideas of the particulars to our readers. The mistakes committed, the evils resulting from carelessness and incompetency, will most require attention. It is in war that their effects are most strongly displayed, and in the most terrible manner. To avoid misstatement when bringing examples of them under review, we shall be under the necessity of giving extracts, and more than otherwise we could wish to offer.

We shall commence with the recruiting of the army. An excellent letter is addressed on this very important subject to the President of the United States by the Executive Committee of the Commission. It is written in strong and yet respectful language. Its main intent is to point out the necessity of a careful examination of recruits by skilled and competent medical officers, officers who have been trained to the duty, with an adequate knowledge of the qualities that fit a man physically to become a soldier for active service. Referring to the past—the levies of the spring and summer of 1861, and looking forward with apprehension to the 300,000 new recruits about to be called into the field in the summer of 1862, they remark:—

"The wise and humane regulations of the United States Army, that require a minute and searching investigation of the physical condition of every recruit, were, during the spring and summer of 1861, criminally disregarded by inspecting officers. In twenty-nine per cent. of the regiments mustered into service during that period, there had been no pretence even of a thorough inspection. Few regiments have thus taken the field that did not include among their rank and file many boys of from fourteen to sixteen—men with hernia, varicose veins, consumption, and other diseases wholly unfitting them for duty, and which could not have escaped the eye of a competent medical officer; and others with constitutions broken by intemperance or disease, or long past the age of military service. Each of these men cost the nation a certain amount of money, amounting in the aggregate to millions of dollars. Not one of them was able, however well-disposed, to endure a week's hardship or render the nation a dollar's worth of effective service in the field. Some regiments left ten per cent. of their men in hospitals on the road before they reached the seat of war. No national crisis can excuse the recruiting of such material. It increases for a time the strength of the army on paper, but diminishes its actual efficiency. It is a mere source of weakness, demoralization, and wasteful expense, and of manifold mischief to the army and to the national cause. The frequent spectacle of immature youth and of men of diseased or enfeebled constitutions returning to their homes shattered and broken down after a month of camp-life, destructive to themselves and useless to the country, has depressed the military spirit and confidence of the people. How can we escape a repetition of this manifest evil, except by a more vigilant and thorough inspection of our new levies? And how can such an inspection be secured?"

After some excellent comments on the neglect of sanitary laws, they remark:—

"But we cannot contemplate the needless renewal of their painful experience without warning Government that the loss of life by debility, disease, and immaturity—ten times that of our bloodiest battles—is wholly unnecessary; that of every ten men lost by the army during the past year, nine have been needlessly wasted; that by proper medical inspection of recruits, the material of disease can be reduced to the lowest possible sum; and then, by a proper distribution of the raw recruits among the regiments already formed, and of all new officers among existing regiments, we may at once communicate all that is most important in the sanitary experience of our veteran army to the new levy of 300,000 men, and thus save them from seventy-five per cent. of the mortality to which they will otherwise be inevitably exposed. From a sanitary point of view, the urgency of the policy is clear. *If all the* 300,000 *men now about to be recruited, were recruited without a single new regiment being formed, it would save the country, sooner or later, thousands of lives and millions of dollars.* We should get a far better class of men. They would have a thorough medical inspection, and every man would soon cease to be a raw recruit when absorbed into a veteran regiment. Thus all one year's costly expenditure would be saved, and the perils of ignorance, inexperience, and crudity be avoided."



The passage in italics may be too sanguinely expressed, yet we are satisfied that there is truth in it. It and its context would be well deserving of the attention of our own Government, should it ever be necessary to employ our volunteer force in active warfare.

On discipline, the following injunctions are excellent. No doubt they are specially needed in such armies as the Federal, formed chiefly of citizens, amongst whom, under their republican government, gradations of rank have been in a manner ignored. We are the more induced to quote them, as they are almost equally applicable to our own volunteer corps. They form a part of the "Revised General Instructions for Camp Inspections," from the central office of the Commission, under the head of "Etiquette and Discipline." We shall enforce them by an extract from a letter from the field.

"Unquestionably the first of all conditions of health in the army is strict discipline. Do all, therefore, in your power to encourage and strengthen a good purpose in this respect; do all in your power to sustain it. Honour in your own conduct the strictest rules of military etiquette, and let it be seen that you expect them to be stringently enforced. Let it be known that you consider no disease so destructive to an army as laxity of discipline. Demand, whenever you properly can do so, that the standard of the volunteers shall be at least as high as that of the regulars in this respect, and reprove any intimation that this is not to be attempted."

An inspector, writing from the field, states:—

"Disease has disabled ten of our soldiers for every one the rebels have been able to destroy. Above all things urge on the Government the importance of enforcing military discipline. Every regimental camp I visited is a mere nursery of disease, because its officers neglect or ignore the United States Army regulations they are bound to obey. We cannot hope to see these sanitary regulations enforced under a system of discipline so slack and nerveless as ours. We have been waging war for more than a year, but no sentinel has been shot for sleeping at his post, and far too few officers have been publicly disgraced for inefficiency. It is not surprising that the important sanitary regulations of the service have been neglected, though their neglect has cost us many thousand lives."

In armies on active service, one of the first difficulties is the forming and maintaining an efficient commissariat and purveying department; and of course the larger the forces the greater is the necessity. From the documents issued by the Sanitary Commission, the United States armies have, as regards the commissariat, been better provided for than perhaps could have been expected; but the same remark is not applicable to the purveying branch of the service, that which has charge of supplying the hospitals. It is sad to see how often, after a battle, the most necessary things have been wanting, and how, notwithstanding the exertions of the Commission in sending supplies from their stores, these have been inadequate to the emergency. In a paper dated September 11th, 1862, it is remarked—

"Notwithstanding the generous support that has been rendered to the Commission, its present expenses far overrun its receipts. And although it is daily relieving a fearful amount of suffering and saving many lives, it is now and long has been our lot to witness a far greater amount of suffering and of death which it has never had the means to relieve."

It is added:—

"The following articles of hospital clothing are especially and urgently required: *Sheets, woollen shirts, drawers and socks, flannel and other bandages, lint, pillows* (feather) of medium size. They are invaluable in bringing men with broken limbs from the field of battle. Wines, spirits, farinaceous food, condensed milk, beef-stock for soup, Boston crackers, canned fruits, preserved meats and vegetables; cast-off outer clothing, coats, pantaloons, vests of any material, are of great use."

The following illustrative extracts are from letters written by the Commission's inspectors from battle-fields.

"On communicating with the surgeons on the ground, I learned that there was a lamentable lack of medical and sanitary stores, the supplies having been cut off by the raids of the enemy. Forty-two wagons laden with medical stores were captured at Manassas. Many of our wounded soldiers had been without food for two days, and were soon to start for Alexandria and Washington over a rough and stony road, at the mercy of merciless insubordinate ambulance-drivers. . . . . Pressing inquiries came from all sides: 'Have you stimulants? have you bandages, lint, dressings, splints, sponges, food, anything for the wounded?' . . . . One melancholy question was asked me: 'Have you any chloroform?' No stimulants, no chloroform at the head quarters of an army—thirty miles from the unfinished dome of the Capitol! Such are the accidents of war."

From another, in a letter of the 7th September, 1862, it is stated:—

"Everything we brought came into play. From Saturday to Wednesday nearly two thousand of our wounded lay on the battle-field without food or water. Even the surgeons were *starving*. One told me he was glad to pick up a piece of a cracker he found lying in the mud, and to eat it. The sufferings of the wounded during this interval were alleviated by a heavy thunder-shower, which gave their lips the only water they tasted. Some were taken to farm-houses, some received food from the country people, but *many, very many died* of starvation and exposure, while . . . ."

The sentence unfinished is suggestive of painful inference, such as we do not venture to make.



One more extract we shall give before quitting this part of our subject, as it is a good example of the want of judgment in sending supplies by individuals, and not through an organized central agency; and we are the more induced to offer it, as a warning to benevolent persons who, as recently during the distresses of our manufacturing districts, acted in the same way:—

"In obedience to the call for help lately issued by the Secretary at War, the New England people sent more than 150 tons of hospital stores to Washington, consigned to the care of a very high officer of Government. The excellent lady to whom he entrusted the distribution sent an order to each surgeon in charge of an hospital in or near Washington, for so many boxes of hospital stores. One of them showed me his order, and told me he really did not want these stores, for what Government did not supply, the Sanitary Commission did. Miss D—— says that the hospital stewards and nurses are having a good time scrambling for the plunder. It is a great pity that the bounty of the people should be thus wasted, when it might be made so much more useful, if dispensed through the comprehensive organization of the Sanitary Commission."

What the Commission accomplished is stated in a paper, No. 48, of the 24th September, 1862, amounting briefly to this, that they had answered the requirements of eighty general hospitals, besides regimental and other hospitals; and that after the great battles they had furnished supplies two days in advance of the Government issues, this in consequence of their independent means of transport; and it is justly remarked that "the first *two* days are more important than the next ten to the saving of life and the relief of misery."

"Within a week (it is stated) we dispatched successfully by teams to the scene of battle from Washington alone 28,763 pieces of dry goods, shirts, towels, bed-ticks, pillows, &c., bandages, old linen, &c., 3188 pounds of farina, &c., 2620 pounds of condensed milk, 5050 pounds beef-stock and canned meats, 3000 bottles of wine and cordials, and several tons of lemons and other fruits, crackers, tea, sugar, rubber-cloths, tin cups, and hospital conveniences."

In a letter from one of their inspectors, of the 22nd of September, it is remarked—

"A single item will show the value of our supplies; we have given out over thirty pounds of chloroform within three days after the battle. The medical authorities had not one-hundredth part of what was needed, and in many places important operations were necessarily neglected and life lost. *Our chloroform saved at least fifty lives, and saved several hundreds from the pain of severe operations.* The want of chloroform was the most serious deficiency in the regular medical supplies, and as the result, amputations which should have been primary, will now be secondary or impossible."

The same writer describes how he found the wounded—

"I saw fifteen hundred wounded men lying upon the straw about two farms, within sight of each other! Indeed, there is not a barn, or farm-house, or store, or church, or school-house between Boonesborough, Kiedysville, and Sharpsburgh, and the latter and Somoketown, that is not gorged with wounded—rebel and Union. Even the corn-cribs, and in many instances the cow-stables, and in one place the mangers, were filled. Several thousands lie in the open

air upon straw, and all are receiving the kind services of the farmers' families and the surgeons."

It is a pleasure to find him adding—

"I hope I shall never forget the evidences everywhere manifested, of the unselfish and devoted heroism of our surgeons, regular and volunteer, in the care of both Federal and rebel wounded."

The newspapers have made us acquainted with the vast frauds perpetrated by army contractors and army officials during this deplorable war. It redounds to the credit of the Sanitary Commission that their transactions, so many and complicated, conducted chiefly by unpaid agents, are an exception, and certainly a most honourable one, and, so far as the people are concerned as a community, a redeeming one. A gentleman, whose name is given, who made it his duty to undertake a strict inquiry into the manner in which they conducted the business of affording relief, expresses himself, in a Report expressly on the subject, as perfectly satisfied of the correctness of the agents of the Commission, and the absence of any abuse. He states that only one box of 25,000 forwarded is known to be lost. He says—

"I have taken pains to inquire of soldiers, officers, and surgeons what they knew and what they thought of the Sanitary Commission and its work. I could give many valuable testimonials to the fidelity and efficiency of the Commission. Said the chaplain of a Delaware regiment—'I have tried the Sanitary Commission, and know that its action is wise and beneficent.' Said a surgeon just from the battle-fields of Antietam—'O the suffering there, and but for the hospital supplies of the Commission which were there—twenty-five four-horse wagon-loads of them two days before the Government supplies came—the suffering and death would have been still more terrible."

The following is the announcement of what the Commission has been, and is still doing, by means of its funds—these amounting to 200,000 dollars in the treasury, at the time the Rev. President and Chairman of the Executive Committee wrote—viz., October 22nd, 1862—

"1. Maintain constant inspection of camps for the dissemination of intelligence regarding the prevention of disease.

"2. Maintain the preparation and distribution of short, but thorough medical and sanitary papers, for the guidance of medical and other officers.

"3. Relieve the wounded on battle-fields, by supplying them with condensed food, stimulants, and means of preserving life, as at the battle of Antietam, when 20,000 dollars were expended in a few days.

"4. Keep a corps of experts in constant circulation in all our hospitals, reporting defects, correcting evils, and doing their utmost to alleviate the radical sources of suffering.

"5. Maintain the machinery for collecting and distributing the supplies furnished by the homes of the land—a business of great labour, expense, and wide agencies.

"6. Afford special relief at our various 'homes' for sick and wounded men who are *in transitu* from camps and hospitals.

"7. Make the general wants and condition of sick and wounded men a constant study, and strive, by influences on Government, on Congress, and the public, to secure such new laws or general orders, or *to make such a public opinion* as will induce constant improvement in their condition."



With the immense forces in the field, estimated at from half a million to a million, the hospital requirements were of necessity on a corresponding scale of magnitude. In a Report of the 22nd of October last, the number of sick and invalided soldiers needing aid was stated to be 130,000; of these 70,000 were in general hospitals, 10,000 in regimental hospitals, and perhaps 50,000 more in convalescent and other camps. The state in which the inspectors found the hospitals was, as might be expected, very various; and the same remark applies to the encampments, there being little system or unity of action observed. In a Report written in September, the author of it relates—

"I spent five days in and around Washington visiting hospitals, observing the methods of management and the condition of the patients. I had every facility afforded me by the Surgeon-General and by the officers in command. I am happy to say, that in general the patients were made more comfortable than might seem possible. Nearly all the hospitals are large and airy, and many with gardens and surrounding grounds. There never was before such a sick room as the Rotunda in the Capitol, in which lie nearly three hundred patients, and four hundred more in the Senate Chamber and House of Representatives. Every patient in all the hospitals which I visited lies upon a cot bedstead, not upon the floor, and in general the bed-clothes and the clothes upon the patients were decently clean."

Here is another account, written at an earlier period. The hospital was the Marine Hospital at St. Lewis. A small part of the Inspector's Report will suffice: "The beds all dirty and disgusting, men sleeping in their clothes; no sheets or bed-clothes, except a comforter to each man. The house bad-smelling, the men disgusting, furniture all broken."

The following is a part of an account of an hospital in Cumberland, one of fifteen in that town. It is—

"A three-story brick building, formerly used as an hotel. It is badly placed for ventilation, and the surroundings are filthy in the extreme. *1st Floor:* The main hall is large, but in a shocking state of police. Ward 1 is a good room, 36+18+11=7128 cubic feet. It has recently been occupied by twenty-seven men, lying on the floor as thickly as they could be packed, *each man having about twenty-three square feet space.* It is in a horrible condition; straw scattered all over the floor, upon which are placed three rows of filthy bed sacks, with no other bedding."

The description of the other rooms differs but little from the preceding—

"The condition of the yard of this building defies description. It is simply disgusting. The out-houses are filled with dirty clothes, such as sheets, bed sacks, shirts, &c., which have been soiled by discharges from sick men. The privy is fifty yards from the house, and is filthy and offensive *ad nauseam.* It consists of a shed built over two trenches. No seats, simply a pole passing over each trench for the men to sit on."

After describing the several rooms, and how they were occupied, he remarks—

"*We have* 205 *persons occupying* 47,040 *cubic feet, or about* 229 *cubic feet each.*"

He adds—

"I do not hesitate to say that such a condition of affairs *does not exist in any other hospital in the civilized world;* and that this hospital is altogether worse than any which were such *opprobria* to the allies in the Crimean war. It is under the charge of Drs. —— and ——, the former a citizen, the latter belonging to an Ohio regiment. He was sent by the Governor of Ohio. There are five ward-masters, twenty-seven nurses, five cooks, and ten matrons. The nurses are uninstructed, and their duties very badly performed."

The accounts of the encampments show similar contrasts, and almost as marked differences as regards the health of the troops. Two examples may suffice—

"—— *Regiment.*—I found (reports the Inspector) camp-streets, tents, spaces between tents, drains, and edges of the tents filthy. Refuse-slops were buried in the trenches, but the trenches were nearly filled before the dirt was filled (*sic*). The men were undisciplined. The horses tied very near the tents, and their dung not removed. The cooking bad, the men dirty. In short, by want of cleanliness and attention to the requirements of civilized life, the men were in danger of losing all self-respect."

"*Sixth Indiana Regiment.*—This was in excellent condition. The colonel is a gentleman and a soldier, alive and active in his duties. The surgeon, Dr. C. S. Schussler, is eminently well qualified, and devotes himself untiringly to his duties. Guided by science, he is saving many lives by taking those precautions necessary to prevent sickness. Means were used to promote cheerfulness, and the men were in good spirits. The streets of the camp are beautifully turnpiked and well drained. The tents are struck or raised from the bottom often. The slops are carefully disposed of, so as to be not in the least offensive; the men clean, their clothing well washed. The sink was on the leeward side of the camp, in the woods, at a proper distance, neither too far nor too near. A nice walk was cut to it through the woods. Most of the companies have built loghouses, with fireplaces and chimneys for kitchens well adapted for the use designed. But two men were so sick but that they would join their regiments, were an order given to march; one of these disabled by an accidental wound, the other sick with fever."

Did our limits permit, we could give from the Reports striking examples equally of the good effects of attention to sanitary rules in the preservation of health, and of the reverse from their neglect in the production of disease. We hope to be able, in a future number of our Review, to contribute an article expressly on this subject, from the documents now before us.

Of the medical officers belonging to the volunteer forces, in a Report of December, 1861, it is stated that "the surgeons of 176 out of 200 regiments were sufficiently qualified; of 4 incompetent; of 13 of doubtful competency; and as to those of 7 regiments, the point is not reported on." The following is a more general account of them, prefaced with the astounding remark as to the suspicion alluded to:—

"It is not true, as it seems to be too generally suspected, that when a medical man accepts a military appointment, he thereby and at once sells himself, body and soul, to the devil. On the contrary, I do not hesitate to say, that the most hard-working, self-denying, earnest, and conscientious officers of the army are its surgeons. I do not, of course, arrogate to the class any superhuman virtues. They are all simply men, and have man's imperfections. And there are those among them so ignorant, and others so depraved, that they are a curse to the service, *opprobria* to the profession, and a disgrace to those by whom they were commissioned. Yet such are a few. Most are laborious, faithful, and meritorious. The greater part have passed a rigid examination before a competent medical board, by whom they were declared well qualified for their duties; and have since, by their services in the field, vindicated the propriety of their selection from the great number of candidates for the places which they hold. During the past year all the surgeons have been overworked. None, that I know of, have escaped disease contracted in the discharge of their duties; many have gone home with their health permanently broken, and not a few have been martyrs to their faithfulness."



The same writer eulogizes the medical officers of higher rank—the inspectors of hospitals; but not so, many of the general officers, those who, in their military and fighting *furia*, view sick and wounded men, thereby disabled, much as slaveholders at one time considered their slaves. Here is an instance:

"One general of division, within the last few months, and under my own observation, determined to eradicate sickness from his command by ordering all men under medical treatment to appear daily at dress-parade. And so they did, day after day; those able to walk dragging themselves out under a broiling sun to witness the ceremony, those unable to help themselves dragged thither in ambulances. The system, if pursued sufficiently long, would doubtless have been successful, driving all malingerers back to the ranks, the really sick rapidly to their graves."

Here is another instance of a nearly allied madness:

"Another military chieftain, commander of a great army at a later date—a very recent date—led his forces, by rapid marches, across a State; many, if not all, his regimental surgeons being prohibited, by special order, from taking with them any medical supplies whatever. Some of them are to-day, as I know, following their regiments with no other remedial agents than such as they carry, in defiance of orders, about their persons. Will it surprise you, then, if I tell you, that when the forces of this general met the enemy, and a bloody battle ensued, there was no adequate preparation for the wounded; and, as a consequence of this want of preparation, there was great suffering, and lives were lost? Nor will it surprise you to learn, that the chief medical officer of this army—an eminent surgeon, a most efficient officer, a man endeared to all his associates in that army by his kindness and courtesy, after months of endurance of what seemed a studied disregard of the claims of his department, felt compelled to ask to be relieved."

As regards the medical service, one of the great defects and deficiencies of the military system of the Federals, as at present conducted, is that it cannot claim the aid of either the quartermaster's or commissariat department, and can only get assistance in a casual way, subject to the caprices of those in command—having, accordingly, no independent means of transport, or even of subsistence, for the sick and wounded, and this though the Sanitary Commission, it is stated, and the Surgeon-General have for months urged the necessity of supplying such means.

In the numerous Reports and other documents before us, there is much that is deserving of attention, and which we could wish to bring under the notice of our readers; we reserve them, hoping, as we have already said, to recur to the subject, that portion of it which relates to the sickness and mortality of the United States Volunteer Forces,

its causes, and their prevention; and when we shall have an opportunity of briefly reviewing the several treatises on the predominant diseases of the army, published by the Commission as handbooks for the use of the surgeons, of which we have before made laudatory mention.

If our readers view the extracts we have given in the light we do, they will consider them of no small value, partly as exhibiting war in its terrible features, and partly because, in ordinary campaigns, instances and details of suffering, especially those occasioned by wilful neglect, are on principle suppressed; and with the exception of the Crimean war, the errors and incompetency of officials are kept from the public, and are, as it were, ignored. Let us hope that no hostile army will ever again invade our shores; should it, we could wish that every medical officer of a volunteer corps which would then have to take the field, were well read in these documents which we have so partially reviewed. No reading, that we know of, is so well fitted to give either an insight into the incidents of war and its horrors, or of the qualifications which medical officers should possess to check and mitigate its evils.

From one of the series of these papers, we ventured to indulge in hope that the end of the unnatural warfare is not far distant—a paper in which the Commission is forecasting what is to be done when the struggle is over; when, should it last only a few months longer, the country will be burdened, according to their calculation, with "100,000 men of impaired vigour, maimed or broken in body and spirit;" and, what is worse, with 100,000 more "men demoralized for civil life by military habits, endangering the order, industry, and security of society." The Reverend the President of the Commission has written admirably on the subject. But though a gentleman has been commissioned to inquire how the invalids of European armies are dealt with and provided for, our hope of a near approach of peace is checked by a declaration in another Report, in which determination, as a sacred duty, is expressed to persist in the contest until the so-called rebels are subdued, and the union of the States is re-integrated.

We shall conclude with one more extract, regretting much, what appears to us, its sophistry. Ought they not to remember that exhaustive wars have often ended in despotism; that no peace is so insecure as that which is compulsory, and that there can be no brotherly unity without brotherly love?

"For the sake of mankind on this continent, we must not have the experience of Europe repeated here; we must go on and on, and ever on, with this our war, until such an end is reached as will save constant recurrence of wars; we must make any necessary sacrifices to firmly and finally establish here the policy of co-operation and brotherly unity, against the policies which from time to time will arise through the impatient ambition, the instability or perversity of this or that part of the people of the land."



The subjoined Table presents the results of the larger Amputations performed at the Carlisle Infirmary from Jan. 1861 to Oct. 1863.

| No. | Name. | Age. | Nature of Disease or Injury. | Date of Amputation. | Amputation, where performed. | Means adopted for arrestment of Hæmorrhage. | Date of the removal of Needles. | Occurrence or non-occurrence of Hæmorrhage. | Result. | Date of Discharge or Death. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | D. C. | 21 | Gangrene after comp. fract. of leg, 14 days bef. | Jan. 9. | Below the knee. | Needles. | 64 hours. | No hæmorrhage. | Recovery. | Feb. 27 |
| 2 | J. S. | 20 | Comp. com. fract. of leg. | May 1 | Below the knee. | Needles. | Not noted. | No hæmorrhage. | Death. | May 9 |
| 3 | J. R. | 13 | Disease of ankle-joint. | Mar. 23 | At ankle (Syme). | Needles. | Not noted. | No hæmorrhage. | Recovery. | May 26 |
| 4 | J. L. | 32 | Comp. com. fract. of leg. | Feb. 29 | Below the knee. | Not noted | ... | No hæmorrhage. | Recovery. | June 3 |
| 5 | T. C. | 11 | Comp. com. fract. of leg. | June 21 | Below the knee. | Needles. | 48 hours. | No hæmorrhage. | Recovery. | Aug. 28 |
| 6 | J. K. | 19 | Gangrene of foot, and leg | June 27 | Below the knee. | Needles. | 48 hours. | No hæmorrhage. | Recovery. | Aug. 21 |
| 7 | J. M. | 24 | Gangrene of the foot. | July 24 | At ankle (Syme). | Needles. | Not noted. | No hæmorrhage. | Recovery. | Oct. 3 |
| 8 | A. T. | 60 | Injury of arm. | Aug. 22 | Upper third of arm. | Ligatures. | ... | No hæmorrhage. | Recovery. | Oct. 3 |
| 9 | P. M. | 19 | Comp. com. fract. of arm. | Oct. 25 | Middle third of arm. | Ligatures. | ... | No hæmorrhage. | Recovery. | Nov. 20 |
| 10 | T. N. | 14 | Disease of tarsus. | Dec. 10 | At ankle (Syme). | Ligatures. | ... | No hæmorrhage. | Recovery. | Jan. 22 |
| 11 | J. H. | 25 | Dis. of ankle and leg, etc. | Nov. 8 | Below the knee. | Ligatures. | ... | Hæmorrhage on 9th d. | Death. | Nov. 19 |
| 12 | J. M. | 22 | Comp. com. fract. of legs. | April 1 | Below the knee. | Ligatures. | ... | Hæmorrhage on 5th d. | Death. | April 8 |
| 13 | J. H. | 50 | Gang. of leg after injury. | April 25 | Below the knee. | Ligatures. | ... | Hæmorrhage on 6th d. | Death. | May 6 |
| 14 | F. C. | 9 | Disease of Knee-joint. | May 6 | Lower third of thigh. | Ligatures | ... | No hæmorrhage. | Recovery. | July 9 |
| 15 | T. Q. | 15 | Injury of feet. | July 17 | Both legs, low. third. | Ligatures & needles* | 60 hours. | No hæmorrhage. | Recovery. | Dec. 3 |
| 16 | J. P. | 22 | Disease of ankle-joint. | Dec. 2 | At ankle (Syme). | Ligatures. | ... | No hæmorrhage. | Recovery. | Jan. 28 |
| 17 | J. B. | 11 | Disease of ankle-joint. | Dec. 2 | At ankle (Syme). | Ligatures. | ... | Hæm. slight on 2d day. | Recovery. | April 8 |
| 18 | J. C. | 17 | Comp. com. fracts. of legs. | April 18 | Below the knee. | Ligatures & needles. | 48 hours. | No hæmorrhage. | Death. | May 14 |
| 19 | R. S. | 49 | Injury of arm. | March 5 | Upper third of arm. | Needles. | 44 & 72 hrs. | No hæmorrhage. | Recovery. | May 13 |
| 20 | J. M. | 45 | Wound of leg. | March 25 | Thigh, lower third. | Needles. | 24 hours. | Hæmorrhage. | Recovery. | Oct. 14 |
| 21 | W. N. | 47 | Com. com. fract. of thigh. | July 20 | Thigh, middle third. | Needles. | ... | No hæmorrhage. | Death.† | July 26 |
| 22 | J. R. | 15 | Comp. fractures of leg. | Sept. 1 | Below the knee. | Needles. | 64 hours. | No hæmorrhage. | Death.† | Sept. 29 |
| 23 | W. C. | 15 | Wounds of arm. | Sept. 3 | Upper third of arm. | Ligatures. | ... | No hæmorrhage. | Recovery. | Sept. 30 |
| 24 | J. W. | 35 | Comp. com. fract. of arm. | Sept 29 | At shoulder-joint. | Ligatures. | ... | No hæmorrhage. | Death. | Sept. 30 |
| 25 | J. A. | 14 | Disease of leg and foot. | Oct. 10 | Below the knee. | Needles. | 66 hours. | No hæmorrhage. | Recovery. | Nov. 30 |

* Ligatures were employed in the amputation of one leg and needles in the other. † Lost much blood prior to admission.

# Part Second.

## REVIEWS.

*Army Medical Department: Statistical, Sanitary, and Medical Reports for the Year* 1861. *Presented to both Houses of Parliament by Command of Her Majesty.* London: Harrison and Sons: 1863.

The Blue Book of the Army Medical Department, which is now published every year, is divided into three parts,—the Statistical, the Sanitary, and the Medical. The first is produced under the superintendence of Dr T. Graham Balfour, Deputy Inspector-General; the second is edited by Dr Logan, Inspector-General; and the third by Dr Mapleton, Deputy Inspector-General of Army Hospitals. The three reports make up a bulky octavo volume of 550 pages, the price of which is only five shillings; and whether we look to the statistical, the sanitary, or the more purely medical information contained therein, we must allow that the work is one of the cheapest ever issued from the press.

The value of a correctly drawn up statistical report of the numbers, composition, sickness, and mortality of our army can scarcely be over-estimated, even if we regard the welfare of the soldier solely from the utilitarian point of view. The army is such a costly machine, and so much of our material prosperity, as well as of our influence and prestige as a nation, depends, or may, at almost any time, depend upon its efficiency, that whatever has a tendency to elevate or to depress it in this respect, whatever also purports to give us information concerning it, deserves to be scanned with the most jealous scrutiny. It is right, therefore, to approach the examination of these reports in a somewhat sceptical spirit, and not to accept their conclusions until after due investigation. The Statistical Report especially requires to be sifted in this manner, owing to the proverbial difficulty of deriving just conclusions from merely numerical data. "Tables," it has been well said, "are like cobwebs, like the sieve of the Danaides; beautifully reticulated, orderly to look upon, but which will hold no conclusion. Tables are abstractions, and the object a most concrete one, so difficult to read the essence of. There are innumerable circumstances; and one circumstance left out may be the vital one on which all turned."

During the last few years there has arisen a very general belief, that the sickness and mortality of our army previously to the war in the Crimea almost exceeded the wildest dreams of the imagination; but that since that period, and mainly through the exertions of Lord Herbert and Miss Nightingale, the soldier's occupation has been stripped of its dangers, and that his health is even better now



than that of the class from which he sprang. We must confess that the evidence in favour of this opinion has never seemed to us entirely satisfactory. That the mortality of the army is less now than it was ten, twenty, or thirty years ago, there is perhaps sufficient proof; but we question whether the reduction has been so sudden, so great, so real, or so entirely dependent upon what are called sanitary improvements, as certain writers in the daily and weekly press would have us to believe. It must be confessed, however, that Dr Balfour's reports have had a tendency to lead one to such a conclusion. In his first Report, viz., that for 1859, for example, it was stated that there was "a remarkable and most satisfactory reduction in the amount of mortality in all classes of troops; indeed, except in the depôt battalions," it was said to be "little above that of the civil population in the healthiest districts of England." In 1860, a similar satisfactory condition was reported; and in the Report for 1861, which we now have under review, a still further reduction of mortality is alleged to have taken place. Dr Balfour also contrasted the mortality of the British army in 1859 with that of the period from 1836 to 1847; and because the death-rate in that year was considerably less than the average of the decade, many of our contemporaries and a great portion of the public have taken it for granted that the reduction was entirely the work of Lord Herbert, Miss Nightingale, and the somewhat noisy band of amateur sanitarians who followed in their train. On this point we consider that a great injustice has been done to the medical profession, because the alleged diminution in the rate of mortality occurred before the special sanitary duties of medical officers, instituted by the new code of regulations, were generally entered upon, and before the recommendations of the Sanitary Commission, with respect to the barracks and hospitals, were carried into effect.[1]

A reduction in the rate of mortality, in fact, generally depends upon many concurrent causes, and not upon one only; whilst, therefore, we are far from denying the efficacy of a rigorous hygiene, we contend for the importance to be ascribed to advances in pathology and therapeutics. A great deal has recently been written about the prevalence of venereal diseases in the army, and the mortality that ensues from them; but if syphilis proves fatal now, what must it have done in the period from 1837 to 1846, when, to give a full diet to a soldier affected with venereal disease was contrary both to practice and precedent in the military service, and when the use of mercury was so imperfectly understood, and its abuse so common? Our sanitarians have not as yet made any impression upon the numbers admitted to hospital for this class of complaint; but we have good grounds for believing that improved treatment has greatly reduced the disability and mortality arising from it. Again, at the military stations in tropical countries, very

[1] Vide Dr Logan's Sanitary Report for 1859.

little has been done by the sanitarians, so far as we can discover, calculated to prevent sunstroke, dysentery, and certain forms of fever; yet we know that these diseases have become much less fatal of late years, owing simply to improved methods of treatment. It is wrong, then, to conclude that the reduction of mortality in the army, which has happily been effected, is to be ascribed solely to the labours of a few enthusiasts. It would be more correct, speaking broadly, to assign a diminution in the number of admissions to the agency of sanitary measures, and a reduction of the rate of mortality amongst the admitted to the greater efficacy of purely medical science.

Of course, Dr Balfour is not to be held responsible for the mistakes of the sciolists who are so fond of dabbling in medico-military matters; we cannot, however, acquit him of a tendency to exhibit the present condition of the army in a more favourable light than the facts would seem to warrant. Thus, in the first table of the Report for 1861, the ratio of deaths per 1000 of mean strength, of the troops serving at home, is represented as having been 9·95 in 1860, and only 9·24 in 1861; and the tables on pages 12 and 13 would lead to a similar conclusion if we did not mark the fact, that a practice prevails in the army of weeding the rank and file of their diseased lives, and that this process of discharging those who have become incapable of further service is called *invaliding*. We then naturally endeavour to discover what influence may have been exercised upon the death-rate by a difference in the amount of invaliding, but we regret to observe that the information on this head is neither so full nor so satisfactory as might have been expected. Dr Balfour is aware that invaliding affects the rate of mortality, and shows its influence, so far as may be done, by calculating the number of deaths amongst those of the invalids of the household cavalry, of the dragoons and dragoon-guards, of the royal artillery, the military train, foot-guards, and infantry regiments, who were placed on the pension list in the previous year; and his conclusion is, that the mortality of the cavalry and foot-guards was increased in 1861, whilst that of the artillery, military train, and infantry underwent a decrease. We can scarcely accept his conclusion, however, without objecting, not only, as he himself admits, that his calculation takes no note of the men discharged without claim to pensions, but also that one year is too short a period to refer to for the information required; and farther, that by omitting the results, whatever they may have been, of the invaliding from the depôts, he has neglected perhaps one of the most important items. We are inclined to think that invaliding has a greater effect upon the rate of mortality than Dr Balfour makes it appear, for, if we take the numbers afforded us by the table on page 12, we find that in 1860 the mortality amongst those of the troops above-mentioned who were serving at home averaged 8·61 per 1000, and in 1861 only 7·62; but then, if we take the trouble, we may discover that only 21·50 men per 1000 were invalided in 1860, whereas as many as



33·35 per 1000 were invalided in 1861 in these same corps. So that an increase in the rate of invaliding of 11·85 per 1000 was coincident with a diminution of mortality, amongst those remaining in the service, of no less than ·99, or nearly one per 1000; and it seems difficult to avoid the conclusion, that, if the rate of invaliding had been the same, there would have been no reduction of the death-rate in 1861.

If now we turn our attention to the influence of age, or rather to the combined effects of age and military service, upon the mortality, we shall find additional evidence in support of the views we have expressed. Dr Balfour asserts that the mortality of the troops serving at home, exclusive of the depôts, only slightly exceeds that of the civil male population of similar age, even in the healthiest districts. But why should the depôts be excluded? Is it not possible, nay, even probable, that by adopting this principle of excluding the most unhealthy corps, or by overlooking the effects of invaliding, a body of troops might at any time have been presented whose death-rate would have been less than that of the civil population? But we should imagine, that if the mortality of the depôts were not estimated with that of their respective regiments, no correct deductions as to the real amount of sickness and mortality in the army could possibly be made. The household brigade have, however, no depot, properly speaking; and as they have no foreign service, except in time of war, their rate of mortality and invaliding will indicate pretty nearly the effects of military service at home. The following table, compiled from those on pp. 26 and 27 of the Report, will elucidate this part of the subject:—

| 1861. | | Annual Ratio of Deaths per 1000 living at the following Ages: | | | | | | Invalided. Ratio per 1000. |
|---|---|---|---|---|---|---|---|---|
| | | Under 20 | 20-24. | 25-29. | 30-34. | 35-39. | 40 and upwards. | |
| Household Brigade. | Household Cavalry,[1] | ... | 3·12 | 13·29 | 5·43 | 6·17 | 34·01 | 8·2 |
| | Foot Guards, | ... | 8·40 | 10·35 | 11·42 | 21·51 | ... | 28·2 |
| Troops generally (including depôts) at home stations, | | 3·21 | 7·10 | 8·45 | 13·40 | 12·38 | 33·54 | 42·23 |
| Civil Male Population. | Healthy districts, | 5·83 | 7·30 | 7·93 | 8·36 | 9· | 9·86 | ... |

[1] The average strength of the household cavalry being only 1219, the figures concerning its mortality are less trustworthy than when larger numbers are dealt with, as in the foot-guards and troops generally.

With the results of this table before us, and bearing in mind the observations we have made concerning the influence of invaliding in reducing the death-rate, we think it will be admitted, that whatever may hitherto have been done to improve the health of the soldier is very far short of that which yet remains to be effected. All our soldiers are picked men, but the guards are the *crême de la crême*. They are subjected neither to great changes of climate, nor to unhealthy climates, nor to privations in bad seasons; they live in comparatively healthy districts, and yet their mortality exceeds that of the civil male population. Surely, under such circumstances, it is somewhat premature to sing pæans in celebration of our victory over death and disease. We ought not to cry "Peace, peace, when there is no peace;" or to "Rest and be thankful" whilst such a large amount of sickness and mortality prevails among the most select and most favoured of our troops. On the whole, we believe that Dr Balfour has prepared his report with the utmost care, still we cannot help noticing that it is not always easy, or possible, to reconcile his tables one with another. At page 5, for example, the average strength of the army serving at home in 1861, is stated at 88,955, with 822 deaths; but we look in vain for the sources from whence these numbers are derived. At page 12 the average strength is figured at 83,542, with 731 deaths; and these numbers are corroborated by the other tables, so that there are 5013 men and 91 deaths, concerning which we are left in the dark. Again, at page 26, the number discharged as invalids from the troops serving at home, is stated at 4554; but neither there nor elsewhere can we discover from what corps more than 3781 of these have been discharged; the remaining 773 are nowhere accounted for.

Turning aside, however, from the unwelcome task of exposing these defects, we have pleasure in observing the large amount of valuable information which the Report contains, of a kind that will be found useful to the civil as well as to the military medical practitioner.

The dockyards and arsenals and the seaport towns are observed to be the most unhealthy of the home stations; Dublin, London, and the large manufacturing towns, come next; and then the camps. The miasmatic diseases occur very nearly in the same order.

The ratio per 1000 of admissions for venereal complaints was,—in Manchester, 487; at Portsmouth, 485; at Plymouth, 470; at Woolwich, 399; at Aldershot, 361; at Dublin, 363; at Edinburgh, 260; at Fermoy, 195; in London and Windsor, household cavalry, 135, foot-guards, 328. "The admissions into hospital by this class of diseases have amounted to 354 per 1000 of the strength;" and in the proportion of 209 for syphilis, and 144 for gonorrhœa. "The average period in hospital is found to be,—of primary syphilis, 25·70 days; of secondary, 27·73 days; of bubo, 35·35 days; of gonorrhœa, 18·77 days; of swelled testicle, 17·80 days; and of stricture of the urethra, 29·90 days." With respect to the average



period in hospital for primary syphilis, we suspect that the cases of primary and secondary syphilis are not always kept entirely distinct one from the other, and that the average of 25 days for primary syphilis is in reality considerably above the mark.

The tubercular diseases cause by far the greatest amount of mortality amongst the troops serving in the United Kingdom, and they are more frequent in the foot-guards than in any other corps.

Diseases arising from intemperance seem to be diminishing, both in amount and fatality.

During the year, 2053 soldiers and 4395 recruits were vaccinated, with the following results:—

| Class. | Results (calculated in ratios per 1000). | In those who bore marks of previous Small-pox. | In those who bore good marks of previous Vaccination. | In those who bore doubtful marks of previous Vaccination. | In those who bore no marks of previous Vaccination or Small-pox. | Total. |
|---|---|---|---|---|---|---|
| Soldiers not Recruits | Perfect pustule | 451·4 | 484·6 | 236·8 | 326· | 430·6 |
| | Modified do. | 159·6 | 157·4 | 505·3 | 277·5 | 218·7 |
| | A failure in | 389· | 358 | 257·9 | 396·5 | 350·7 |
| Recruits | Perfect pustule | 345·5 | 407·3 | 461·3 | 527·3 | 415·5 |
| | Modified do. | 266·8 | 240·8 | 301·3 | 202·6 | 242·5 |
| | A failure in | 387·7 | 351·9 | 237·4 | 270·1 | 342 |

From this table one of two things is sufficiently clear. If it be true that the capability of developing a perfect vaccine pustule is a measure of the susceptibility of the system to the small-pox poison, as most authorities maintain, then vaccination, and even small-pox itself, affords but little security against subsequent attacks of small-pox; or else the distinction between the perfect and the modified vaccine pustule is but little recognised by the medical officers of the army—a conclusion which we think much the more probable.

*Recruiting.*—Of 12,191 recruits inspected, England furnished 6237; Wales, 235; Scotland, 1899; Ireland, 3742; British Colonies, etc., 78. Of these, 4600 were rejected, viz., 2257 English; 60 Welsh; 778 Scotch; 1476 Irish; and 29 Colonial—the proportion being highest in the Scotch, and lowest in the Welsh and English; and it is added, that "upwards of two-fifths of the rejections were for causes indicative of ill health or feeble constitution, and one-fifth for defects which would have affected the marching power of the men."

*Previous Occupations of the Men serving in the Army.*—In the army, on the 1st of January 1860, there were 2655 bakers; 2527 blacksmiths; 2886 smiths generally; 1976 bricklayers; 2144 masons; 5032 tailors; 7404 shoemakers; 4001 carpenters; 937 cabinet-makers; 2146 painters; 1762 butchers; 1162 gardeners; 1197 printers; 244 druggists; 600 attorneys' clerks; 4078 commercial clerks; 31,115 agricultural labourers; 69,861 labourers of

branches undefined; etc., etc. We should imagine that an army so composed ought to be well able to take care of itself under almost any circumstances; for there is ample material in it wherewith to furnish troops equal, if not superior, in intelligence and skill, to those of any other army in the world.

Of the foreign stations, we find that Bengal was the most fatal to the British soldier—the death-rate in that presidency having been 45·57 per 1000 of mean strength. In Bombay it was 24·72, and in Madras 15·83, per 1000. In China it was 20·19; in Ceylon, 19·85; in Australia, 15·44; at the Mediterranean stations it was about 11 per 1000; at the Cape, 10; and in Canada, 9·42. In India and China the high rate of mortality was caused principally by disorders of the abdominal viscera (cholera, dysentery, hepatitis, etc.), and by remittent and intermittent fevers. At the Mediterranean stations, fever, continued and remittent, and tubercular diseases, were the two chief causes of death.

From the various tables in this Report we have also gathered, that the average strength of the British army at home and abroad, in 1861, was 196,316, and that the deaths numbered 3675, or in the ratio of 18·72 per 1000; also, 6041 men were invalided, giving the ratio of 30·77 per 1000. Adding, then, the deaths and the number of invalids together, we have 49·49 per 1000 as the rate of expenditure in 1861. In the review of the Army Medical Reports for 1860, which appeared in this Journal in February last, the death-rate for that year was stated to have been 19·9 per 1000, and the rate of invaliding 13·1 per 1000,—the total waste of men being 33 per 1000. Consequently, although the actual number of deaths that occurred in the army in 1861 was less than in 1860, the conclusion seems well founded, that the reduction in the rate of mortality was almost entirely attributable to the greater extent of invaliding.

Having devoted so much of our space to the examination of the Statistical Report, our comments upon the Sanitary and Medical Reports must necessarily be very brief.

The object of the Sanitary Report is to show the condition of the barracks, hospitals, huts, and camps occupied by the troops; to note their defects, and to record what may have been recommended for their improvement; to mark the influence upon the health of the soldier exercised by his clothing, food, occupation, change of climate, etc.; in short, to take cognizance of the circumstances which tend to preserve the army in health and efficiency, as well as those which produce, or may be likely to produce, sickness and death.

In accordance with the new code of regulations, there is now sent to the Army Medical Department Office at Whitehall, at the commencement of every year, by each medical officer in charge of a detachment, regiment, or station, either at home or abroad, a detailed sanitary report, in which all the matters just mentioned



are commented upon, according to the extent in which they may have come under his observation. The Sanitary Report of Dr Logan is in reality an abstract of these; and notwithstanding certain peculiarities of its style, which we should be glad to see amended, it is impossible to glance through it without perceiving that the medical officers are generally both able and active in the discharge of their manifold and important duties. Professor Parkes, of the Army Medical School at Netley, has also contributed to this section an excellent "Report on the Progress of Hygiene;" and the "Report on the Ventilation of the New Hut Barracks at Gravesend," by Assistant-Surgeons Hewlett, Stanley, and Reed, for clearness, brevity, and scientific precision, may well be regarded as a model.

In the Medical section of Dr Mapleton there are a few contributions from medical officers to the literature, as well as to the science and art of medicine and surgery. The "Observations on the Influence of Pandemic Causes in the production of Fever," by Mr Lawson, Deputy-Inspector General of Hospitals, supply good reasons in behalf of the theory which supposes the existence of a noxious morbific atmospheric wave, whose course is from the south or south-east towards the north or north-west in the Indian and Atlantic Oceans. It is Mr Lawson's opinion that this pandemic wave "determines the frequency and severity, rather than the particular form of the fever, which, there are many reasons to conclude, is more intimately connected with the local circumstances at the time" of its outbreak.

The report on fever as it occurs in Malta, from the pen of Assistant-Surgeon D. Marston, R.A., may also be read with advantage. We are especially glad to see the paper of Dr David Milroy, Assistant-Surgeon, 30th Regiment, on "Pulmonary Diseases and their relation to Syphilis," followed by another on the same subject from Professor Aitken of the Army Medical School, because we fear that constitutional syphilis has never been sufficiently recognised in this country as a cause of phthisis. The profession will welcome the observations of these gentlemen, as being very valuable contributions to our knowledge both of syphilis and phthisis.

Professor Longmore's Reports on the Cases of Gunshot and Sabre Wounds of Invalids, sent to Fort Pitt during the year 1860–61, are excellent in every respect.

Dr Mapleton himself informs us, that "on the 1st of January 1861 there were 1033 medical officers on full-pay. During the year, 22 assistant-surgeons entered the service; 15 medical officers died; 9 resigned; 8 retired upon permanent half-pay (7 from ill-health, 1 from other causes), and 27 were placed upon temporary half-pay, on account of illness." He also gives a list of the medical officers, from the Director-General downwards. With reference to the number of deaths of medical officers, we must, however,

observe that in Hart's Army List 41 deaths were reported for this year, and in only 12 of these instances had the medical officers been on the half-pay list more than two years. We are therefore justified in believing the mortality of the officers of the medical department to be much higher than Dr Mapleton represents it,—indeed, not far short of 29 per 1000 (as was stated in this Journal last year), and consequently about 10 per 1000 more than that of the rank and file, and more than double that of the civil male population of England of similar age. When, therefore, we look down the long list of medical officers, and remember that two-thirds of them receive less than £210 a-year, we cannot wonder at their being discontented with their condition, especially as there seems no other prospect for the majority of them than to linger on for from ten to twenty years more, at very nearly the same rate of pay. This we believe to be the fundamental source of the dissatisfaction which pervades the department, and which serves to give exaggerated proportions to all its other grievances, whether emanating from without or from within. As to those which emanate from without, it is easy to understand why the medical has more of them than any of the other civil departments; for the officers of the latter are not brought so much into contact with the combatant officers, or in such important relations. The medical officer is in a false position in the army, owing to the absurdity of the regulations which affect him. He may be said to be a living anomaly, only to be described by antithesis; for "he is made to march, yet he was never drilled; he is supposed to ride, yet he was never taught; he carries a sword, yet he must not draw it;" he perhaps ranks as a captain or a major, yet he is neither one nor the other; he has grave responsibilities, yet no command; he pays his full share of the mess and band expenses, but has less than his share of their management; he is subject to military discipline, yet is considered a civilian; he has to dress like a soldier, yet he is not a soldier; he has to go into action, and occasionally also to fight, both for his own safety and for that of others, "yet he is perpetually told he is a non-combatant, etc., etc.; in fact, he is a civilian sailing, not under false, but under military colours." It is clear that he is too much, yet not enough; and the only way out of the dilemma would seem to be that which would separate him as far as possible from the purely combatant ranks,—which would, in reality, make him a staff instead of a regimental officer as he now most frequently is.

Nor is it difficult to account for the grievances which have their origin within the department. There is probably no class of men who, from the very nature of their studies and pursuits, are so sensitive as the medical, or so prone to resent any dictatorial interference on points of professional practice; and hence it happens that in no profession is there a stricter code of etiquette, or more necessity for its exact observance. But, strange to say, in the military medical service such a code has scarcely any place, for it seems to be often thought that relative army rank entitles the senior to dictate to the junior, even in matters appertaining solely to surgical or medical practice; and as the "regulations" can generally be interpreted so as to sanction such a proceeding, it would be contrary to human nature if the power were never exercised. But, as if this were not a sufficiently fertile source of heartburnings and distrust, it is said[1] that there has recently been instituted a system of "confidential reports," which, if carried out, must tend, we think, to make every medical officer a spy upon the private as well as upon the public conduct of his subordinate.



We need not go farther in search of the causes which have rendered the medical department of the army so unpopular. We can only re-echo the general belief that the remedy is very simple. As there are only two classes of medical officers really required in the army, viz., surgeons and inspectors, these ranks only should be retained, and the pay and relative rank of each should progress according to length of service. But will this remedy be applied, seeing that it involves an increase of expenditure? We hope so, because we know that every improvement in the medical department of the army, every advance made by its members in station and comfort, has hitherto been almost immediately followed by an amelioration of the health of the soldier, and by an increase of his longevity. The good effected by Lord Herbert and Miss Nightingale arose, we firmly believe, almost entirely from the extent to which their acts and efforts led to the loosening of the bonds of red tape by which the hands of the medical officers had previously been so closely tied, and not from the fanciful schemes which they inaugurated. Of late these bonds have been tightened again, notwithstanding that the sickness and mortality of our army are still so much greater than they ought to be. Well, therefore, may we ask whether it is wise already to neglect the lesson which was taught us by the sad and humiliating experience of the Crimean war?

---

*On Malaria and Miasmata and their Influence in the Production of Typhus and Typhoid Fevers, Cholera, and the Exanthemata.* By Thomas Herbert Barker, M.D., F.R.S. Edin., etc., etc. London: John W. Davies: 1863.

The subject of the production of disease by malarious and miasmatic influences has of late years received great attention, and on various important points a marked change of opinion has taken place. Typhus, for instance, which was formerly considered as derived from a specific poison, and as being incapable of being generated

[1] Army and Navy Gazette.

*de novo*, is now generally recognised as capable of being produced under deficient hygienic conditions, the most important probably being the crowding together of human beings. Typhoid or enteric fever, again, which is now regarded as a distinct disease from typhus, is probably capable of being generated by the emanations proceeding from decomposing fecal matter. As to the true exanthemata, small-pox, measles, and scarlatina, there is as yet no proof that they can arise spontaneously, and there is indeed a great probability to the contrary, as there is no evidence that these diseases existed in Europe at a remote period, and as they appear to have been unknown in the western world and in Australasia until introduced from the eastern hemisphere. The solution of the various questions regarding the influences of malaria and miasmata in the production of disease, is not merely of pathological interest, but of the highest practical importance, for a diminution in the mortality occasioned by the exanthematic and allied diseases is to be sought for, not so much in improvements in curative treatment, as in the discovery and enforcement of judicous prophylactic measures.

The first six chapters of Dr Barker's book contains an abstract of the opinions of a great variety of authors as to the influence of malaria, and as to the origin or development of epidemic diseases from geological, meteorological, and climatic influences. The seventh chapter contains Dr Barker's own opinions on the subject, and the following is the general conclusion at which he arrives:—"The thing is clear, as I shall have occasion to show in the sequel, that there are specific poisons for all the diseases under consideration, and that other agencies and influences, whether meteorological, geological, or mental, are but secondary agencies, adding to the effect of the primary and no more." With this conclusion, in the present state of our knowledge, we entirely concur.

The eighth chapter contains original observations on the relations of various meteorological states to particular diseases. The results are interesting; but as the period of observation (two years) was too short, and the number of cases of disease was too small to warrant the deduction of general conclusions, we refrain from stating Dr Barker's results in detail; we may merely state that they agree on the whole with those arrived at by other observers.

The tenth chapter is headed "Illustrations of the Origin and Propagation of Diseases by Infected Air." Regarding the cases detailed, Dr Barker observes:—"Suffice it to say, in the way of introduction to the examples of disease named, that they were all well marked types of the families to which they respectively belonged, and that the circumstances under which they occurred were observed in the most careful and trustworthy manner. However much, therefore, opinions respecting the origin or propagation of the diseases may differ, the *facts* must be accepted; and on the facts, apart from the opinions, I base all the value that attaches to the histories appended."



population of about 35,000 inhabitants; more especially since the instances thus enumerated were all inmates of hospitals, and did not include any patients treated at their domicile or belonging to other classes of society.

In addition to the several prominent points we have now briefly noticed, the periodical alluded to discusses numerous questions which have occupied the attention of medical writers in other countries. Notwithstanding, however, that such references would be highly interesting, as well as instructive to practitioners residing in a district like Christiania, and thus far removed from the more south-western seats of learning, yet believing that to British medical practitioners, any notices of important observations lately recorded by English, French, or German medical authorities would appear wholly superfluous in connexion with our cursory notices of the 'Norsk Magazin,' we will conclude the present brief allusion to its contents by observing that this journal is creditable both to its editors and various contributors.

---

## REVIEW X.

*China from a Medical Point of View in* 1860 *and* 1861; *to which is added, a Chapter on Nagasaki as a Sanitarium.* By CHARLES ALEXANDER GORDON, M.D., C.B., Deputy Inspector-General of Hospitals, Army Medical Department.—*London*, 1863. pp. 464.

WITH laudable industry Dr. Gordon has laid before the medical world what the late expedition to China, as he expresses it, has afforded him by "opportunities not heretofore available to Englishmen of making observations upon a tolerably extensive scale, in regard to the climate of several portions of that great but disorganized empire, of inquiring into the various productions of its soil, and of investigating the phenomena of disease, as well as its ravages among our troops employed there." The author points out the probabilities of further military operations in China; alludes to the excellence of the outfit and organization of its departments, and the success of the late expedition, and hopes the present work will be a guide to the medical men and the authorities in future operations there.

The reader will peruse with interest Dr. Gordon's researches into the origin of the word China, its apparent connexion with Sacred Writ, and the extreme antiquity claimed—and with every evidence of truth—by the Chinese for their nation. Allusion is made also to the affinity between ancient Egypt and China, and between the writing, if we may so apply the word to the characters of China, Egypt, Assyria, and of the Hebrew language.

A short outline of the history of the several dynasties which have ruled China, of its more important articles of manufacture and trade—as silk, tea, printing so called—its religion, and some of the peculiarities of the customs of the people, is given in the introduction. The

science of medicine, as far as seems known, though of very ancient date in China, still continues very much in its primitive state.

Records of epidemics exist in China, though very meagre in their details. Plague is said to have existed in the south of the country in the sixteenth century, but not more recently. From 1820 to 1861, cholera prevailed at times in parts of China. That small-pox is a terrible scourge in China is not to be wondered at, as vaccination is almost unpractised there, and the dreadful modes of practising inoculation in general use among the Chinese but render the propagation of this loathsome disease in an aggravated form more certain. The manner of "disposal of the dead and of the veneration shown to ancestors" by the Chinese, and the similarity between these customs and those of some African nations and others, is alluded to. The introduction to the work gives a rapid review of the ancient commerce between China and Egypt, Assyria, &c., and the gradual growth of trade between England and China in more recent times, and the "misunderstandings and wars" which attended the same. Of Hong Kong Dr. Gordon says:

"A very few days' residence at Hong Kong convinced me that early rising is not practised here. In this respect the habits of the residents resemble those of the few white men who vegetate for a few years on the coast of Guinea in Western Africa, and probably from the operation of similar causes, to wit, the well-known fact that the morning air, before the sun has dispelled the noxious vapours that hang about, is extremely unhealthy, producing fevers in those who expose themselves to them. Among many other important facts of late years brought to light during the investigations that have taken place into the probable causes of yellow fever, is one which appears to be applicable to Hong Kong, and whose operation forces the residents, without they themselves being aware of it, to accommodate their habits accordingly.

"It has been ascertained that a temperature of 80° Fahr. destroys the power for evil of that morbific influence to which the name of malaria has been given, and hence the explanation of what at first sight appears paradoxical, that exposure to the heat of a tropical sun in a 'malarious' and unhealthy district, is far less dangerous than exposure to the heavy mist and emanations that from sunset to sunrise envelope these places as with a cloud.

"There is, therefore, good reason why the residents of Hong Kong do not during the hot season get out of bed, and away scampering on horseback in the early morning, as is the custom in India. Unhealthy as I fear the island is at all times of the day, it is to be suspected that it is most so of all during the hours the sun is below the horizon." (p. 31.)

We have ourselves resided in Hong Kong in summer and in the early winter, and can endorse the foregoing observations. One additional point which we personally experienced in that part of the world, and one worthy of the consideration of regimental officers and others, is the doubly sickening effect of the early morning sun in those regions.

A quaint test of the salubrity of a locality we saw practised by the late Pacha of Egypt, when seeking a healthy site for a palace—namely, the suspension of a leg of mutton from a pole, the test of healthiness being in favour of that place where the mutton kept sound the longest; in other words, it showed the difference between dry heat and that much more serious enemy to human health, moist heat. It is not in the unhealthy island under our consideration or in other hot climates alone that the night is most noxious; we need not go further from home than some of the comparatively undrained districts of our own British isles to satisfy ourselves of the truth of the principle that night-fogs are so dangerous to health. Dr. Gordon mentions the praiseworthy arrangements of Government as regards hospital accommodation, coupling the name of the late lamented Lord Herbert with some of them; he dwells strongly, too, upon the invaluable aid in the recovery of the military and naval invalids, which would arise if a regular steamship communication was available for their rapid transport to their native land. He suggests having a service of large steamships specially fitted up for the sick, to run as required from India and China. We think that that enterprising and efficient company named in this work, the P. and O., very generally known by that abbreviation of its proper title (the Peninsular and Oriental Steam Navigation Company), could, at a far less cost to the country, employ its spare, or, in some instances, its reserve ships in the conveyance of any large number of invalids, while small drafts could very often get passages in their regular "liners" in the slack months of their main traffic, as has been the case frequently in the Mediterranean for years past. We published a similar suggestion to Dr. Gordon's in one of the London daily journals during the Indian mutiny, pointing out, as he does in his present work, the advantages of receiving-ships for the invalids in Egypt, a plan which has been, according to him, actually adopted by France.



An account of the wet and sickly season follows, with its effects on the health, and tables of the sickness and meteorology are given, showing the climate, though still very unhealthy, to have improved of late years.

In 1843, the average strength of European troops at Hong Kong was 937, and the total deaths 368! justifying the name, "Valley of the Shadow of Death," which a rather picturesque glen, a little way out of Victoria, was called when we visited Hong Kong some years ago. However, many causes then concurred in the infancy of the colony to render it unhealthy, which do not exist, or at least not to at all the same extent, at present.

It is consoling, after reading such sad accounts of Hong Kong long ago, to observe that in 1860–1 (official year), the mortality of the British troops in Hong Kong and Canton was only 3·68 per cent., while among our native (Indian) troops it was but 2·34. "The year is reported to have been a remarkably healthy one." February is stated to be the most healthy month, and July the least so. Fevers and bowel complaints are the most fatal diseases at Hong Kong. As in India, remittent fever and coup-de-soleil often seem closely allied. We can vouch for the accuracy of the graphic description of the Chinese, their customs, and their country, and quite agree in his remark that the light of Christianity is still wanting to them, as seen no way more

strongly than in the treatment of their prisoners. But we will not omit to mention the contrast he draws between the well-clad and happy-looking tea-pickers of Honam and the poor needlewomen of our own land.

A somewhat prolonged residence in the important commercial city of Tien-Tsin afforded opportunities for obtaining a very interesting insight into the manners and customs of the people; their dinner-parties, new year's festivities, public baths, foundling hospital, physicians, street shows, beggars, are all described in an agreeable style.

Repetition occurs in some parts of the work, but this is in a great measure explained in the preface by Dr. Gordon having had to leave home again on service, without correcting the proofs. Attention is paid to minutiæ of climatology, and its "bearings," so to speak, on the daily admissions to the hospital are given at length; though presenting a formidable array of tables, they are at once interesting to the scientific reader, and likely to prove highly useful in case of a future occupation of the country by our troops.

After giving a table showing the amount of ozone in the different months and the relative mortality for the same periods, Dr. Gordon says—"It is evident from these particulars, if they prove anything at all—and it is not clear to me that they do—that they prove the very opposite of what, according to theory, would be expected from them."

An interesting chart of climate is given, contrasting that of Greenwich, Canton, and Hong Kong with Tien-Tsin, from which it will be seen how applicable to the latter is the appellation of an "extreme climate." In winter it (the temperature) "descends far below what we are accustomed to see in England; while in summer it rises further above the English mean than it had previously sunk below it." The author, referring to the strong contrasts which are shown by the chart in question between Tien-Tsin and Canton and Hong Kong, points out the marked difference as to sickness, attributable, as he considers, to the greater moisture of the two southern localities and other local causes. The latitude of Tien-Tsin is about the same as that of Lisbon, and yet the mean cold of the three winter months of the former is respectively 10°, 15°, and 14° below that of Greenwich.

The requirements of a military hospital are described so comprehensively, and particulars of detail of the highest importance so fully, that we have only space to mention the fact; while we must sum up our references to the chapter on the mortality of Tien-Tsin by stating that the annual loss by death and invaliding was about 10 per cent. for the year 1860–1 (beginning November, 1860), "a loss by no means severe when contrasted with that at many other foreign stations" where our troops serve, as will be seen by the following comparison from published returns—



| | | | |
|---|---|---|---|
| At Tien-Tsin, deaths of British for the one year, per cent. | | . | 5·68 |
| Jamaica, | „ annually | „ . | 6 to 13 |
| Peshawar, | „ „ | „ . | 5 to 12 |
| Dinapore, | „ „ | „ . | 2 to 11 |
| Chinsurah, | „ „ | „ . | 2 to 14 |
| Burhampore, | „ „ | „ . | 6 to 9 |
| Fort William, | „ „ | „ . | 3 to 8 |
| Dum Dum, | „ „ | „ . | 3 to 20 |
| Crimea, from disease | | „ . | 18 |
| „ wounds | | „ . | 3 |

Dr. Gordon considers that his chapter on the "Pathology of Diseases at Tien-Tsin" needs the observation, "that he is not personally responsible for" parts at least of it; and we must concur with him in thinking that the chapter shows that the spirit of research was not active in the members of the profession who prepared the reports on the pathology of Tien-Tsin hospitals; we are willing to make every allowance, however, for the trying nature of the duty in an unhealthy climate, where for a great part of the year the intense cold or great heat must have rendered the investigations doubly injurious to the health of those pursuing them, and the difficulty of the task greater than under more favoured circumstances. However, this addition to our knowledge is not devoid of value. A sketch of the successful working of an hospital for Chinese at Tien-Tsin, carried on by the medical officers of the British force, will be read with interest, reflecting as it does much credit on all who promoted its establishment and carried it out.

Chloroform excited the attention and admiration of the Chinese to so great a degree "as to out-do, if that were in their opinion possible, the power of the dragon itself." Many who had no chloroform given them bore the pain of operations with great firmness. Dr. Gordon observes—

"From their earliest youth the Chinese are taught indifference to bodily suffering or to life itself. Personal cruelty is instilled into their nature from their infancy, and so effectually that I have seen bystanders and relations of a subject of operation smiling and joking as its details were being proceeded with, and I have seen a person just removed from the operating table, and placed for the time being upon a bed in the immediate vicinity, smile at and appear to enjoy the agonies of his successor as the knife was cutting its way through, and the blood trickling from, his quivering flesh.

"And yet, notwithstanding these characteristics, the Chinese are far from devoid of gratitude. Some have expressed themselves as deeply indebted to the foreign surgeons for having restored them in health to those dependent upon them for support; neither are they wanting in kindness and attention to each other during sickness. Brothers have been seen performing offices to one another, when prostrated by sickness, such as, I must say, I have never seen in what are called civilized countries. If, therefore, there are very many objectionable points in the character of the Chinaman, even he has his redeeming ones.

"Shortly after this hospital had been established, the fact became very apparent that the male patients had for some time been behaving with great rudeness towards the inmates of the opposite sex, and this to so great a degree that a great number of the latter had left, while some who remained were in tears, and busily engaged in preparations to make their exit also. The fact

now transpired that the men were at a loss to comprehend the motives which induce us to apportion to the women the best room in the hospital as a ward. They did not scruple to inform us that they wanted the room in which the former were accommodated, and quietly intimated that 'any place was good enough for them'—i.e., the women, adding, as if in derision, 'they're only women.' We had before met with much to convince us that the female sex hold among the Chinese a most degraded position. Here was an additional confirmation of the discreditable fact." (p. 431.)

The peculiar ideas of administrative government in China is shown by the return it made us for kindness and valuable medical treatment to some Tartar soldiers who had serious gun-shot wounds, but who were sent to the hospital at Tien-Tsin by Sir Hope Grant, and when recovered were sent, with some little ceremony, back to the Chinese, in the hopes that the "celestials" might understand the different treatment we gave prisoners, unlike that which our unfortunates received at their savage hands.

"As regards the Tartar soldiers, however, it speedily became apparent that the Chinese authorities thought very differently from what those of England would have done under similar circumstances. They refused to receive the men, or to have anything to do with them; the men had fallen in battle, they said, and therefore had by them been considered to be dead; officially dead, therefore, they were considered to be, and the Chinese system of 'red tape' had probably no precedent for dead men coming to life again, and being retaken upon their 'returns.'" (p. 435.)

Then follow the shocking details of the treatment which the British and French prisoners underwent at the hands of the Chinese.

A trip in the *Vulcan* (H.M.S.) for coal, to Nagasaki, in Japan, gave the opportunity of the notice of that very interesting town and its beautiful vicinage. Dr. Gordon went about with pencil and paper in hand.

"I am reluctant," he says, "to take leave of this most exquisitely beautiful and interesting place without alluding once more to the greater civilization of its people than what was to be met with among the Chinese, at least those in the north and near the capital. It may, indeed, be well said that one of the best tests of the degree of civilization attained by either a single person or a community is shown in their manner of treating a woman. The more barbarous the people, the less do they associate with their women.

"Now, in Japan—at least if we can judge from what I observed at Nagasaki—families seem to have about as much intercourse among each other as is the case with ourselves. Wives, instead of being secluded, or kept separate from the males of the family, mix with them, and take upon them the duties of the household much after the manner of our own women in England; and I am inclined to believe that, notwithstanding the freedom, and perhaps frivolity, often shown by even matrons in Japan, there is among them less actual harm than might be found in some societies where more outward decorum is observed. The civility of the people has already been remarked on; indeed, I have never seen so great a degree of civility displayed towards strangers and foreigners as that shown by the more respectable classes of Nagasaki towards us. From various sources we learned that they and the inhabitants generally of Kin Sin are well disposed towards the British, and entertaining, as they do, the belief that before long one or other of the Great Powers will assume possession of the island, they go so far as to express their hope that this power may be Britain.

"In the course of my notes on China, I had occasion more than once to



remark how very desirable would be a sanitarium somewhere in Japan, to which invalids from our stations in the former might be sent. My cursory examination of Nagasaki convinced me that here is really the best possible situation for such an establishment. The place itself possesses in an eminent degree all the ordinary indications of being a healthy one. Building materials are abundant, and cheap labour is procurable to any extent." (p. 463.)

We would gladly give a fuller quotation on this extremely important subject did our space permit, as we can, from personal experience in Southern China, vouch for the truth of the unwholesomeness of our stations there, and the want which exists of such a sanatarium as Nagasaki seems fitted to afford.

We must now take leave of 'China from a Medical Point of View;' though containing much that will interest the general reader, it is not devoid of merit as a medical work, though we should have preferred to have found more detail as to medical treatment, &c. Dr. Gordon states that he intended the work especially for those who may again be in medical charge of troops in China, and to such we think it cannot but prove on the whole useful.

---

## Review XI.

*A Manual of Military Surgery, for the Use of Surgeons in the Confederate States Army; with an Appendix of the Rules and Regulations of the Medical Department of the Confederate States Army.* By J. Julian Chisholm, M.D., Professor of Surgery in the Medical College of South Carolina, Surgeon in the Confederate States Army, &c. Second Edition, revised and improved.—*Richmond, Va.*, 1862. pp. 514.

The dreadful slaughter which has been lately going on in America has not as yet produced that slight compensation which such horrors usually bring with them, in any useful systematic contribution to the healing art. The Peninsular war, if it did not deserve all the encomiums in this respect which Mr. Guthrie used to lavish on it, yet no doubt was most valuable in its effect on the treatment of all injuries, and especially gun-shot wounds. The Crimean war was illustrated by a medical history which will long be referred to as one of the most valuable medical works of the age; nor have the Indian and Italian campaigns been barren of useful experience; but as yet the war in America seems destined to be as useless for instruction to the surgeon as to the soldier, and for the same reason—viz., that a mass of duty which would have taxed severely the powers of the most efficient staff of well instructed and experienced officers, has been suddenly thrown upon a heterogeneous collection of persons without any special training, and often without any aptitude for the business. This has not proved so disastrous in the medical as in the fighting department, since the officers of the former were, at any rate, surgeons at the outset, while those of the latter in most cases had not been soldiers at all; still, it has not been without its effect. Every reader of the book which we have placed at the head of these remarks will see, that to be a good

military surgeon at all, even so far as to do the best for life and limb in the various emergencies of war, an officer must have received some special training which an ordinary general practitioner neither has nor should have; but he will also learn that this constitutes only a small portion of the ordinary army surgeon's duties, since gun-shot wounds and the casualties of actual warfare occasion less than a tenth part of the loss of an army; so that questions of camp-hygiene and discipline, utterly foreign to medical education as such, ought to occupy the greater part of the thoughts of any surgeon serving with the army.* But to be a good and efficient head of a medical department, such a chief as shall really be likely to advance the science of military surgery, either by practical improvements or by extended observations, requires a combination of knowledge, experience, and natural capacity which can only in ordinary cases be expected from army surgeons who have passed through the rough ordeals and sad experience of years of camp life and actual warfare. Wars such as these in America, managed by civilian soldiers and civilian doctors, with the dreadful losses which a want of special training in both classes has involved, will do much to prevent a repetition of the error by which in the Crimean war civil surgeons were put in positions of greater dignity and emolument over the heads of the far better qualified military surgeons; and a number of expensive civil hospitals were founded, the principal use of which was to allay popular clamour, at the expense of engendering well-founded discontent among our more hardly worked and less generously paid army doctors. In America, however, there was no choice; as no army surgeons existed, the armies were necessarily handed over to ordinary general practitioners, with the results which Dr. Chisholm hints at in his preface—

"As our entire army is made up of volunteers from every walk of life, so we find the surgical staff of the army composed of physicians without surgical experience. Most of those who now compose the surgical staff were general practitioners, whose country circuit gave them but little surgery, and very seldom presented a gun-shot wound. As our country had been enjoying an uninterrupted state of peace, the collecting of large bodies of men, and retaining them in health, or the hygiene of armies, had been a study without an object, and therefore without interest. When the war suddenly broke upon us, followed immediately by the blockading of our ports, all communication was cut off with Europe, which was the expected source of our surgical information. As there had been no previous demand for works on military surgery, there were none to be had in the stores, and our physicians were compelled to follow the army to battle without instruction. No work on military surgery could be purchased in the Confederate States. As military surgery, which is one of expediency, differs so much from civil practice, the want of proper information has already made itself seriously felt." (Preface, p. i.)

Dr. Chisholm's work is intended, then, not as a complete treatise on the art of military surgery, but as a manual for the use of the surgeons in the army to which he belongs. We must say that the work is a most excellent one for this purpose, and that as far as this specimen goes (the only one we have seen from the Southern States),

* See the excellent remarks of our author in Chapter IV.



the Confederates appear to have as great an advantage over their Northern invaders in the surgical as they have in the other branches of the art of war. We have already noticed some of the works printed for distribution among the surgeons of the United States army.* In those written by native authors, the want of practical knowledge has been only too conspicuous, and perceiving this, we suppose, the Government has resorted to the peculiarly American expedient, of printing some of the best known English works on military surgery (as the essays of M'Leod and Longmore), for the use of the surgeons of their army. This piece of authorized piracy is a plain confession of the inadequacy of the works of their own surgeons. No such necessity is laid upon the Confederate authorities. This work of Dr. Chisholm is amply sufficient for the needs of those for whom it is intended. The author does not inform us what experience he has had, nor how much of the work is original; nor is it possible to judge on this head, since he adopts the reprehensible practice of transferring passages from other authors into his pages without acknowledgment (beyond the general acknowledgment contained in the Preface, p. iv.); but from some expressions on p. 63, we infer that Dr. Chisholm was at any rate in the neighbourhood of the French army during the Italian campaign, and has therefore had some opportunities of seeing the medical arrangements of large European armies. But whatever may be the sources from which it is derived, the work before us gives an excellent and tolerably full account of all the matters which it is necessary for an army surgeon to know—hygiene, recruiting, clothing, feeding, and amusing the soldiers; the arrangements, sanitary and others, of camps and hospitals; the transport of sick and wounded; the duties of surgeons in military hospitals, in charge of bodies of troops, and in battle; the general and special surgery of gun-shot and other wounds; short directions for such operations as are most commonly necessary; the administration of chloroform, and the management and detection of malingerers, make up a goodly array of subjects; and as all these are treated usefully, well, and intelligibly in four hundred and forty-six small pages, it is plain that the author must be a man of clear head and good powers of expression, as well as familiar with his subjects. In the Appendix are contained—1. The official regulations for the Confederate States army surgeons. 2. The Memorandum published for the information of surgeons in the English army on taking the field. And 3. Some plain directions for cooking.

There is not, of course, very much in the strictly surgical portion of this work that would be new to our readers; but a few extracts on subjects which are either new to us, or on which opinions in Europe are still divided, may serve to show what the teaching of the best American authorities is.

The following passage is encouraging to those who have maintained

* A work by Prof. Hamilton on Military Surgery was noticed in vol. xxix. p. 171, and one by Dr. Stephen Smith, in vol. xxx. p. 458. Both works, but especially the latter, were below the reputation of their authors.

the efficiency of volunteer troops if called upon to sustain the hardships of actual war:

"When the call to arms was made, the militia—composed in a large measure of clerks, merchants, and professional men, most of whom were much more familiar with the duties of the desk than manual labour—with one common impulse rushed to meet the enemy. Many of them, of delicate frames and frail constitutions, exposed themselves upon sandy islands, directly upon the sea-beach, with little or no protection. They were badly housed, irregularly fed, and miserably watered. Their daily duties were, with pick and shovel, to throw up redoubts, establish batteries, and mount heavy ordnance during the day; whilst their nights, when not spent in anxiously watching an expected invasion, or performing tedious guard duty during a spell of continuous stormy weather, were forgotten in sweet oblivion upon the wet sand, at times without the shelter of a tent. Notwithstanding, the sanitary condition of the troops was excellent, and many, of delicate frame, returned to their homes, at the expiration of two months, sturdy robust men, with an addition in some cases of twenty-five pounds weight. All, without exception, were improved by the change of life, under the exhilarating influence of sea air and active exercise." (p. 6.)

The following hint as to dressing may be useful, though the material is much less plentiful with us than in Dr. Chisholm's experience:

"Carded cotton has been extensively used in military surgery, and was found in the Crimea to be a good substitute for lint by the French surgeons, with whom an abundance of lint is a *sine quâ non* in the treatment of wounds. As it can be so easily obtained in any part of the Confederate States, and at so trifling a cost, it promises speedily to usurp the place of the officinal preparation. Now that tents and meshes are scarcely used, and receptacles for collecting pus are denounced in modern surgical practice, we see no reason why carded cotton, with its very soft elastic fibre, would not make a more soothing dressing than lint, which is often formed of coarse, hard threads, which would leave their marks upon a sensitive inflamed surface, and therefore must be the unrecognised cause of pain.

"Mayor, in his work, 'Bandages et appareil à pansement,' after mentioning that the use of raw cotton had been proscribed without cause in the treatment of wounds, reiterates what would be evident to every serious investigator, that, far from being hurtful, this substance, so light, so soft, so clean, so simple, so abundant, and so easily obtained, is the very best article that can be used." (Note, p. 132.)

The subject of gun-shot wounds of the extremities seems to us especially well treated by Dr. Chisholm. We select two topics for extract. On the question of amputations in the thigh, Dr. Chisholm's experience appears to coincide with that derived from the recent campaigns of European armies, in leading him to dissuade amputations at or near the hip, while warmly urging the importance of amputating, as a general rule, in the lower part of the femur.

"Baudens succeeded in saving both limb and life in cases in which compound fractures of the upper half of the thigh were treated without operation. Consolidated and useful limbs, with but little deformity, are reported as having been saved. By the use of the fracture-box and inclined plane he succeeded in curing a compound fracture on a level with the trochanter, saving a useful limb, although he had extracted two inches of the shaft of the femur. His experience proves that compound comminuted fractures of the upper half of the thigh are not so fatal when attempts are made to save the limb, as when the thigh is amputated. The experience of surgeons derived from the wounded of the army of the Potomac, would establish a similar course of treatment, as excellent limbs were saved where fractures had occurred in the upper third of the femur, whilst amputations in the neighbourhood of the trochanters met with the usual fatality." (p. 401.)

"As a rule, amputations are less hazardous the greater distance we operate from the trunk; and the reason why amputations are urged for compound fracture of the lower and not upper portions of the femur is, that the chances being similar without it, amputations are much less fatal in the lower than in the upper half of the thigh. Attempts at saving limbs, after the battles on the Potomac, confirm the above experience. Too few primary amputations were performed upon the lower portion of the thigh, and the result was a heavy mortality among this class of wounded." (p. 408.)

Dr. Chisholm speaks in very favourable terms of the operation of resection generally. His words are:

"In gun-shot wounds of joints, very rarely does the patient escape with life in military hospitals. In private practice he sometimes recovers; but even under the most advantageous circumstances a successful case is rarely seen, and then usually with a destroyed and anchylosed joint. As the results in injured joints are so fatal, surgeons had at an early day adopted amputations as giving the only chance for recovery. In recent years, conservative surgery has introduced the operation of resection as affording not only the means of preserving life, but also of saving a useful limb." (p. 386.)

We infer from these and other expressions of Dr. Chisholm that not only the elbow and shoulder, but also the other large joints, have been frequently the subjects of resection in American military experience. If this be really so, we look with much interest for a publication of the results, since hitherto the very slight experience obtained of excisions of the knee and hip in actual warfare has been highly discouraging.

Many other interesting topics might be illustrated from Dr. Chisholm's work, but we must forbear. We commend it to the notice of our readers as one of the best compendiums of the present state of army surgery which we have met with. The want of references prevents us from judging accurately what praise it deserves in respect of originality.

## Review XII.

1. *Elementos de Hygiene Militar.* Por J. A. Marques, Cirurgião-Medico pela Escola Medico-Cirurgica de Lisboa, Cirurgião de Brigada-graduado, &c., Redactor do 'Escoliaste Medico,' &c. &c. —1854. pp. 396.

*Elements of Military Hygiene.* By J. A. Marques, Surgeon of Brigade, Knight of the Order of Christ, &c. &c., Editor of the 'Escoliaste Medico.'

2. *Resultas d'uma Commissão Medico-Militar em Inglaterra, França, Belgica, e Paizes-Baixos; Londres Medica; &c.*—Idem. pp. 448.

*Results of a Medico-Military Commission in England, France, Belgium, and the Netherlands; followed by various Chapters under the Title of 'Medicine in London.'*

3. *Estudos Estatisticos, Hygienicos, &c., Sobre as Doenças e a Mortalidade do Exercito Portuguez de Junho de* 1851 *a Julho de* 1861.—Idem. pp. 270.

*Statistical, Hygienic, and Administrative Considerations on the Diseases and Mortality of the Portuguese Army, during the Decennium from June,* 1851, *to July,* 1861; *followed by Numerous Comparative Data, &c.*

A man who writes a good book may be said to have done a good thing; but it does not follow that he has done a useful thing. Unless the conjunctures are favourable, truths may be sown broadcast from term to term, and no practical issue occur.

We may draw this experience even from the most civilized and extended communities.

The happiest circumstances, according to us, have their event when the influential persons in a state look for character in the support they are ready to afford to enlightened suggestions and unusual exertions for the advancement of the people. And generally speaking, the favourable attention of persons of consequence is a *sine qud non.* It is with pleasure, therefore, that we can write of modern Portugal as a country in which science appears to have received such encouragement as, if in a rising community it is most necessary, is somewhat indispensable in all. To study with perseverance, to borrow with discrimination, to criticize without prejudice or spleen, to suggest construction and change on a scale sufficient to establish national improvement, these are qualities of no common occurrence, and the Portuguese Government have done themselves honour in the enlightened manner in which they have given support to the investigations which lie before us under the name of Senhor Marques. The "act of courage" which led him to publish a scientific treatise in Portugal in the year 1854, has since borne good fruit, and his Government has only to avail themselves of such efforts to escape the imputation of indifference so condemnatory of the ruling power. To calculate on the nobler and not on the more perverse instincts of our nature should characterize a new era in legislation.



Until lately, the medical profession was content to base its opinions on the general views which resulted from the aggregate experience of its members, or which were the fruit of individual sagacity and research, and these have proved trustworthy guides in the main. It is scarcely necessary to remark on the assistance which has been more recently derived from statistical data; sometimes by the confirmation of truths not before resting on sufficient evidence, they have, by removing doubt, afforded a ready answer to scepticism; or again, by penetrating beneath the surface, they have broken up dogmas and revealed fallacies previously unsuspected; so that statistics, carefully collected, and in sufficient number, constitute a considerable resource in the formation of individual judgment. It is to the Portuguese army that we shall presently have to apply them.

But before doing so we shall say a few words upon Portugal.

The climate of Portugal, as is well known, is excellent and salubrious. The character for moisture which in some degree attaches to it, is due to fogs from the rivers and to the neighbourhood of the sea, the aqueous evaporations from which serve agreeably to temper the dry land breezes. The feeling of heat in these parts is in consequence little oppressive. The dews also are heavy, and the soil retinent of moisture. With a medium temperature of 15° Centigrade, its maximum may be quoted at 20°, and its minimum at 11° respectively. The interior, from continued neglect of planting, is deficient in humidity, and by the paucity of springs, the growth and comfort of the population are seriously interfered with. The mountains are bare of trees. The hilly character of the country is apparent even in the cities, and the highest summits, for the greater part of the year at least, are covered with snow, the winds from them being often piercing cold.

In the neighbourhood of the rivers there is marsh land. Elsewhere the soil is generally light and fertile; in parts it is marvellously endowed. The mass of the population are exceedingly poor, and they are abstemious to a fault, but they do not perish with hunger. The bread of the country is principally of maize, and rarely good of its kind. In all parts of the peninsula the bilious temperament is the prevailing type.

The Portuguese army, as we shall have to consider it, may be said to consist of 20,000 men, of whom 16,392 are effective; the larger number is completed by 2781 pensioners (*veteranos*) and other supernumeraries entitled to hospital relief. Of this aggregate, as many as 5000 are in garrison at Lisbon, and a third of that number at Oporto; the next largest stations are Elras and Chaves; about twenty others absorb the remainder of the troops, and there are some scattered posts. The islands of Madeira and Azores are included in our calculation. With the more remote colonies we are not concerned, as they have no returns that can be made available for our consideration.

The casualties from disease, as given in the 'Hygiene Militar' of Senhor Marques, published in 1854, have the following proportions for

the period from Midsummer, 1850, to Midsummer, 1853, inclusive—viz.: Of 58,821 entries into hospital, 3399 bronchitis, 359 broncho-pneumonia, 779 pulmonitis, 212 pleuro-pneumonia, 538 pleuritis, 1142 angina (cynanche), 1756 rheumatism, 599 erysipelas, 310 pulmonary phthisis, 630 typhoïd fever, 238 dysentery, 5700 ophthalmia and its complications, 5580 simple and complicated intermittents, 2878 inflammations of the alimentary tubes, 9040 syphilis in its several forms. The post-mortem tables give, within the period, from among 948 dead: 177 from phthisis, 110 from pneumonia, 40 from bronchitis, 20 from broncho-pneumonia, 27 from pleuro-pneumonia, 32 from pleurisy, and 84 from typhoïd fever.

We have not failed to enumerate these calculations as corroborative of and complementary to such other observations as will fall under our notice. Senhor Marques, at a more recent date, has published a volume containing a summary of statistical results obtained during the decennium 1851–1861, with scientific deductions for the benefit of the service. It is, for the most part, to this work that we are indebted for the statements that follow.

The number who come yearly under treatment in the Portuguese army averages 757·9 per thousand. The yearly death-rate is estimated at 16·5 per 1000; the number daily under treatment 39·4 per 1000; the average duration of treatment nineteen days. Of the whole 16·392 effective, 12,582 pass under treatment in the year. The cures are calculated at 42·6 to one casualty from death. The dismissed yearly for inspection 48 per 1000 sick.

During the decennium there have occurred two visitations of cholera morbus and one of yellow fever, with serious epidemics of pneumonia, influenza, &c.

We shall now consider in detail some of the more considerable affections of the Portuguese soldier. The term of stay in hospital is certainly short, but the diseases are both grave and numerous.

The mortality from diseases of the lungs is extraordinarily great; in round numbers it constitutes half the mortality. We may say, indeed, that it constitutes the greater number of deaths, both absolutely and relatively. Bronchitis prevails chiefly in the more mountainous districts—Traz-os-Montes and Beira Baixa, where also the military quarters are the least advantageous to health. The islands of Madeira and Azores, and in lesser degree the provinces of Minho and Algarve, are much more free from this complaint. Its proportion for the year 1860–61 is 1205 cases, with 16 deaths, in the whole army. In the year previous there were 847 cases in excess of these numbers.

Pneumonia is prevalent in the same regions as bronchitis. There is this observable with regard to it—viz., that in a mortality varying from one in two cases attacked, to one in nineteen cases, neither the treatment, which is usually of a mixed character, nor the locality, afford a datum to account for this, the relative number of deaths being greatest in Traz-os-Montes,* and smallest in the more rigorous

* The country up the Douro (Alto Douro), between Traz-os-Montes and Beira Alta, is very cold in winter and very hot in summer. The cloud-capped Serra do Marão is



climate of Beira Baixa. The average mortality from pneumonia is one death for 6·8 cured. Until the last year of the returns, 1860–61, it was predominant in Beira Baixa, but subsequently assumed larger proportions in Estremadura, Beira Alta, and Traz-os-Montes. It is strikingly rare in Minho and Algarve; also in the southern province of Alemtejo and the islands.

We shall now pass to the statistics of phthisis, and in considering them we notice this fact—that in 1860–61 the garrison of Lisbon being, as before stated, but one-fourth of the army, this garrison furnishes 78 out of the 147 cases occurring in the whole service—more, indeed, than half of the entire returns in respect of the disease. A fact so analogous to what is occurring with our Foot Guards, cannot escape attention; and, without losing ourselves in the category of causes, we will simply remark that this army is in a rare degree sober, and the hospital at Lisbon is superior in its ventilation and general condition. The proportion of the disease for the garrison at Lisbon is 14·7 per 1000; that of the troops at Oporto 11·9 per 1000. Of the soldiers elsewhere employed, the proportion is as low as 3·1 per 1000.

Lamego, Castello-Branco, Santarem, Leiria, Evora, Tavira, Lagos, Funchal, are stations where phthisis is of rare occurrence.

Lisbon seems thus to keep pace with cities further in the north in maintaining a high death-rate from consumption. Its civil returns (communicated by special favour by the ministry) appear in no way to differ from the calculations obtained by Lombard of Geneva on the workpeople of Paris, Hamburg, Vienna, and his native town—the proportion, viz., of 12 in 100 deaths from all causes; and this appears to be the proportion in the civil population of Lisbon. In the entire Portuguese army, calculated on the last few years, the result has been 22 in 100 deaths (in the Belgian it is 14·5), and 3·6 deaths to each 1000 of effective.

This is a very high proportion, and we are ourselves inclined to attribute it in great part to a defective commissariat.

We now come to the consideration of a class of diseases connected, by an acknowledged community of cause, with those of which we have last treated—viz., typhoïd fever. Indeed, these two diseases cause the heaviest losses in European armies, and we find that both in the civil and military returns it is the city of Lisbon which affords the greater number of cases, the fever being extremely rare in the country districts. The estimated occurrence of this fever is 5·4 cases in 1000 effective, with a proportion of 3·9 out of 100 deaths.* This average is not much above that of its occurrence in civil life in Lisbon.

The infraction of the laws of hygiene which occasions the maladies

observable in this mountainous country. The higher range of Estrella is in the Lower Beira. Algarve, in the south, is a plain in the greater part of its surface.

* The last year's returns, 1860–61, give 67 cases of typhoïd fever, with 18 deaths; 18 cases of remittent fever, 13 of inflammatory fever, and 77 of ephemeral fever, each form of disease without casualty. There are also 381 cases under the head of suppressed perspiration.

last discussed, makes itself equally manifest in the development of ophthalmia in military hospitals, and notably of that affection of the lids termed granular ophthalmia. The proportion of diseases of the eye to all diseases in 1860–61 was 1 in 13·5, having been as considerable as 1 in 7 in the year 1850–51. They seem in great part an inheritance from the severer conditions of the year 1849, having declined with unvarying steadiness from 1850 to 1858 to reach so low a proportion as 1 in 24. It has not subsequently maintained itself at that favourable point. The capital still continues to supply the greater number of ophthalmias, notwithstanding the circumstance of the 11th Infantry, in Estremadura, having a recurrence of 146 cases in the year 1861. The proportion of ophthalmias to other diseases of the eye is 82·6 to 100.

Hemeralopia, which had attracted no attention before 1855, has subsequently been the subject of much interest, both in observation and discussion. It has been the occasion of a particular mention by Senhor Marques at the late Ophthalmic Congress at Paris. In the year 1858 there occurred in the Portuguese army as many as 116 cases. The disease displayed itself almost exclusively in the first division of the army, quartered at Lisbon, the bare exception being the 15th Infantry at Lagos, Algarve. The causes lie hid in some special constitution of the soldier which subjects him to defective atmospherical conditions not yet defined. Our author does not omit to point out the increased frequency of the disorder as coincident with the spread of intermittent fevers from submersion of large districts; this occurred more especially in the neighbourhood of the capital, in the year previously mentioned, so much so, that agues were not uncommon in the heart of the city, whence he connects the disease with miasm as its special cause, to which others are secondary or general.

A circumstance not so easy of explanation is the occurrence, in the previous year, of 71 cases of hemeralopia among the soldiers at Lisbon, with merely the usual average of ague there; in the provinces, agues were very much on the increase in that year, but they were unaccompanied by this ocular affection. To meet such an exception, Senhor Marques is obliged to suppose an immunity as a result of acclimatization in the country districts, which does not, however, extend to the worse forms of intermittents.

His enlightened colleague, Senhor J. C. Mendes, in his careful treatise on the subject, seems to have attributed greater importance to the incidence of light, direct or reflected, as a special cause, than to miasm.

The scanty and monotonous diet of the soldier,* the difficult country, hot summer, and miasmata, with the familiar instances of Montpelier and Ehrenbreitstein in our memories, suggest to us a community of cause more than sufficient, and only unsatisfactory from

* "C'est surtout du côte de l'estomac et des intestins qu'on observe des phénomènes qui se lient à cette maladie. Aussi peut on la considérer comme symptomatique d'une affection des voies digestives, affection appelée *embarras gastrique saburral* ou autrement."—Vidal: Pathologie Externe.



a want of definiteness. But is this amblyopia, as described in medical works, a pathological entity? such opposite causes would seem to indicate difference in morbid seat and condition. Are there two affections? Can science severalize them?

The frequency of intermittent fevers in the ranks of the army was in an ascending scale from 1853 to 1858, having increased from 1037 to 3386 in the latter year. It has since considerably declined, either as a result of atmospheric change, or from want of fresh constitutions to work upon. The recruits have always suffered by far the most.

Traz-os-Montes, Estremadura, Alemtejo,* are the provinces where intermittents are most common. The year 1858, when agues were at their height, was also the year of the yellow fever. In the two preceding years the cholera morbus reigned. It is observable, that from 1855 to 1858 was the period of increased development of rice cultivation in the country, and Senhor Marques insists on this cause in relation to all three diseases. It is incredible, indeed, to those who have not witnessed it, how malignantly the cultivation of the rice-plant reacts upon the human frame, and how deteriorating it is on the general aspect of the inhabitants.† The facility of its production in marshy soil, its enormous profits to both landlord and peasant, cause the loss of human life to be disregarded.‡

While human lives are sacrificed, it has been said, at the rate of twenty-five to thirty per cent. per annum, the wages rise from 100 to 400 reis (7*d.* to 2*s.* 4*d.*) daily, and the rent is six times multiplied. The Government does not forbid its production; but in particular instances the civil governors of provinces have interfered, as in 1849, in Alemtejo, where "a malignant fever devastated the province, and carried off a third of the inhabitants,"§ the rice-ponds were ordered to be ploughed up. The same local interference occurred at Leyria. According to intelligent cultivators, it is the leaves about the roots of the plant, which in decaying exhale a pestiferous miasm, such as does not occur in the decay of the ordinary grasses. It is by changing the seed and doing away with the *tanques* (rice-pond) system, that they hope to modify these results. The immediate mortality from ague among the troops does not seem excessive, having been 14 in the year 1858, with 74 cases discharged from hospital to undergo inspection.

We shall now turn our attention to a class of disorders occurring in the years 1860-61, which Senhor Marques considers to have merited a particular notice—cephalo-rachidean meningitis, and on which he has bestowed a chapter of his work.

Of 25 cases included in the returns as meningo-cephalitis, at the least 13, with 5 deaths, fall under the denomination of epidemic

* From neglect, the rivers in Portugal have been allowed at various times to overflow their banks and to change their course, so as to leave much marsh in their neighbourhood.

† See Dr. Peacock's paper on Pellagra in our last number.

‡ A further cause of ague and fever in Portugal is the want of shelter from trees in due proportion, which have beneficial effects in purifying the air and attracting humidity.

§ Forester: Essay on Portugal.

cerebro-spinal meningitis. Ten of these cases happened in the 8th regiment of cavalry at Castello-Branco, soon after the first appearance of the disorder at Monforte; 1 case occurred at Oporto, 1 at Guarda, and 1 at Evora. It had been previously unspecified, or classed with typhoid fever. It was not limited to the military, as in the Strasburg epidemic of a similar disorder; but, taking its rise near Castello-Branco, it subsequently affected the surrounding population, as well as the city inhabitants, giving a total of 105 deaths out of 348 cases happening in the district, nearly all from the ranks of civil life. At a more recent date, 4 cases occurred at Evora in the 5th Regiment of Cavalry, all on one day, and all fatal; while at Castello-Branco, at the time of publication, the disease had not declined.

Diseases of the heart and great vessels are rather large in amount—47·1 yearly for the whole army, with a mortality of 38 in 100 affected. The hilly country and the national habit, which is inveterate, of carrying burdens in transport, will account for this.

Rheumatism is a frequent complaint in the army, a common proportion being 3·8 in a hundred sick.

Venereal diseases, during the first nine years of the decennium, decreased with unvarying steadiness, year by year, from the proportion of 120 per 1000 to 75 per 1000. A slight increase for the provinces in the last yearly return is attributable to the want of generalization in the moderate sanitary regulations which had previously led to their decline. It is greatly to the credit of our author, that he has contributed largely by his writings to the establishment of such precautionary interference. He speaks of them as moderate, but certainly the numbers stand in favourable contrast with those of the British army.*

In considering the returns of the year 1860–61, we notice but 7 cases of blennorrhagia; there are, however, 23 cases of acute cystitis, and 8 of chronic cystitis with complications, the latter form presenting four casualties by death. There are also 5 cases of openings in the urethra. We cannot but connect such cases with blennorrhagia. In the same year there are 1228 cases of primitive syphilis and venereal symptoms (*sic*), 91 with secondary syphilis, and there are besides 5 cases under the head of rupia. There are, moreover, 181 cases of tertiary syphilis, one in which it was fatal to the patient. These proportions are interesting, but are accompanied by no information as to treatment. There is also one case of elephantiasis, and one of ephelide. There were 10 cases of glanders, all fatal, during the decennium.

A feature which greatly strikes us in these returns, is the prominent figure attained by what is termed gastric embarrassment, about 1 case in 30·5 of the whole army. In the year 1860–61 there were 417 of these cases, exclusive of graver abdominal affections, for we have of

* Our last army returns indicate not less than one-third of our troops in home service, and in Portsmouth one-half, affected by these complaints, being 8·69 days' loss of service to the state in every year; or, as we have heard it otherwise stated, two regiments and a half in permanent disability.



gastritis 137 cases, with two deaths; of gastralgia, 34 cases; of gastro-enterite, 19 cases, with four deaths; of indigestion, 32 cases, with two deaths; of dyspepsia, 7 cases; of obstructions of the abdominal viscera, 10 cases, with two deaths; all these independent of the *embaraços gastricos e intestinães*. We have also of peritonitis 4 cases, all fatal; of enteritis 34 cases, with one death; of colitis, 81 cases, with one death; of hepatitis, 15 cases, with one death; of splenitis, 17 cases, with no casualty; 24 cases of dysentery, idem; 131 cases of diarrhœa, with eight deaths; 1 case of cholerine; 2 of enteralgia; 289 cases of stomatitis; 1 of bulimia; and three deaths from cirrhosis of the liver.

As regards head affections, &c., for the year 1860–61, we find, of apoplexy, 4 cases, with three deaths; of paralysis, 30 cases, with four deaths; of epilepsy, 43 cases; of affections of the cerebral mass, 4 cases, with three deaths; of cerebral commotion, 2 cases; of vertigo, 4 cases; of mental affections, 32 cases; of cephalalgia, 26 cases. Besides these there occurred, of epistaxis, 7 cases; of affections of the middle ear, 19 cases; of otitis, 60 cases; of otalgia, 3 cases; and of amaurosis, 6 cases.

Of variola there occurred 542 cases in the decennium, with a mortality of 93 individuals, being 17 deaths for 100 cases of the disease. Secondary vaccination, as it appears, is not employed; in the last year there were six deaths from variola out of 51 affected. Of skin affections we shall only note a few, such as erysipelas, 84 cases, with two deaths; erythema, 12 cases; ecthyma, 10 cases; herpes, 30 cases; zona, 7; all occurring in the year 1860–61, as aforesaid. The prevalence of psora is considerably diminished, especially in the Lisbon garrison, which has fewer cases than three regiments well known in the service.

There is an affection of the glands of the neck which, under the head of adenitis, makes a considerable appearance in the returns. In the last year there were 61 such cases in hospital. Glandular affection of the neck is the subject of strong remark in connexion with the leather stock. Senhor Marques informs us that in recruits of four or five months' standing, small groups of indolent swollen glands are of the commonest frequency, and that in autopsies of the soldiers the cervical glandules are often found altered in colour and structure, without presenting an unusual appearance in the exterior. This is irrespective of the impediment the stock offers to respiration and circulation. This article of dress claims the merit of great simplicity, neatness, and convenience, and these are advantages of the highest class in the equipment of the soldier; but the condemnation of it in these pages is so marked, we should not feel justified in passing it over. The leather stock is especially remarked upon as a cause of ophthalmia. "Meanwhile," says our author, "it is so rooted in the existence of the soldier, that going without it for a very short time gives him sore throat." He inculcates, notwithstanding, that it should be invariably taken off when the soldier lies down in the guard-room. Every soldier not under the bedclothes in hospital should have a loose handkerchief for his neck. In continuation of our subject, we may say the returns show 48 cases yearly, of anæmia,

with one death, and 18·05 of scrofula. The last year's returns give 17 cases of cachexia, with ten deaths; 134 abscesses, with one death; 39 cases of asthenia; 19 cases of congestion; and 194 cases of phlegmon, whatever that may include. Senhor Marques has exercised, doubtless, a wise discretion in withholding details of the more serious epidemics, but still it is very disappointing to us. All we learn of the cholera is that in 1854 it started from the Lazaretto in Vigo, and spread into Galicia; in the year 1832, on the other hand, it seems to have broken out among the Belgian contingent, who brought the germs of the disorder with them. The influenza, in 1852, was most severe and general in the southern provinces, Alemtejo and Algarve, though it prevailed extensively in Lisbon. We see no notice of diphtheria, which has been prevalent in Portugal lately, nor of that other virulent and fatal affection of the throat which has lately been heard of there. We presume such cases would have fallen under the heading of angina, of which, in the year 1860–61, there are no less than 343 cases. Of laryngitis, with other complications of the voice, there are 21 cases, with two deaths; and lastly, to the honour of Portugal be it written, there is in this exemplary army no case of delirium tremens or chronic alcoholism; but rather the absence of such cases is recorded with excusable complacency.

We should have been more instructed, considering the restricted basis of calculation, had the whole decennium been brought to bear on each head of disease; but the calculations of the later years, as most reliable, have been sometimes given instead, and sometimes we have relied on the last year only.

The inspections are made by a committee of officers, termed "Juntas de Saude." The following is the form of inspection for the year 1860–61:

| | |
|---|---|
| Diathetical or general affections (syphilis, scrofula, asthenias, cachexias, anæmias) | 80 |
| Affections of the nervous system (lesions of the nervous centres, neuralgias, neuroses, mental affections, &c.) | 47 |
| Affections of the circulatory system (lesions of the heart, great vessels, aneurisms, varices, &c.) | 35 |
| Affections of the respiratory organs (chronic pneumonia, &c.) | 188 |
| „ organs of digestion, including those of the mouth, stomatitis | 39 |
| Affections of the genito-urinary system | 18 |
| „ organs of motion (muscular, fibrous, and osseous system) | 68 |
| Affections of the lymphatic system | 10 |
| „ organs of vision | 147 |
| „ „ hearing | 21 |
| „ dermoid and cellular system | 33 |
| Cachexias from miasms and other consequences of intermittent fever | 19 |
| Deformities and imperfect balance of parts (faults of relation), loss of limbs in whole or part, defects of symmetry, hernias, &c. | 61 |
| Affections not classified above | 2 |
| | 768 |



A few other details of service may prove not uninteresting; for instance, of 8607 recruits received between 1850 and 1852 ('Hygiene Militar'), 1007 could read and write, 235 could only read, and 6715 could neither read nor write. The schools presided over by regimental chaplains had at that time only a qualified success.

The Portuguese, in their medical service as in their army, have many points of resemblance to the English service, on the model of which it was founded; moreover, by their ordinances of 1837 and 1851 they have brought themselves to a level with more recent improvements in our system. The regimental hospital is almost a necessity with them from the great dissemination of their troops. The regimental surgeon, probably from economical considerations, is the controller or administrator of the hospital affairs; but, differently from us, he draws food and everything he requires from a single department; their method of verification is also different from the English. In time of war casual hospitals, called *ad interim* and *di sangue*, are constituted, conformably to time and circumstance. The permanent hospitals are at Lisbon and Oporto. That of Lisbon is lighted by gas, and well ventilated on a plan of insensible ventilation, modified from Uytterhoeven, so well known and generally practised. A few soldiers, mostly *veteranos*, find their way into civil hospitals.

The medical officers of Portugal do not undergo an examination on joining, they bring their diploma of doctor, and are made of rank equal to assistant-surgeon; seniority makes them battalion officer; their single examination occurs before they can be regimental chief officer; after these there come the surgeons of division and brigade. Some time since there were three examinations, one for each of the earlier ranks. The appointments and promotions are made by government. By a decree of 1851, the ambulance was directed in time of war to be established in direct conformity with the French. The cacolets and litières are the means of transport most in favour, as suited to the rugged nature of the country. The English stretcher is only approved of in these pages when constructed with less pliable material, and with the improvements introduced into the Spanish army by Señor Anel, and subsequently into Portugal. There is an organized hospital corps of orderlies in the Portuguese service, whom Senhor Marques considers indispensable to good service, and of whom he speaks with pride.

Our author entertains all those advanced views of hygiene which latterly have seemed to have pierced the thick shell of indifference which previously encircled all such questions in our country, and notably with respect to agglomeration and atmospheric impurity. The views of Cormac with regard to the exclusive agency of foul air in the production of phthisis, and the corroborative evidence of other authors, are laid down by him at great length and to their fullest extent. He vindicates the soldier's claim to a "ration of air" in fair terms. Senhor Marques recommends hospitals of light and inexpensive construction, and extensive ground plan, with a single story, as best suited to the present circumstances of his country. Preferably

he advocates isolated dwellings for twenty-four men each, as allowing the simplest kind of ventilation. These ideas, we think, are subject to modification, according to the nature of the soil, building material, and prevailing maladies. In some circumstances elevation is an advantage, perhaps a hygienic necessity. With this slight warning, we are ready to approve him in the justness of his reasoning as to the chief cause of illness among the troops. Phthisis, he points out, is not an affair of latitude or temperature. The northern parts of Portugal do not display it, but the cities do. Is it, as Boudin has asserted, antagonistic to ague? At first sight it might appear so. The most aguish points, such as Chaves (where ague is endemic), Bragança in Traz-os-Montes, Elvas, Estremoz, and Evora in Alemtejo, Tavira and Lagos in Algarve, &c., are those where there is least phthisis; but in Vienna da Castello and Valença in the north both complaints are rare; in the Abrantes hospital both are rather frequent; in Terceira and Madeira neither prevails. Nor can it be traced to depend on littoral conditions of river or coast. Our author closes with the opinion of Baudelocque and Papavoine, that bad food is far less liable to generate phthisis than vitiated air. It was this identical defect which produced an outbreak of pneumonia in Guarda in 1853, the much more considerable epidemic in 1859 and 1860 in the depôt of recruits at Mafra, which equalled the devastations of the yellow fever; so also in 1860-61, in the 7th Cavalry at Bragança; in the 14th Infantry at Vizeu; and in the 4th Cavalry at Santarem. Add to this, that granular ophthalmia is endemic in the Grenadier quarters in Lisbon; general ophthalmia in the barracks of the 10th Infantry, also in Lisbon, and pourriture d'hôpital at Oporto. New constructions are in contemplation to obviate these objections of locality.

We now approach a division of our subject not less interesting with respect to disease than illustrative of the enlightened endeavour of Senhor Marques to break the trammels of routine and bring about a reform in the service. This regards diet, a part of the regimen of the Portuguese soldiers which seems extremely faulty. In fact, the Portuguese and the Spanish armies (the latter only in part) are the only remaining ones in the present day in Europe in whose dietary fresh meat is not included. It is only in time of war that the Portuguese soldier has a miserably insufficient quantity of beef,* alternating with salt fish, and then he has also a little wine. In time of peace he has a better bellyful of daily bacon, with a small portion of lard or oil, maccaroni, rice, nearly always peas and beans, and occasionally potatoes. He has neither tea nor coffee (except the sergeants), nor has he wine. Two meals daily, the first at from seven to eight in the morning, the other from three to four in the afternoon, leave a long intermediate blank of sixteen hours' interval. Economy† alone could dictate such terms of

* There is little pasture near the Tagus. The beef is overdriven and scarce in the capital. The pigs are fed on acorns and chesnuts, and though of a poor breed, the bacon is tolerable. In the larger towns beef is killed twice a week. French beans, in the everlasting lard broth, is the common diet of the country.

† The cost of an infantry regiment in Portugal is about 10,000*l.*; that of an English regiment on home service we reckon at 30,000*l.* In no other European country is the soldier in hospital on such an economical footing as in Portugal.



subsistence, and only false conclusions maintain them unaltered; already commissions have noticed the defect: but it still remains, at the expense of the soldiers' health and efficiency. The diet is faulty to the extent that the town garrisons are less well fed than those in the country, the latter getting more abundant rye bread or that of the oily Indian corn; while from the scantiness of azotized material, the ration in war time is on the whole less nutritious than that in the time of peace.

We shall extract a few of these diets, reduced to their simplest forms of expression, to compare them with those of the English soldier in campaign, according to Baudens, recording our conviction, which has no pretensions to originality, that the English soldier is underfed, as he is poorly clad (*see* Table).

| | Quantity in kilogrammes. | Nitrogen in grammes. | Carbon in grammes. | Fat in grammes. |
|---|---|---|---|---|
| British soldier in the Crimea; daily ration according to Baudens | 1·326 | 30·74 | 367·84 | 27·62 |
| Portuguese war ration, with meat and wine | 1·266 | 12·88 | 423·40 | 42·64 |
| Idem in country quarters in peace, Indian corn bread | 1·787 | 22·09 | 517· 6 | 131·12 |
| Cavalry in the country, two kilogrammes of potatoes daily | 4·087 | 19·53 | 466· 2 | 32·19 |
| Infantry in Lisbon | 1·206 | 19·56 | 386· 8 | 23·12 |

In the esteemed work of M. Squillier,* of the Belgian army, it is concluded that for each soldier in quarters a daily minimum of 20 grammes of nitrogen, with 310 of carbon, should be allotted; to be increased to 25 of nitrogen when on service or in marshy localities. The diet should not in any case weigh more than two kilogrammes. This is calculated for the Belgian infantry soldier of the average weight of 60 kilogrammes; but the cuirassier should have 26 grammes of azote, and 331 to 413 of carbon, with 13 to 16 of salt. The proportion of fat, though not less important, is less subject to rigid calculation; we think it should vary according to exposure. Now the possibly smaller stature of the Portuguese soldier — the minimum is 57 pollegadas for infantry, and 62 for grenadiers—and his climate, as warmer, may necessitate less food; nevertheless, the monotony of the dietary, its marked leguminous character,† its bulk compared with the poverty of plastic material, render it not difficult to perceive how the overloaded digestive organs must suffer, and general anæmia, gastric and scrofulous affections, and finally phthisis, frequently ensue. However calculated on the simple habits of the peasantry, this dietary seems

* Des substances alimentaires; de leurs qualités, de leur falsification, de leur manutention, de leur conservation, &c. 1858.

† The Grão di bico, which appears in all the diets, is a pea with a sort of beak or spur, not known in this country, but much used in Portugal, and still more so in Spain; it may indeed be called the potato of the Spaniard. Potatoes, though exported to England from Oporto, are little appreciated by the Portuguese themselves, not often grown inland, or in the south. It is a singular circumstance that beans are never, as with us, given to the cattle as food.

condemned by the experience that the recruits (who join at eighteen years of age) furnish the bulk of the hospital entries, and really require a larger share of nourishment than the made soldier. It is further condemned by the fact of the proportion of disease in the rank of sergeants being little more than half that of their command.*

The tobacco, always a snare to the soldier, is described as very bad indeed. A Portuguese cigar, even to a smoker, is detestable. The commissariat wheaten bread is far from good, but in Lisbon has lately been under somewhat better regulation. It has been the subject of much difficulty from faulty speculators. Its proportion in each ration is low, six hundred and eighty-eight grammes. Wine has not as yet been used as a defence against miasmata.

We shall not have failed in our intention if we have given a current view of the relations of Portugal to the evolution of hygienic science in our day. The action and reaction of one country on another in this respect is so undeniable, that it partakes of the nature of compulsion. To Senhor Marques it is due to say, that a spirit of patriotism seems the secret of his perseverance, which has rendered him one of the most competent authorities on these subjects.

From a perception, no doubt, of these estimable qualities, he was selected by the valiant Viscount de Sá da Bandiera,† to attend, in the first place, the Ophthalmic Congress at Brussels to gather information on the management of ophthalmia in armies, and thence he had a roving commission to study the organization of the Dutch, English, and Belgian medical services, in reference to the efficiency of the Portuguese. He was directed to pay attention especially to the school of Utrecht, and to the functions of the Sisters of Charity in the French hospitals. A handsome octavo volume has resulted from the elaboration of his experience, being a *résumé* of all that can be said on each subject.

The presence of our author at the Ophthalmic Congress at Brussels, was that part of his mission to which he attached the greatest importance. He shared in the debates on that occasion, and read two papers, which in the *compte rendu* of the congress received the very first place in the commendations bestowed. This signal compliment to Portuguese surgery seems fully justified by the laborious and logical character of these *mémoires*, in which Senhor Marques appears to have missed no reflection which could throw a light on the interesting subject of which he treats, at the same time that he strives to do justice to the earnest and intelligent minds which in his country have been led by the importance and urgency of the malady to engage themselves in the study of it. If there is any part of Europe in which it would be possible to trace the disease *ab ovo*, it is in Portugal, from which country it would seem to have been so long absent, and we shall not, we are persuaded, go beyond our duty in drawing attention to a complaint which, though the interest we have in it is equal, and its antecedents here

* "The disproportion of food and sleep to work," says M. Levy, "is the cause of four-fifths of the disease of the lower classes. An insufficient alimentation realizes the effects of inanition, which to become complete only requires a little time."

† Minister of War and *ultramar*.



sufficiently memorable, has not until lately in England been the subject of so much remark as on the Continent. It is to be understood, however, that it is mainly from Portugal that we shall endeavour to derive that experience by which we hope to elucidate the character, and perhaps improve the treatment, of this affection.

But before proceeding to analyse the truths displayed by Senhor Marques, it will perhaps not be amiss to say what we mean by granular ophthalmia—

"In the complaint called 'granular lids' (trachoma of Plenk, asperitas in palpebrarum superficie), out of a great variety of forms, the granulations may be classed according to their anatomical structure under four heads—1st, papillary; 2nd, vegetating; 3rd, nodular; 4th, vesicular. The three first are more or less products of inflammation. Those under the fourth head, as we shall consider them, seem constituted by a special virus *sui generis*, of recent introduction, and they are remarkable for insidiousness in their origin and progress, and for their resistance to treatment. Vesicular* granulations (trachoma herpeticum of Plenk) are small cysts developed in the substance of the conjunctiva; the parietes of the cyst are formed of an intricate tissue, and of a kind of aggregation and even stratification of cells; they contain a hyaline transparent liquid, in which simple cells float. These cysts measure from 0·003 mm. or 0·00¼ mm. to 1 or 2 millimetres. Subsequently this liquid, in the process of transformation into cells, assumes a caseous consistence. When the conjunctiva tends to inflame, its vessels become prolonged over the cysts, spreading out on their superficies, or penetrating into their substance; the plastic exudations which result becoming organized, give rise to small masses of moist fleshy tissue, composed of fibro-plastic material, which take the place of the vesicular granulations. Considered under the practical view of resistance to treatment and termination, we may divide vesicular granulations into three periods—viz., transparent, vascular, and vegetating, or fleshy.

"I. The transparent vesicular granulations are minute, discrete, diaphanous, disseminated over a smooth, fixed conjunctiva, of a normal degree of transparency. The mucous secretion, scarcely or not at all increased, retains its transparency, and appears to have undergone no change.

"II. The vascular granulations are larger and generally more numerous; the conjunctiva, which serves for their substratum, is inflamed, of a more or less lively red colour, but it is thick and contracted. The secretion is more or less abundant, and consists of a thick cohesive mucus, and of a puriform matter.

"III. The vegetating granulations give to the conjunctiva a red, fleshy, or sarcomatous aspect; but as the production of the fibro-plastic tissue does not extend to every part of the vascular granulations, it results that in this advanced period of the disease the conjunctiva does not present everywhere a uniform appearance. In those points in which the vesicular are supplanted by fibro-plastic granulations, the conjunctiva is of a red, fleshy, and vegetating aspect, the other parts are covered by vesicular granulations. It sometimes happens also that you perceive masses or *plaques* of nodular tissue. The secreted matter, generally abundant, is thick and purulent. In this period of the disease papillary granulations (trachoma sabulosum) often appear very distinct, especially in the part of the conjunctiva near the margins of lids."

There have not been wanting those who have considered this affection

* The terms sycosis, scabies palpebrarum, quoted from Rhazes by Dr. Vetch, seem to point to this disorder.

as a pathological entity distinct from the results of inflammation; but experience altogether shows it to be an inheritance from severe outbreaks of ophthalmia occurring in barracks: such epidemics usually begin with an alarming suddenness, and pursue a devastating course for a time, to be subsequently prolonged under the form of relapses, with the appearances above described. The contagious character of the muco-purulent secretion from such granulations when undergoing morbid change is no longer doubted, nor the fact of their introduction into particular countries through contagion (as occurred in Denmark from the hostile troops of Schleswig and Holstein). Their consequences in implicating the cornea and other structures of the eye are very considerable. Like other epidemics, they increase under defective hygienic conditions; and what is most singular about them is their persistent character and the large figure they make in the soldiers' returns. It is this complaint which bids fair to be the "schoolmaster" which will lead governments to that minute attention to hygiene and study of the comforts of the soldier which he did not before acquire, either from his own merits or from an earlier conviction of their necessity towards his efficiency. If these granulations are, to use an expression before us, sometimes *interminable;* if it is an acknowledged fact that of themselves they very rarely get well; and if, looking to their irritable character under treatment, and their complications, they are often best let alone, then, as foci of contagious disease, they have a wide signification and interest attached to them, both in regard to European populations, and, considering our system of workhouses, especially to us. There is no doubt that cases of this disease now exist in a sparse state in the civil populations. Soldiers returning from furlough, and recruits on joining, sometimes display them; but whether the disease dates earlier in Europe than the return of the French and English armies from Egypt, is still a moot point, though long considered, and argued with great plausibility on either side. It is probably correct that they have appeared after epidemic ophthalmia in schools and unhealthy places; but it is the disease of the soldier, κατ' ἐξοχήν, and the standing subject of solicitude to his medical officer. Agglomeration of individuals feeds its growth, but there are other points not so well ascertained about it. For instance, a certain quarter may happen to have a bad name for ophthalmia, and successive relays of troops suffer there; but one corps will enjoy immunity, while others are afflicted, and the next that arrives will be free from attack.* This is what happened at Hythe in 1805, when, in the 52nd Regiment, 636 out of 700 men (mostly Irish recruits) were affected, while the 43rd Regiment and Lincolnshire Militia, in the same quarters, escaped. Such facts would seem to show that not only local and climatic causes were involved, but something which undetermined acts of discipline are capable of correcting.

There is no country in which the introduction and course of the disease apparently offered more favourable opportunities for study than

* Of the same order of facts is the circumstance of the French soldiers in 1832 residing in the Belgian barracks without infection.



Portugal; men of science, however, have been far from agreeing as to the origin of the malady in that country. Senhor Marques informs us that many have come over to his views of its catarrhal origin, based upon the expressed opinion of Mackenzie, that a catarrhal ophthalmia can not only become contagious, but communicate by method of contact an intensity not existing in the primary affection; and these views are strengthened by that of Desmarres of Paris, as to the rapidity with which epidemic granular ophthalmias may become contagious. To arrive at the verification of the cause which he suggests, he treats the other arguments by the process of exclusion; in the first place, he notes that the French and English regiments employed in the Egyptian campaign improved on their return to Europe, and that the English regiments, so notoriously affected by so-called Egyptian ophthalmia two years subsequently, had never served in that campaign; in the next place, tradition, he affirms, says nothing of those Portuguese troops who fought side by side with the English in the Peninsular war having been affected by ophthalmia, nor indeed was there a single case of granular ophthalmia ever remarked in the Portuguese hospitals till forty years subsequent to their separation. In the Portuguese African possessions there is no epidemic ophthalmia; in Brazil, the ophthalmia which is generated in the slave ships does not, as he is informed, assume the granular form; he therefore excludes these sources from consideration. From the association with Belgian troops in the Pedro-Miguelite war, no such cases, he is assured, occurred either in Oporto or elsewhere. There remains a Spanish emigration, twenty-eight among whom were affected with ophthalmia of the ordinary type, two only had small granulations, and all got completely well. There have been a few other noticeable ophthalmias in Portugal in the course of the present generation: one, of soldiers in the edifice of Desterro, in Lisbon, without great intensity; one in Graça, also in Lisbon, where all the soldiers of one company were affected from the proximity and bad construction of a latrine, but it had no extension. The public mind has chiefly rested on the single instance of the community of Casa Pia, which corresponds to the occurrence communicated by Sir P. Macgregor,* of an ophthalmic epidemic which prevailed in Chelsea Hospital which circumstance obtained full publicity in this country. Similar facts of a milder

* This ophthalmia was considered by Sir Patrick Macgregor to be of the same nature as the Egyptian ophthalmia, but in children it was not so fatal to vision. It seems to us to partake somewhat of an erysipelatous character, notwithstanding that the febrile disturbance, except in severe cases, was hardly discernible. "The vessels of the tunica conjunctiva," says Sir P. Macgregor, "were distended with red blood, and the tunica conjunctiva was generally so thickened as to form an elevated border round the transparent cornea. This state was often accompanied with redness of the skin round the eye, which sometimes extended to a considerable distance, and resembled in colour and form very much what takes place in the *cow-pox pustule* between the ninth and twelfth days after vaccination." There is at the present time (January, 1863) prevalent in the Austrian capital an epidemic ophthalmia, which Prof. Arlt characterizes as a "catarrhal erysipelatous ophthalmia." It is not of a severe type; the lids are swollen, and the ocular conjunctiva very red. Prof. Arlt points out that Beer described a catarrhal ophthalmia in these terms, and the coincident pre-

character occurred in the College of Thildonch, near Louvain; and they appear as phenomena in the normal history of these institutions. The community of Casa Pia, consisting of some hundreds of boys and girls, inhabited the damp and sombre edifice of Desterro at Lisbon; there was a graveyard and much dirt and filth in its vicinity, but no prevailing eye-complaints among the neighbours. In this institution a serious outbreak of ophthalmia occurred among the pupils in 1834, they consequently removed to the Castello St. Jorge, and thence to Belem; but the ophthalmia still clings to the community with repeated exacerbations. These attacks, called purulent ophthalmia, sometimes catarrhal ophthalmia, have continued occasionally for the space of twenty-three years, but have been much milder and less frequent of late.

Senhor Marques was at pains to examine the eyes of the entire community of Casa Pia at a recent date; out of about 900 boys and girls, he found in 35 to 40 (chiefly boys) a sandy condition of the palpebral surfaces, principally in the external angle of the superior palpebra; in a few cases *he considers that he found* some vesicles, in others, fleshy granulations on a turgid and slobbering (*babôsa*) conjunctiva, when boys had been long affected. The precursive ophthalmia did not appear to have differed from that of the soldiers; but still, he remarked that the fleshy granulations did not cover the whole of the palpebral surface, as occurred in them. The quarter of Desterro was afterwards, in a milder degree, disastrous to soldiers quartered there, who became affected with ophthalmia some time previous to 1849; it so happened, however, that in the year the present publication went to press—subsequently, that is, to the prevalence of ophthalmia in the army—there were extremely few granular cases in the quarter of Desterro.

The advent of granular ophthalmia in the army of Portugal was well marked, and could not escape observation under the monthly returns. The year 1849 was ushered in by a spring season favourable to diseases of a catarrhal biliary type—such as bronchitis, angina, small-pox, and measles—generally followed by dysentery and diarrhœa in the autumnal season. With the premature rains of autumn, the biliary type gave way to the catarrhal, which seemed to complicate all disorders, and there were cases of catarrhal ophthalmia among the civil population. The climate of Lisbon, soft and mild and free from fog, is not often subject to this constitution of atmosphere. It was at this period—namely, June or May at the earliest—that a noticeable deviation occurred from previous statistics, and a new experience of ophthalmic surgery ensued; from this time forward counting eight years, there were 10,000 ophthalmic cases in hospital; whereas, counting backwards eight years, there had been 2187 only. In Lisbon nearly all the regiments became affected, but the Grenadiers principally; hence it was called among the people the ophthalmia of the Grenadiers.

valence of erysipelas fully justified the present employment of the epithet. (See Medical Times, Jan. 24th, 1863.) We may remark, that the one thing which was considered to characterise Egyptian ophthalmia was the first appearance of the inflammation in the lining of the lower eyelid.



The features of the disease were not different from catarrhal ophthalmia—viz., redness and tumefaction of the mucous lining of the lids, especially at the external angle, and where it adheres to the margins; more or less injection of the vessels of the ocular conjunctiva, and minute flocculi floating in a few drops of lachrymal secretion at the bottom of the conjunctival sac; adhering lids during the night; villosities in greater or less quantity in the tarsal conjunctiva; in some cases small, scarcely visible granulations, and there was little pain or photophobia. Soon after the ophthalmia had declared itself in Lisbon, that is, in the month of August of the same year, when the ophthalmia ran high in that city, a similar affection appeared in the 3rd Regiment at Vianna da Castello, sixty-three leagues from the capital, without any interchange of soldiers,* favoured, as it seems, by winds from the north, and much rain. In this regiment it assumed a graver form; of 71 patients who entered the hospital at this period, 32 lost one or both eyes from various complications. Unfortunately, through different movements of troops resolved on for 1850, the disease very soon spread though the army. A commission subsequently appointed to report on the disease, found—

"Considerable injection, or rather stain, of the tarsal mucous membrane, near its adherent edge, co-existing with granulations which were *sometimes vesicular*. In the greater number of cases there had been no great amount of inflammation or of subjective symptoms; but in many others, instead of being limited in seat, it spread to the sclerotic conjunctiva, producing epiphora and some photophobia, or even chemosis, great redness and swelling of the lids, secretion of pus, strong pain in the orbit and forehead—in fine, all that constitutes purulent ophthalmia. On subsidence of the inflammation the conjunctival surface was discernible, and the eye presented granulations, nearly always fleshy, occupying all the palpebral mucous membrane. After the phlogosis had terminated, and nothing remained but these morbid productions, relapses of inflammation occurred, and the same thing happened during the treatment of the granulations. Chronic inflammatory action, often of long continuance, was not unfrequent, during which the granulations became established, so that in fact their production was favoured by both acute and chronic inflammation."

The treatment of the disease at this period was in exact correspondence with the existing state of ophthalmic science in Europe; it was mostly mixed or varied, according as the ingenuity or experience

* "The north wind," says Senhor Marques, "that blew with violence during the months of July and August, was followed by very abundant rains till the middle of November, occasioning great moisture in the atmosphere, and causing a great tendency to inflammations of the eye even among the civil population. The conclusion we have to draw from these facts is evident: it is true that as regards the 3rd Regiment it was considered to derive its affection from a soldier who had been treated for a blennorrhagic ophthalmia in the hospital of the Villa d'Arcos; but this soldier had arrived blind at Vianna da Castello in December, 1848, in order to enter directly the hospital of the regiment, whence he received his dismissal from the service. It is, moreover, worthy of note, that this private belonged to the 4th company, and the affection commenced in the 2nd company. The ophthalmia in this case was considered to be syphilitic because he had been treated for bubo some time previous, and when he came to Vianna da Castello he had on him a cutaneous eruption with every character of secondary syphilis. It is for the reasons we have stated that we are far from attaching to the present fact the importance it has attained."

of the surgeon might dictate. As may be surmised, a corrective power was thus brought to bear on the mass of the disease. Hygienic measures were not neglected, and there were commissions of civil and military surgeons appointed to report on the subject. The Grenadiers were exchanged to other quarters, general and daily inspections were put in force in the capital for the immediate isolation of any recent cases; a special ophthalmic hospital was established, great attention to cleanliness recommended, special wards were set apart for granular convalescents, and subsequently a separate hospital was arranged for them distinct from other cases of disease.

In 1850, the second year of the ophthalmia, there were 2825 cases, and the sanitary regulations became more minute and stringent; every soldier had his towel; great attention was given to food; drill and parade were regulated in accordance with special hygiene, with exemption from drill of cases in the least degree implicated; in fine, nothing was omitted that scruple could dictate, but still the disease did not yield. Among therapeutic means, the nitrate of silver held the first place, but many vaunted methods of treatment failed in the trial. In this year occurred those dispositions of troops which disseminated the complaint. The regiments from Lisbon took it with them to Guarda, and the 2nd Battalion of Caçadores, who exchanged from thence to Lisbon, became the most affected of all the garrison in the capital (four hundred and forty-five entries during that year). Some of the Grenadiers carried it to Elvas.

In the year 1851, nearly all the army and the military prisons had experience of the disease, but somewhat of its intensity had abated. It seemed to spare the regiments first attacked, and this improvement continued during the year. Notwithstanding some exacerbations, we may say that there was a perceptible diminution of cases in the year 1852.

Much benefit had been anticipated from sea-bathing about this time, and it was accordingly tried to a full extent at Belem, where there was an ophthalmic hospital, under the direction of the distinguished ophthalmic surgeon, Senhor Sa da Mendes; we shall reproduce his final experience—

"That sea-baths do not always produce salutary effects in patients with the military ophthalmia; that sometimes to obtain the required result it was necessary to assist the treatment with the nitrate of silver; that, in some cases, baths were more prejudicial than useful, because they accelerated the development of the granulations; that, on the other hand, their efficacy was well marked in cases in which the conjunctiva showed chiefly some vestiges of ophthalmia. However, the action of baths was various, according to constitution and the several stages of the complaint; it was very necessary to exercise a watchful attention to appreciate conditions and occasions tending to a good result.

"The state in which some of the patients continue," he says, "is deplorable (speaking of cases that have been long in Belem); this condition is an occasion of despair to them, and of disquietude to the faculty. Some are affected by fleshy cartilaginous granulations of such an obstinate character as to remain stationary after months of treatment, and never improving without relapse. In other patients you see the eyelids thickened and indurated, with slobbering (babôsa) conjunctiva presenting irregularities in the superficies,



the result of ulcers and cauterizations practised with a view to cure, and all elsewhere covered with these morbid products in the parts which are not ulcerated or cicatrized. In some instances these conditions are accompanied by photophobia and epiphora, and in all the treatment is more or less unsatisfactory.

"Finally, in other cases, what we have described is complicated with pannus, ulcers, cicatrices, opacities from keratitis, hernias of the iris, synechia, symblepharons and blindness of one or both eyes. To these various forms of disease is superadded a scorbutic condition partly due to an alimentation sufficient in quantity and material, but too little exciting and varied, partly also to the moral depression experienced by the patients under pressure of a complaint which admits of little relief."

Things were at this pass when the Minister of War, under the advice of the consulting surgeon-in-chief of the army, J. A. S. Terxeira, resolved on a minute inspection of every regiment as regards the ophthalmic patients, in order to classify them as follows:—

I. All subject to ophthalmia who have been long and frequently in hospital, or who have been kept long in the convalescent wards without complete cure, if they can be returned to their districts without fear of blindness or prejudice to their complaint, shall receive a present discharge.

II. All those who, for reasons above-mentioned, give no prospect of cure, but have their eyes more or less injured by the complaint, shall be received into the class of pensioners.

III. All who have affections of the eye susceptible of cure shall enter the hospital until a definite result shall ensue.

This was the first efficient blow dealt to the ophthalmia in Portugal; its success has been most marked, as shown in the present returns; but the dismissal of so many diseased persons to their homes seems a grave action, to which the Sardinian Government, under similar circumstances, refused to resort. In the course of his arguments, Senhor Marques attributes much of the immunity of armies in the previous centuries to the habit of quartering soldiers by billets in the towns as well as in barracks.*

It was not until a later date that the Portuguese surgeons, among whom the name of Senhor Sa Mendes prominently appears, arrived at a method of treatment which Senhor Marques considers superior to any other in the management of this disease: though derived from this country, the application of it is so far due to Portuguese surgery as to justify the fullest claim on their part. This treatment consists in the method of scarification as practised by Mr. France, of Guy's Hospital. In the 'Londres Medica,' Senhor Marques points out that when he visited Fort Pitt, he found the military surgeons unaware of its application to these disorders, and far from coinciding with his recommendation of it. This plan of treatment does not suit recent cases with existing inflammation, but only serves to irritate them; it

* Senhor Sa Mendes has seen many become granularly affected (*granulosos*) in a few days. In some, these bodies come first in the upper, in others in the lower lid, and *vice versâ*, sometimes in one, sometimes in the other eye, from no other apparent cause than stay in hospital. In Belgium it was stated that twenty-four hours were sufficient for the development of vesicular granulations.

is the older cases of fleshy granulations, more or less advanced, complicated with pannus, keratitic ulcers, &c., that it suits; with these it fairly produces wonders; under this method, also, the vesicular granulations improve and fade away; the fleshy, if recent and newly-treated, last longer, but eventually get well. The exact procedure of Senhor Sa Mendes is as follows:—

"With the scarificator of Desmarres he makes on the palpebral surface a great number of small incisions, parallel to the free border of the lid, very superficial, and not extending far. Their number should vary according to the surface affected and to the quantity of the granulations; but in the worst cases, they should be forty or fifty of one or two millimetres each. If deeper or more extensive, they might involve the ducts of the Meibomian glands, and even the tarsal cartilages, producing considerable cicatrices, which it is best to avoid. In general, the granulations alone are divided. The incisions having been made, the blood is allowed to flow, and the evacuation is facilitated by the application of lukewarm water; meanwhile, a degree of liberty should be afforded to the lid, which is turned back to its normal position. When the blood ceases to flow, the sulphate of copper is applied more or less lightly, according to the individual.

"Sometimes from the beginning, and nearly always towards the end of the treatment, the blood flows scantily, which is an advantage, as it allows the application of the bluestone. When there is no further need of scarifications, the sulphate of copper and the ointment of red precipitate should be used to finish the cure."

There is no rule for repeating the scarifications, but generally, in the chronic and old cases, they must be used more frequently than in cases which are recent and acute: so that the first may require it every day, the second every two days. The treatment may occupy a month, and even some months. This method leads to a cure without complications, and generally complete. As subsidiary to treatment, the Portuguese surgeons employ section of the external angle of the eye to prevent friction from granulations, which is the cause of the greater number of keratitic complications. The lapis of nitrate of silver is used with great reserve, with a very light touch, and at rare intervals, except in very exceptional obstinate cases. The proto-chloruret of iron, 30°, is occasionally used. The treatment of M. Buys by neutral acetate of lead had no success. Cyanogen is mentioned as their remedy against photophobia.

It will not be expected of us that we should enter minutely into hygiene. If a quarter is very bad, it should be broken up; by abandoning their barracks, the Danish troops got the better of the disease; every object in an unwholesome dwelling is a source of infection; the soldier should have his towel; he should wash, Mussulman-like, in running water; every private coming from an infected spot should undergo ablution with soap, and his garments be purified. Some precautions seem overdone, such as the prescription of linen sheets by the congress, not so strange in that flax-growing country; so also the admixture of vinegar to water in washing the face; one may hesitate also as to the admission of night-air into dormitories. M. Decaisne, of the Belgian service, attributes granulations entirely to an irritation derived from drill and



the specialties of a soldier's duty; it is not wonderful, therefore, that a minute attention has been shown to points of convenience in dress; the fit of the stock was in Belgium the subject of a circular by the Minister of War during the prevalence of the so-called army ophthalmia there; all that in dress constricts the neck, or chest, or head, should be relieved; the width of the collar of the coat, its fastening, that of the vest underneath, if worn, should be objects of care. The subject has been amply discussed in the 'Revue Militaire Belge,' 1823. The soldier should never go out to drill without a peak to his cap, and it is better for him to have his back to the sun.

The ophthalmias now met with (1859) in the military hospital of Lisbon are, for the most part, old cases, undergoing treatment for complications, chiefly of the cornea; most of them have fleshy granulations; there are also fresh cases occasionally. Their description may be instructive as regards the present state of ophthalmia in Portugal.

"In the garrison of Lisbon one meets with some soldiers displaying small conjunctival granulations, in the form of the finest sand, accumulated in the conjunctivo-palpebral angles, especially in the external; in some of these one even meets with various vesicles, sometimes dispersed, sometimes disposed in series on the adhering margins of the tarsal cartilages. In this state, Senhor Sa Mendes considered it better not to subject the patients to treatment in hospital, because he had noticed, whenever he sought to combat these vesicles, either by energetic or mild applications, the disease only gained ground, and a serious complication occurred out of a benign affection. Senhor Sa Mendes observed some of these cases for a long time, and never could find that they underwent development, nor that such granulations affected the efficiency of the soldier."

In closing our review of Senhor Marques' Mémoires, we abstain from giving a decided opinion of our own in favour of the exclusive catarrhal origin of this malady. The period is not very far distant when it was as "out of date" to declare oneself a contagionist, as it would be in the present day to say anything that might militate against free trade; there has been a sort of revulsion since. Certainly the very striking facts displayed in the outbreak of ophthalmia in this country at a short interval after the Egyptian campaign; the general opinion entertained of the non-existence of this form of ophthalmia in Belgium prior to Waterloo; its persistence in the English army of occupation cantoned in France, with many exacerbations; and also its well ascertained existence in French hospitals of that period; add to which, the firm persuasion of the Russian commanders that it was brought with them from Paris in 1814; all these facts have left the impression on the mind of some quite especial virus being concerned in its transmission. We do not contend for the expression "granular virus," nor will be tempted to class it with blennorrhagia—a disease almost as limited in its seat, but with a wider range of sympathies in the frame; nor shall we commit ourselves to a dogmatic assertion the other way.

We are conscious that we go very far in saying that it is not absolutely impossible that, after a period of obscurity (or incubation) of forty years, a contagious disease may be suddenly manifested in the

way we have described. The history of contagious diseases, however, is too incomplete for us to pronounce with certainty. Quite recently facts have occurred in Italy connected with the syphilitic poison which have taken the world by surprise. It occurred to us to know, at no remote period, a member of the profession who suffered from ophthalmia in Egypt, and whose eyes were a subject of anxiety to him during a long life ever after. There must have been numerous similar foci of disease in Europe capable of taking effect in a limited degree upon the neighbouring population.*

We intend to pass in review, in a manner necessarily incomplete and sketchy, the hospital systems which Senhor Marques held a commission to observe, referring to the pages of our author, or rather to the systems themselves, those who are inclined to make themselves critically master of the subject.

What most excites our favourable attention in the Dutch service, is the definite purpose and unity of design it displays, impaired, however, in its results by some defects, of which the greatest is the maintenance of an *intendance* similar to the French.

The school of Utrecht forms the most marked feature of the service. We cannot pretend to do justice to these subjects, but shall indicate some of the prominent points of each.

The hospitals are all of the garrison class; in each of them the head of the *intendance* takes the name of director. He has the control of the hospital orderlies, who are not formed in time of peace into a distinct corps. The same official also undertakes the hospital accounts, which, according to our author, are not regulated with that superior skill which might have been expected from the genius of the nation; on the contrary,

"A standing mistrust and extraordinary precautions against every possible abuse subsist as a rule in every division of the Dutch military service, leading infallibly to an intricacy of detail in accounts, and with it to such an endless amount of bookkeeping and rectifications as render a little simplicity very desirable."

Hygiene, practically unknown in the French military hospitals, is at the same low ebb here. Those of Holland are noted down as worse

* "We repeat," says Senhor Marques (p. 110), "there was existing ophthalmia under the circumstances to which we allude, but not in the army, before 1849. In seeking for the origin of military ophthalmia in the granular affection which sometimes occurs in the civil population, and which flourished for twenty-three years among the pupils of Casa Pia, it would be necessary to indicate as a basis the primitive case, the starting point, in the old granulations of certain patients. But the only ophthalmic case which in the commencement of the epidemic in Lisbon displayed well-marked granulations, appeared in the Lisbon Hospital after the epidemic disease had entered on its initial stage. It was in a Grenadier who had suffered from blennorrhagic ophthalmia when on detachment in Santarem, for which he had to go into a cavalry hospital—that is, into the hospital of a regiment which never had granular ophthalmia. All the patients who since June, 1849, were received into the hospital at Lisbon displayed the ophthalmic affection in its initial stage, except a soldier of the 7th Infantry, who had an inflammation of a rather more noticeable character than the rest, but even in this case we were informed by the patient that the complaint dated from three days previous."



than the Portuguese. The Dutch are not known to advantage in this class of institutions. Even the bread is coarse and inferior. The mere alimentation of the soldier in hospital, however, is estimated at half a florin daily; meanwhile his pay ceases, except one halfpenny per diem. We may remark, *en passant*, the extraordinary proportions of tinea in hospital, and its prevalence in the country, and with it the fact that granular ophthalmia has not lately prevailed.

The cadre of the service may be seen from the accompanying plan:

*Table of Qualifications, Army Rank, Number, and Personnel of the Department of Health in the Netherlands in time of Peace.*

| Qualification. | Rank. | No. | Pay, florins. | Pension, florins. |
|---|---|---|---|---|
| Inspector | Colonel | 1 | 4400 | 1800 |
| Chief officer of health | 1st class: Lieut.-Col. | 2 | 3000 | 1500 |
| | 2nd class: Major | 4 | 2600 | 1300 |
| Officers of health | 1st class: Captain | 8 | 2200 | 900 |
| | | 8 | 1900 | 900 |
| | | 8 | 1500 | 900 |
| | 2nd class: Lieutenant | 50 | 1000 | 600 |
| | 3rd class: Sergeants | 50 | 800 | 500 |
| Pharmaceutists | 1st class: Captain | 3 | 1600 | 900 |
| | 2nd class: Lieutenant | 10 | 900 | 600 |
| | 3rd class: Sergeants | 13 | 800 | 500 |
| Pupils | 1st class | 6 | 300 | — |
| | 2nd class | 16 | 200 | — |
| | 3rd class | 2 | — | — |
| | for the Marine | 24 | 400 | — |
| | for the East Indies | 66 | 400 | — |
| | for the West Indies | 9 | 500 | — |

The inspector-general is in immediate relation to the Minister of War, and he resides at the Hague, where are located the medical secretariat and the pharmaceutical depôt. This officer regulates the army medical service and that of the civil prisons; he is also head of the navy service, with some difference of charge. The inspector-general gives a monthly account to the War Minister of his disposition of the personnel; and the minister, on the other hand, informs him of the movements of troops. The medical officers of the highest rank are required to perform clinical duty, and this is felt to prejudice the service and to be an imperfection. All, except the highest rank, are under the obligation to be seen in uniform, with the military hat and sword. With slight variation, the pharmaceutists wear the same. There are examinations for all but the highest grades.

"In the garrisons where the officers of health are employed on duty, the highest in rank, or the elder in the service where there are two of the same rank, assumes the charge of directing the labours of the others; the pharmaceutists also fall under his direction. It is the head of the sanitary service of each garrison who, according to the orders and instruction received from the inspector-general, designates the official, or officer of health, who is to perform the duty in any regiment or fraction of a regiment; and he forthwith communicates to the commander of the force the name of the particular officer he has to depend upon for the performance of the sanitary service. When

a battalion, or other corps, changes its garrison, as the inspector-general has received notice of it beforehand, it is he who designates the officers of health who are to accompany the force; but as soon as the regiment or battalion has arrived at its destination, the officer of health who has accompanied it delivers over the service to the chief health official of the garrison, and returns to his post. When it is a division or brigade that goes into camp or under canvas, the inspector-general designates for this occasion the precise number of officers of health, and these are not only for such regiments as constitute the division and brigade, but for the ambulances of the same division and brigade."

In Holland, the medical staff have the duty imposed upon them of treating at their domiciles the officers, with their wives, children, and also their *domestics*, as well as the wives and children of the soldiers. There is not, as in Belgium, an officer detailed for this duty, but any one officer is liable to be called on, as preference may dictate; civil practice, however, is otherwise forbidden to them; thus it may be seen how very dearly a good officer will have to pay for his superior reputation. Such extraneous services commonly double the ordinary routine. The organized class of pharmaceutists is considerable in number—viz., twenty-six. Each hospital has two of them, the central depôt has five. This large establishment, worthy of note in many respects, furnishes the army, navy, colonies, and prisons. Its large extent, its economical operations, organization, and service are worthy of admiration. Here also are preserved the surgical appliances and ambulance. The mode in which the sanitary service is conducted in Holland gives rise to more reflections than we are able to condense—

"These and other observations gave me reason to reflect on many an inconvenience from the side of lay directors in hospitals. The eyes of science are subject to behold, with no power to correct them, the most defective arrangements possible; the duty of the most competent officers is restricted to the exercise of medical and surgical skill, without comprising therein such exigencies of treatment as are extraneous to the pharmacy, the operating box, and the kitchen. Under such limited directions, the condition of a room prepared to receive patients consists entirely in a comfortable bed and cleanliness.

"Ventilation, airing, light, space, &c., are not attended to, or if so, only as secondary things. The Netherlands, as well as France, will one day have to diverge from the extreme they now occupy in this respect, towards that happy medium which exists in Belgium, while England and Portugal, from an opposite extreme, also fertile in inconvenience though not of equal magnitude, will doubtless concur sooner or later towards a class of views justified every day by an increasing experience."

The medical school of Utrecht is intended to secure a class of servants for the army, navy, and colonies, on a sure and economical scale, for ten years' engagement certain; after twenty years' service, they enjoy the privilege of civil practice, from which they have been previously excluded. The professors, ten in number, with two subalterns, are all members drawn from the ranks of the medical service. The examination on entrance is by no means high. Sixteen to twenty pupils are admitted yearly. Great efforts are made for their instruction, though not the very best the country can afford. The system of education is a very tight one. Scanty holidays, with drill for sole



recreation. It has a strong military bent. The pupils board and sleep in the town, which, as regards living, is about the cheapest in Holland. They have a four years' course of instruction. On entering, each pupil receives his destination for army, navy, India, or the colonies, and is educated *ad hoc*. They start as commissioned officers of the third class.

It is in Belgium that those happy arrangements meet, which, according to Senhor Marques, give the best promise of efficiency in medical service—viz., liberality on the part of the Government, a sufficient degree of independence in the administration, with opportunities and provisions which stimulate zeal, and guard against remissness. We invite the study of our readers to this service, which is at once an honour to the king and the nation.

In Belgium, all the hospitals, about eleven in number, are garrison hospitals of the first or second class, situated in the several districts whence the troops are summoned for manœuvres on a large scale generally once a year.

The Inspector-General (immediate to the War Minister) includes in his functions the medical, pharmaceutical, and veterinary services, the civil prisons, and some other duties. From July to September he inspects the hospitals as chief officer of health and hygiene, with well-defined instructions and extensive discretionary powers. It is the duty of the local engineer and commissariat officers to accompany him in his inspections. The rank and number of his subordinates are as follows: One chief officer of health, with rank of colonel, for sub-inspections, and to accompany the army in campaign. Three principal officers (lieutenant-colonels) for hospitals of the first class. Those of the second class fall to the garrison surgeons of the rank of major. Next come the regimental medical officers, and then the first and second battalion officers, and, finally, the assistant, with rank of captain, lieutenant, and sergeant respectively. The assistant serves two years to become battalion officer. There are, in addition, pupils who serve with defined duties; they emanate from the universities of Brussels, Ghent, Liege, and Louvain; eight or ten for each university, these are, at the same time, engaged in their medical curriculum. At first the pupils only count service, but advance to the receipt of three hundred to eight hundred francs yearly. They take day duty at the garrison hospital to relieve the assistant-surgeon, act as dressers, clinical clerk, perform autopsies, &c., and on one day in the week they compound medicines. They reside in the town. On admission they must be bachelors in sciences at the least, but are mostly chosen from students somewhat advanced. They wear uniform without embroidery. When they take the degree of doctor they are received as assistant-medical officer, with pay of two thousand five hundred francs per annum, and in military gradation they have counted four years' service.

Besides examinations, which form a guide and basis for promotion, a regimental surgeon must serve as such four years before he can be garrison surgeon, in which post he must be three years in order to be-

come principal officer, again the same term to be sub-inspector, and two years more to become inspector-general.

In Belgium, a certain connexion which they claim with the army causes a large class to use the privileges of attendance from the medical officers of the service, and some of these receive batta for such duty. The civil practitioners are infringed upon in more ways than one by the army officers entering into civil practice, obtaining professorships, &c., which occasions many of the latter to shirk their examinations and avoid promotion.

There are seven or eight battalion officers thus employed at Brussels, some of them of twenty years' fixed residence in the city. We remember something of this kind in England, when votes for parliament, always much desired in small constituencies, were especially valued by half-pay officers with a good ledger of patients. In Belgium, this is allowed; the officer is rarely struck off the list, but the service suffers and jealousies ensue.

In the routine of the hospitals, the garrison medical officer sees the patient twice a-day: the first visit early in the morning. The diets are arranged over-night. Senhor Marques considers these hospitals the best in the world. Let him speak for himself:

"The Belgian military hospital is primarily dependent on the military chief or local military commander in all that concerns discipline. For its medical direction, there is the principal or garrison medical officer. For administration and accounts, there is the so-called *surveillant* or his *adjoint*, chosen from retired officers of the army. Under this arrangement, all flows smoothly enough. The medical director attends to the medical requirements and hygiene, he disposes of everything in this respect, even as to the food and drink. He examines and superintends the pharmaceutical service; in short, he holds in hand all that he can require to further his proper sense of obligation. On the other hand, the administrative employés not being interfered with by the medical officer, keep themselves in their proper places. They are responsible for the hospital property, for the proportion and distribution of the diets, and also for the execution of the hygienic arrangements determined on; but they cannot change a nurse (orderly) from one ward to the other without permission from the medical officer. It is easy to see the difference there is between these administrative appointments and the *intendents* of the military hospitals in France; and this view establishes what I have already expressed in my notice on the medical service in the Netherlands—viz., that the system before us is of all the most advantageous, holding as it does the middle place between the French and English system, which last is also that of the Portuguese.

"For my part, I believe that the essential condition of increased utility in military hospitals consists in a concentration of authority in the medical officer as regards every branch and thing in which his especial information is a requisite, and in setting apart accounts, bookkeeping, and administrative work for some person who is expressly forbidden to interfere with the medical officer—nay, more, who is bound to see him satisfied in every act of hygiene according as he may direct.

"For guarantee and security of the administrator, I prefer the bail and bonds that are required in Belgium to the kind of responsibility which is in use with us.

"In the way I have stated the service in military hospitals in Belgium works exceedingly well, but to these elements of service there are others conjoined—viz., the regimental and battalion medical officers, each with their appointed duty,



the assistant-surgeons, the medico-military pupils; the sisters of charity, the hospital orderlies and sergeants, members of an administrative corps established in 1853."

The hospital at Brussels has between 200 and 300 beds for patients. In its medical and pharmaceutical service it comprises one chief physician (sub-inspector), 2 assistants, 10 pupils, 1 chief pharmaceutist, 2 of second and third class, 3 pharmaceutical pupils, 6 head orderlies, 15 orderlies, and 11 sisters of charity; in all, 51 employés, besides the administrative department.

"The hospital at Brussels (says our author) has a system of warming and ventilation extended to all the chief dependencies of the establishment (two caloriféres of Joises, of Liège, for each ward, with chimneys d'Arcet in the upper flights), and everywhere a degree of cleanliness that is unsurpassable. The floors are well waxed, the furniture and patients' clothes superior to what I have witnessed in any other hospital, and also the utensils of a better appearance and in better condition than I have ever met with in similar institutions. Each patient has an *elegant* iron bed, with a paillasse twenty centimetres high, a mattress, linen sheets, counterpanes, white blankets, and large pillows. At the head of the bed is a shelf, forming one with the bed, for convenient use, and in the middle a frame for the card. In connexion with the frame, there is an arrangement for the name of the disease, written grey on a black ground. In the intervals between the beds there are arm-chairs for those who can get up. Each ward has in a species of framework two barrels raised high up, with taps at their lower part; one serves for water, one for tisane, according to direction.

"Among the articles which a patient receives are a loose coat and a neck-handkerchief. All patients out of bed or sitting up are directed to wear such a necktie. Among the constant appliances of the wards one remarks a curtain supported by three columns, used as a screen," &c.

Our author does not omit to notice the central pharmacy at Brussels, a grander establishment than that at the Hague, founded apparently with a view rather to perfection of service than to economical considerations. The considerable number of persons who claim privileges in connexion with the army necessitate a large staff. The civil prisons, the marine, and the railroads are furnished with medicine through the operation of the War Minister; these last better and cheaper than they could do it themselves, with a slightly favourable balance to the State.

The pharmacy is supplied by tender; the chemicals are accurately analysed; even of the water of crystallization of the sulphate of quinine (ten to fifteen per cent.), an exact estimate is made for calculation of discount; every care is taken to ensure preservation and rotation of drugs, economy, &c. The War Minister settles and approves the accounts, and regulates everything, even to minute particulars.

The surgical instruments and ambulances are collected there. A plan of one of these last accompanies the work under review, and is recommended by our author for its unparalleled simplicity. The smallest caisse of the French army comprises more, he says, and is of equal excellence in its way.

As regards the pharmaceutical staff in Belgium, it is very complete. It consists of a principal pharmaceutist, bearing the rank of major, 6 officers of the first class, with the grade of captain, 10 of the second class (lieutenants), and 14 of the third class (sergeants).

The inspections of the sick and disabled are of great simplicity. They are arranged on the following plan:—

1. Illnesses and deformities exempting by the sole fact of their existence.

2. The same exempting temporarily or definitively, according to their degree.

3. Those requiring exemption for a year or more, or that the inspected should be referred to the district commander to be under observation in the hospitals. The degree of illness is often marked by the terms "considerable," "grave," "habitual," "extensive." The incurable alone are marked as "incapable." Other maladies, as myopia, are the subject of special investigations.* Besides these tables, intended for early years of service, there is another for pensioners, with the history of accidents, &c. This comprehends all we shall say of the Belgian army.

The subject of Sisters of Charity is too interesting to be passed over, and keeping in view the public events which have occurred in respect to them at a more recent date in Portugal,† we shall be careful that Senhor Marques does not incur a greater responsibility with regard to them than his expressed opinions warrant, so far as these may have tended to form a public opinion. It is incontestable that the result of his observations is adverse to the employment in the service of military hospitals of ladies who are "religious" devotees, yet not wholly so, nor without reservation. Admitted, that in civil hospitals their employment is a success, sanctioned in some countries by long use and experience, this success is attributed to the laborious and comprehensive nature of the duties performed, necessitating an earnestness of character devoid of frivolity and calculation. On the score of economy, it seems justified by the very low rate of pay afforded to the ordinary assistance, which would seem to render indispensable the gratuitous ministrations of a more highly educated class. Nevertheless, even in civil hospitals a want of promptitude, a turning aside to religious duties at inconvenient hours, and occasionally a resistance to the orders of the faculty,‡ have sometimes given occasion for regret. Senhor Marques has,

* The faulty accommodation for eye patients in the Brussels hospitals is a subject of reproach considering what they have suffered from ophthalmia in Belgium. It is an inconsistency. Their latrines are also detestable, on a level with the French. *A propos* of this subject, we may mention the *latrinas inodoras* of Sr. Oliveira Pinentel; by a process resembling that of D'Arcet, this famous chemist disinfects the solid matter by carbonized turf from the banks of the Tagus in equal quantity to the matter infected. For disinfection of the urine he uses small portions of the mother waters from the salt-pans of the Tagus and Sado, or small quantities of hydrochloric acid.

† The *Sœurs de Charité* located in Portugal were a French community, of no considerable numbers, but sufficiently so as to be noticeable. More than a year since they were dismissed from Portugal under a ministry of the same shade of opinion as had introduced them under Pedro V. This occurrence seems to have happened from no firm conviction of opinion, but under the view of an election cry, foreigners not being in favour with the masses. They were never employed in the military hospitals, but in schools and elsewhere. Their departure was the occasion of the "old parties" (Miguelite) withdrawing their subscriptions; but this will probably be only temporary.

‡ Without excusing such occasional resistance, we can quite understand that it is not wholly surprising, as we have in some of the Continental hospitals seen the sisters treated by the medical officers with the greatest rudeness and harshness.



we may say, formed a different estimate of the services of the Sisters of Charity in France and in Belgium. In the latter country, their functions in the military hospitals date from more than twenty years; in the former, it is only since the Crimean war that it has been determined, under the patronage of the Empress Eugénie, to continue their attendance in the time of peace at the Parisian military hospitals of Val de Grace and Gros Caillou, with nine hundred and two hundred and fifty beds respectively. To introduce twenty of these ladies into the Gros Caillou, we are, to our surprise, told that it was necessary to disutilize space for beds of one hundred patients. Each Sister of Charity (*première mise*) has two hundred francs on joining, he states, four hundred yearly for alimentation, two hundred francs yearly for clothing.*

He takes a modified view of their utility in Belgium, in which country he admires the neat completeness of the hospital arrangements. But here his objections on the score of economy fall with equal, if not greater, force. Their subsistence is not less than one thousand francs per annum. At Brussels there are eleven Sisters to two hundred and fifty patients; not one attendant the less is required on their account. For instance, in the military hospital of Antwerp, he remarks, they had eighteen orderlies: they discharged ten and took on ten Sisters of Charity; by the end of the first year the men had been wanted back again by twos and threes till the staff of eighteen was complete, *plus* the ten Sisters of Charity. His objections evidently arise in great measure from utilitarian prejudices.

Senhor Marques concludes somewhat favourably of sisters of charity in a fixed circle of duties, in a restricted number, seven or eight for 300 or 400 patients. To secure efficiency, they should be the subject of exact, not to say severe, personal choice. He assigns to them fever wards, bad surgical cases, and the ophthalmic wards. He excludes them from the convalescent wards, and very properly from the chambers of loathsomeness and impurity.

From circumstances of similarity, Senhor Marques finds less to remark upon in the English medical service. He praises the wide discretion allowed to the director-general in his field of duty, and considers it to impart a certain *élan* to its operations; but by no means does he approve of the dependence of that functionary on the corroborative assistance of other departments (inspector-general of fortifications, barrack department, purveyor, &c.). The general freedom from inspection of the regimental surgeon he thinks suited to our circumstances of territory. As regards the hospitals, he feels himself compelled to extenuate any error his sources of information may have led him into, "seeing that, from the regulation in force, only a very incomplete idea can be formed of what kind of hospitals exist for the treatment of the soldiery." "I shall have occasion to refer," he says, "to this regulation,

* The wages of a head-nurse at a first-class London hospital is increased from 20*l.* a year for three years, to 26*l.* after, by additions of 1*l.* yearly. The assistant-nurses begin with 16*l.* yearly, and increase by half-a-guinea a year to 20*l.* yearly. The board wages are 1*s.* 1*d.* daily, or 7*s.* 7½*d.* weekly, for all servants alike. Each servant has also weekly rations of candle, soap, &c., equal to 4*s.*

which, from its unparalleled simplicity in some things, and its extreme prolixity in others, is very far from resembling those of other countries."

In the administration of the regimental hospital by the surgeon-major, he disapproves of the dependence for the food on the deputy-purveyor, and for other things, "except in extraordinary cases," on the barrack department. In the Portuguese service everything for the use of the regimental hospital, food, utensils, &c., is issued from a special department, and with great benefit, as he deems, to the service. The report in duplicate which the regimental surgeon is called on to make to the commanding officer and to the director-general when any improvement is required in the quarters, is not different from the Portuguese service, but seems to work with less obstruction there. He is inclined to consider that the convalescents in hospital are not sufficiently under discipline. With regard to the hospital corps, from which such wholesome results have been obtained on the Continent, he regards it as having been "hastily organized" in England, "and therefore defective, and too hastily laid aside on exaggerated statements of the necessary expenditure." As to this point he is too firm for us not to believe it to be the result of strong conviction. It is a deficiency which causes him some surprise in so liberal a nation as ours;* so also with regard to the restricted list of medicaments; there is no limitation of the kind in Portugal; to be sure, in England there is the liberty which the medical officer possesses of travelling out of the record to the extent of twenty shillings a quarter for articles not in the list: but for all exceptional cases there are a deluge of declarations, requisitions in duplicate, and correspondence, which altogether do not encourage efficiency. The same and worse with each application of leeches, which it is well known the soldier would never have the benefit of, but for the liberality of his officer. In Belgium they are freely allowed, and there is a Government regulation that every leech should be divided after its application, to ensure its destruction, showing the "difference of their spirit."

In Portugal there are not similar restrictions as to large operations on the part of the regimental surgeons; this appears a very wholesome regulation to Senhor Marques, considering the excessive readiness the English surgeons display in this field—the Portuguese surgeon being

* Senhor Marques seems barely to have apprehended the conditions of our hospital service through the "Army Hospital Corps" founded by warrant, 1857, which now continues. It seems to offer more perfect elements of discipline than the very liberal system it superseded. The soldiers engaged in it have the privilege of "free rations" in excess of regimental pay. This is the principle of remuneration adopted. For inefficiency they are subject to be sent back to the ranks. The compounder (surgery man) has a shilling a day extra; he now undergoes, we believe, some kind of examination for pharmacy.

The medical staff corps, established in 1855, and superseded in 1857, was more extensive in its plan. It had nine companies, each suited to an hospital of 500 patients, and contained 702 individuals in all. The steward over the purveyor's department had 5s. daily pay. The wardmaster, 4s.; the assistant wardmasters, 2s. 6d.; the orderlies, 2s. They had besides free rations and quarters, with army rank of serjeant-major, serjeant, corporal, and private. Both of the corps supplemented the Field Ambulance.



of a much more conservative turn of mind. He remarks on the perplexity created by the instructions for inspection in minute particularization of diseases (even mental), when the degree of ailment and incapacity of the individual are the one thing necessary to be specified. He considers this duty over-laboured and refined into unnecessary minuteness. In signing the monthly nosological map in Portugal, the surgeon-major is not required to refer to the absence or presence of the other medical officers on the occasion, nor whence the "leave" emanated.

We should be fortunate if it were foreign to our duty to mention the dispassionate observations of Senhor Marques on the central hospital of Fort Pitt, that unwholesome and disheartening receptacle, where the "child of glory" returns from heathen lands to fulfil his dream of "home and beauty." We would rather banish it from view, as a thing of the past, though as a scandal that is yet recent. May the young soldier find nothing corresponding to it in his experience. We can detect no maliciousness in the remark, that the superior authorities had "convenient and even elegant apartments," notwithstanding the ugly look of the interior of the hospital.

Senhor Marques writes warmly in favour of the regimental hospital, particularly as to the family character which characterizes it. How much must depend on the personal character of the surgeon in these posts can hardly, we think, be exaggerated. These are the hospitals he would retain for Portugal, engrafting on them an element borrowed from the Belgian hospitals.

"The difference, however, is considerable in a line of comparison with the French system, in which there is no regimental hospital, properly so called, although towards the end of the Crimean war there were organized some regimental wards.

"The ambulance hospitals occupy the lowest place in their organization. Each *corps d'armée* in time of war has its separate service, and is accompanied by the ambulance hospital in its movements. The sick and wounded are passed on from them to the general hospitals. Hence the surgeons restrict themselves to the simplest dressings that may be necessary, and the sick and wounded escape very quickly from their care and observation. And in making this comparison, I hold in view that if the regiments are unembarrassed by the inconvenience of a hospital, the patients do not, according to the testimony of the military men who observed both systems in the Crimea, obtain the same favourable conditions of treatment as they do in regimental hospitals. These observers gave the palm to the English system, greatly to the astonishment of those who had before quoted its inferiority as compared with the French.

"To be brief, I will state that, in relation to the French system, the manner of organizing the English service has every advantage which can result from unity and completeness in the medical, dietetic, or to explain myself better, hygienic service. The English system has no sous-intendant, or even a mere *officier comptable*, who can forbid at his *bon plaisir* the requisitions the clinical officer makes for the use of the hospital, nor does it concede the inexcusably barbarous privilege to mulct the surgeon in the value of a diet which is not comprehended in the respective tables. There is no license for the pharmaceutist to refuse the preparation of a remedy, the name and composition of which are not included in a limited formulary; finally, there is not that unjust prohibition as to recommendations in the interest of science from the superior

medical officer to his subalterns; in France he cannot address himself to them in such a sense 'without the consent of the military sous-intendant charged with the administrative police of the establishment.' All this takes place in the French system, and more than this, for the medical officer has no claim to be heard, and can only be consulted in whatever is not included in the hospital direction. He may represent the desirability of improved hospital accommodation and conveniency, the separation of certain patients, the renewal of bed furniture, the purification and renovation of a ward, the change of an orderly or anything else included in hygiene; but the chief of the hospital, the *employé de l'intendance* will sanction them or not, as seems good unto him. It is to hygienic errors that we must attribute the fact that in the Crimean war, at a time when the English hospitals held scarcely more or worse cases than in normal times, the French found themselves in presence of the most infectious and violent disorders. Thus it is proved that the French army was at its extremity as regards its sanitary condition, &c."

There only remains now that we should mention the latter part of our author's labours; shall we say of this part that it is a labour of love?—viz., what he saw during a short visit in the medical world of London ('Londres Medica'). Intended for the information of the foreigner, this work is calculated to convey pleasure on the score of its literary merits alone. Though but a slight essay, it is written with delightful ease and vivacity, with a vein of observant pleasantry, that give us a most favourable idea of our author's temper and talents.

He is evidently an admirer of our nation, and in travelling with him from point to point, we perceive his strictures are those of a friend. One thing only we shall offer in correction—viz., that in spite of the heavy sums spent in acquiring medical knowledge in and out of schools in our country, the medical profession is neither better nor worse remunerated with us than in the rest of Europe, and when he next hears the income of first-class surgeons quoted at anything like the figure in his pages, we would advise him to divide the sum by two and then again by two.

It may appear to some of our *confrères* that we have treated these matters of hygiene in too discursive and imperfect a manner to suit the pages of a scientific journal. Perhaps, however, it may not be amiss to relax somewhat in the severity of procedure in dealing with subjects that stand half-way between the physician and the soldier, or which, more strictly, are the common property of both. Of all the public, it is the soldier whom on such a topic we would seek to interest. It is now more than a century past since Marshal Saxe boasted he would teach the Duke of Cumberland that the health and comfort of the soldier should be the first thought of a commander.* Had his observation fertilized as it might have done in the brains of our generals, its value would have outbalanced the defeat of Fontenoy.

* Belsham's History, vol. ii. p. 230, second edition.



## Review XIII.

*A System of Surgery, Theoretical and Practical; in Treatises by various Authors.* Edited by T. Holmes, M.A. Cantab., Assistant-Surgeon to St. George's Hospital, and to the Hospital for Sick Children. In Four Volumes. Vol. II.—*London*, 1861.

Punctual according to the editor's promise, the second volume, as well as the third, of Mr. Holmes's 'System of Surgery,' has been for some months before the profession. Reserving to ourselves the pleasure of considering the third volume at a future opportunity (probably in our next number), we propose to bring the second volume under the notice of our readers in the present number of our Review. This volume comprises essays on local injuries; the different regions of the body being treated by different contributors.

The first essay in the volume is upon *Gun-shot Wounds*, and is from the pen of Mr. Longmore, the Professor of Military Surgery in the Army Medical School lately established at Chatham. The special nature of injuries by fire-arms, though liable to arise, in common with other violence, in every region of the body, mark them out as a fit subject for a separate essay; and in treating of these, Mr. Longmore restricts himself to the consideration of gun-shot wounds as they are met with in the operations of actual warfare.

Although wounds possessing some of the leading characteristics of those inflicted by bodies projected by gunpowder, may result from objects driven by any sudden expansive force of sufficient power, there are distinctive features, plain and unmistakeable, in the wounds caused by the metallic projectiles used in war, which have been recognised from the time of the introduction of fire-arms, and which have marked out gun-shot wounds as a subject of special interest for the military surgeon. The increased educational requirements of modern times also point them out as an indispensable subject of additional study to the student who proposes to qualify himself for the military branch of the public service. Injuries from pieces of stone set free in the process of blasting rocks, or by the accidental flying asunder of a faulty mill-wheel, will not present features materially different from the contused and lacerated wounds caused by fragments struck from a parapet or an exploded mine. The fragments of metallic vessels burst asunder by the expansive power of steam, may cause wounds presenting some of the characteristics of those caused by the explosion of a shell. But the military bullet, as an instrument of direct violence, in its passage through the trunk or extremities, causes a wound presenting features of its own, widely different from the accidents of civil life, though equally destructive of life or limb. The bolts of the archer, where they did not destroy life, have not been recorded by cotemporary historians as leaving wounds of a very formidable character: the crushing on a railway, and the destructive effects of modern machinery, in the factory or on the farm, are essentially different in many of their chief features from the lesions

effected by the shot or shell of the military engineer. Mr. Longmore gives a short review of the history and literature of this branch of surgery; and he points with pride and satisfaction to the fact that, in leading the way to a more practical knowledge of the nature and proper treatment of these injuries, the older English military surgeons stand forth conspicuously, though they have written less voluminously than the Continental surgeons.

In considering the varieties of gun-shot wounds, as they come under the notice of the army surgeon, modified by the form and kind of missiles, the degree of force with which they are propelled, and by the seat of injury in the patient, the part of his body struck, and its position relative to the projectile at the time of injury, Mr. Longmore has instituted a comparison of the different effects caused by the bullet of the old smooth-bore musket, and those far more serious wounds inflicted by the modern more perfect arms of precision, the Enfield, Minié, and other rifles. In bullets of the same weight, the rate of velocity being similar, as from "Brown Bess" at 80 yards and the Enfield at 800, the injury from the conical rifle ball will be far greater than that from the round ball, on account of its shape alone.

"The shape of the bullet," Mr. Longmore says, "combined with its momentum, seem sufficient to explain the severity of its effects above those of the round bullet:" and from these in a great measure it happens that the lodgment of balls is now so rare in comparison with the experience of former wars. Grape and canister shot, and penetrating fragments of shells, are frequently found to lodge. These last are often difficult to detect and to extract. The appearance of the wound seldom indicates to the observer the true size of the body which caused the injury. Such fragments become firmly impacted among the fibres of the tissues in which they are lodged; the effused blood fills up the inequalities, and rounds off the edges which might otherwise show themselves prominently and indicate the presence of the foreign body.

With the old musket bullet, when it passed out, the opening of exit was usually easily distinguished from the wound of entrance; it was generally larger, its edges more torn and somewhat everted, and with some protrusion of subcutaneous tissues. At the time of its infliction, as well as in its cicatrix after healing, the different appearances of the two openings of the wound were in general easily recognised. With the modern rifle-bullet—the "elongated expanding cylindro-conoidal projectile" of the Schools of Musketry—Mr. Longmore tells us it is often very difficult to distinguish between them. "In medico-legal investigations," he adds, "it must be often a matter of great importance to decide this point; but to the military surgeon, more especially from the circumstances connected with the new projectiles, it has become a subject of little practical interest." (p. 25.)

Drawing his experience from the ample field afforded by his service in the Crimea, Mr. Longmore gives very excellent directions for the immediate treatment of wounds, and for the conveyance of the wounded, often in a spot still exposed to danger, to the hospitals in the rear. He



urges the importance of establishing the diagnosis as early as possible; the examination of these, as of most other wounds, being made then more easily than at a later period. Of all instruments for conducting the examination, he gives a preference to the finger of the surgeon, long ago pronounced by John Hunter and John Bell the best of all probes.

An unusually large number of gun-shot wounds of the head were seen in the trenches during the long stay of the army before Sebastopol. From that ample field of observation Mr. Longmore brings matter of much importance, and well deserving the attention of the civil practitioner. The trephine has not received more favour at his hands than from other surgeons of the present day.

> "Where irregular edges, points, or pieces of bone, are forced down and penetrate—not merely press upon—the cerebral substance, or where abscess manifestly exists in any known site, or a foreign substance has lodged near the surface, and relief cannot be afforded by the wound, trephining may be resorted to for the purpose; but the application of the operation, even in these cases, will be very much limited if certainty of diagnosis be insisted upon." (p. 51.)

In these and all other gun-shot wounds, the general treatment recommended by the author—constitutional as well as local—is judicious, as we believe his practice was successful.

The essay is specially intended to convey the experience of the military surgeon, and as an exposition only of those leading peculiarities which constantly demand his consideration, and which spring either from the nature of gun projectiles, or the circumstances in which this branch of military practice has for the most part to be pursued. The practitioner will find it a useful guide for reference in some of the more rare emergencies of civil life. In the gun-shot wounds of civil life, inflicted most frequently with small shot or pistol bullets, or even with blank cartridge, severe hæmorrhage, as an immediate attendant upon a wound, comes more frequently under notice than happens in military service. In the cases which have come under our own notice, the primary hæmorrhage has generally been severe: we have known fatal hæmorrhage arise from a trifling wound in a vein, professional help not having been called till too late. The contrast between civil and military experience is probably more apparent than real. Mr. Longmore observes, that we have no data to guide us in determining the proportionate frequency of fatal hæmorrhage; nor can we have them until proper examination and classification of the particular causes of death on the field of battle are instituted. We have heard it said, indeed, that hæmorrhage is one of the accidents feared by the officers when going into action more even than death or mutilation; and that they look with a pleasing confidence toward the medical officer behind them, as able to save them from what they look upon as a preventable accident. They must have had evidence, one would think, of the loss of blood upon the field.

The gun projectiles of civil life—if we may except the volunteer's bullet—are not meant to be sent so far, nor to inflict wounds at a very great distance; and the severity of them generally arises from

the proximity of the unlucky patient at the time of their discharge. The smooth bullet or the slug may traverse the body or lodge in it. Yet the tightly-fitting bullet of the modern "revolver" is, in its destructive effects, as much more powerful for mischief over the old pocket pistol as the Enfield rifle over Brown Bess; and as these weapons become more frequently handled by the careless or the idle, we must look for corresponding increase in frequency and severity of the gun-shot wounds of civil life, and the study of this branch of surgery becomes of corresponding importance to the civil practitioner.

Mr. Prescott Hewett, favourably known to the profession by the lectures delivered at the College of Surgeons upon *Injuries of the Head*, contributes an elaborate and comprehensive essay on that subject. Taking the simplest part of his subject into consideration first—wounds and bruises of the scalp, and the parts outside the skull—he describes in a masterly manner, as they have come under his notice, in the living subject and in the pathological theatre, the numerous complications met with in practice, the primary effects, and consecutive diseases of the bones or membranes, the fatal effects often resulting from them, and the modes of treatment which are most advisable to be adopted. Trifling as some injuries of the scalp may seem at first sight, they all demand watchful care on the part of the practitioner. "All injuries of the head," Mr. Hewett remarks, "of whatever kind, may lead to inflammation within the cranium." (p. 179.) In many instances—in most, we think we might say—the wounds of the scalp heal readily; the great vascularity of the integument commonly saves the lacerated and contused flaps from sloughing. Though supplied so freely with bloodvessels, it is seldom, Mr. Hewett observes, that the hæmorrhage in such wounds is troublesome. In the temporal fossa it has been found so, and the question of even tying the common carotid artery in such cases has been entertained. In the days of our pupilage, we remember a case of very troublesome hæmorrhage in another region of the head. A chimney-sweeper, half-drunk, in falling backwards received a deep wound behind the mastoïd process, dividing the occipital artery, and causing considerable loss of blood. In this state, rendered more excitable by the loss of blood, he was brought into the accident ward of a hospital. It was a very difficult matter at night, in such a subject, to secure the two branches of the divided artery; it was before the days of chloroform, and the lad could scarcely be kept still.

The numerous difficulties in forming a diagnosis of the full extent of the injury—often more obscure, though not less serious, when the scalp is unbroken, or where, as sometimes happens in the bone, the violence has not been *direct*—have occupied Mr. Hewett's attention, and the importance of the different classes of symptoms is fully estimated. In compound fractures the danger is not to be estimated by the extent, or apparent severity, of the wound. Large wounds of the scalp, with extensive comminution of bone, where all the violence is spent upon the part, will often present less unfavourable results than the fractures of the inner table, and may not improbably be attended with favourable recovery. In the *punctured* fracture, in which sharp



splinters of the inner table are driven inwards, inflammation within the cranium almost always arises sooner or later; and of all compound fractures, this is on that account the most dangerous, and the one which most imperatively calls for the use of the trephine and the elevator—to raise, or remove altogether, the fragments which are driven down.

The former teaching of some schools—or perhaps we should say more correctly, the opinion of some former writers—was that in death after injury of the head, in cases of simple concussion of the brain, there might be nothing found in the brain itself to prove that it had suffered any injury, the substance of the brain and its membranes appearing perfect, without any deviation from healthy structure. Mr. Hewett decisively points out that these conclusions have been drawn from insufficient premises; that in the few cases recorded—for there are not many—on which such an opinion has been made to rest for support, there has not been a sufficient examination made of other parts of the body, to show the real cause of death, and that modern investigation has cleared the way for more accurate conclusions in cases once doubtful or obscure. In all cases of sudden death from injury, he thinks the parts to be examined should be the upper portion of the spinal marrow and the heart—whether there is any indication or not of any injury having happened to the chest. In one case, at St. George's Hospital, a rupture of the heart might have escaped detection but for the excellent rule they have there of examining the various parts of the body in all the post-mortem examinations. The following case occurred in a large asylum for the insane at a time when we happened to be on a visit to the superintendent. One of the patients, a heavy fat man, sixty-eight years of age, formerly a blacksmith, in getting out of a window, fell on to the gravel walk below, a height of about twenty feet, striking the right side of his head, and tearing down a large piece of the scalp. He was immediately picked up insensible, and died in a very few minutes. A fracture of the bones of the skull extended through the right parietal and sphenoid bones into the middle fossa. There was no hæmorrhage, no contusion, or laceration of the substance of the brain, or cerebral vessels. In the left pleura there were about two quarts of fluid blood, the source being the aorta, which was torn across in its whole circumference about half an inch beyond the origin of the left subclavian artery.

Mr. Shaw contributes an Essay on *Injuries of the Back*. He commences with a concise description of the structure and anatomical mechanism of the vertebral column, with a special view of the parts most subject to injury, under the varieties of exposure to violence, in which he points to the ample provision made for the safety of the spinal cord, and for its accommodation, under the different offices of stability or mobility. After a slight notice of the more ordinary and less dangerous injuries of this region, "sprains," not implicating the medulla, and not in general leading to serious or permanent ill consequences, Mr. Shaw proceeds to the consideration of the far more serious, and more frequently fatal injury, fracture, or dislocation of the

vertebræ, and the effects upon the spinal cord consequent on the displacement of the bones, for it is, in fact, the question of the condition of the cord which renders the injury of the back of the gravest interest to the surgeon. The cases which Mr. Shaw relates (and which are too long to be transferred to our pages)—some two or three being remarkable instances of recovery after fracture—are well worthy of perusal, as are also the comments he makes upon them, and the general directions he gives for the care of the unfortunate patients during their long-continued sufferings.

The question of surgical interference for removing the displaced pieces of bone, with the view to restore the lost functions of the cord, often mooted, and once thought to be decided in favour of the patient, and against the surgeon, has been of late revived again by a physician whose attention has been specially directed to the structure and functions of the spine and nervous system. The advantages to be hoped from the operation proposed are discussed by Mr. Shaw with care and attention. His opinion is not favourable. Indeed, he has expressed his disapprobation in terms more decided than will, we think, receive the assent of our readers.* He assures "the young surgeon that, in abstaining from performing it, his forbearance is not an omission, but a positive duty." (p. 238.)

What is "concussion" of the spinal cord? The term is recognised in systematic works of surgery, yet it is difficult to assign a definite signification to the word, excluding from consideration those cases where injury to the cord is combined with injury to the bony structures.

A lad, of strumous constitution, in good health, one summer's day, having stripped for bathing, jumped from a bridge headforemost into the stream below, a height of about twelve feet. Finding himself immediately disabled, he managed somehow to get to the bank, and recovered sufficiently to be able to walk home. The next day he was brought to a hospital, paralysed in his lower limbs. The usual symptoms of injury to the spine followed, and he sank, with "bed-sores," at the end of three months. The gentleman who examined the body in our unavoidable absence, reported that there was no injury to the bones of the spine, nor any discernible lesion of the medulla or its membranes. Looking back to this case with the experience of subsequent years, we think it an omission that the state of the chest was not made an object of special examination.

A short essay upon *Injuries of the Face* is contributed by Mr. Coote. The region is a limited one, when the head, and the eye and its appendages are excluded, as forming the subjects of essays by other writers of the present series. In wounds which heal so readily as those of the integument in this region do for the most part, a chief subject of the surgeon's care is to avoid the unsightly scars and the deformity which often attend the healing. In the treatment more than usual care is required to maintain the parts in their exact normal

* The reader may be referred to some observations on this subject which we made in No. 58 of the Review, p. 377-382.



relation, and for this purpose Mr. Coote's directions will be found judicious and practical. In considering the question of surgical interference, the reader may refer with advantage to his observations on the operations proposed for removal of the deformity caused by cicatrices after the healing of burns and sloughs.

An essay upon the *Injuries of the Neck* is the single contribution of the late Mr. Henry Gray, a legacy from one whose early career, giving a promise of much usefulness, has been so prematurely cut short, to the great regret of his professional brethren. Of the wounds in this region, the common "cut-throat" is the one most frequently brought to the notice of the surgeon. These wounds vary much in situation and extent, and the amount of danger varies in a corresponding degree. Wounds at the back of the neck are less frequently made with the intention of destroying life, and are generally far less dangerous than those at the "throat" and at the side. Yet now and then a suicide manages to accomplish his purpose from behind. Several years ago, a man in St. Bartholomew's Hospital, who had once tried to destroy himself by cutting his "throat," succeeded in destroying his life with a penknife at the back of his neck.

Mr. Gray has made a discriminating examination of the nature and anatomical peculiarities of the different injuries he has seen in practice. In doing so, he has pointed out the numerous sources of danger, and he shows how it is that the suicide is so often foiled in his immediate purpose of inflicting instant death, and sometimes also in his ultimate object of getting out of the world.

Other injuries in the neck from external violence, such as a blow or a violent squeeze upon the larynx or trachea, come in for a share of consideration. Some of these have been known to cause death. It is not every one who is so fortunate as to escape from such violence with permanent benefit to the same extent as was the case with the late Dr. Turner.

In the serious and embarrassing cases of children who have scalded the fauces and glottis in trying to drink boiling water from the spout of a kettle, it has long been the practice of surgeons to advise an artificial opening into the larynx or trachea upon the accession of well-marked symptoms of obstruction of the breathing, or upon urgent and increasing dyspnœa. We confess to have been much struck by some remarks published a very few years ago in one of the medical journals by Mr. Wright (of Nottingham, we think), in which he gives it as the result of his observation of many cases, that those in which tracheotomy was performed were almost always fatal, and that a different course of practice, leading generally to a favourable result, consisted in the early administration of an emetic, applying a small number of leeches according to circumstances, and blisters to the sternum, with calomel and very small doses of antimony, repeated at short intervals. In some of these, as in those far more embarrassing cases where foreign bodies have passed the rima glottidis, and have lodged in some part of the air-passages, an artificial opening will be imperatively required. When to operate and where to make the

opening, will often tax the surgeon's powers to the utmost. On an emergency, no doubt an opening is made most speedily in the larynx through the crico-thyroïdean membrane, the only membranous part through which an opening can be made below the chordæ vocales, and a penknife or a pair of scissors can serve for the occasion. But in the large majority of cases of dyspnœa, in the greater number of emergencies, the most eligible spot in the trachea, we have no doubt, is that pointed out by Mr. McWhinnie, *above* the thyroïd gland, rather than below it. If Mr. Gray could have had the opportunity of perusing Mr. McWhinnie's recently-published observations upon the subject, we think he would have modified some of the opinions he has expressed in the essay before us.

Mr. Poland contributes a short essay on *Injuries of the Chest.* Contusions of the parietes (the effects of different degrees of violence inflicted), if simple cases of contusion—i.e., without injury to the structures peculiar to this region—are seldom of a serious nature, requiring prolonged treatment. Complicated with fracture of the ribs, they are of very frequent occurrence, presenting themselves almost daily in the hospitals in London. From the reported statistics of Guy's Hospital, Mr. Poland tells us they form a ninth or a tenth part of all the fractures admitted. For the treatment of these cases, often cases of great suffering to the patient, as they disable him for the time from following an active life, we readily add the testimony of our own experience in favour of the plan which Mr. Poland terms "by far the most preferable," the application of long strips of adhesive plaster, extending from the spine to the sternum, applied to some distance both above and below the fracture—in fact, so as to embrace the greater part of the affected side. Strips of sticking plaster are retained more easily than any kind of bandage, and they have the advantage of restraining the motions of the injured side of the chest without interfering with the free action of the other side in breathing.

From the consideration of these, and the less frequent fractures of the cartilages or of the sternum, Mr. Poland passes to the far more serious injuries and wounds of the contents of the chest. Of the penetrating wounds—those involving the pleura and lungs, with their attending complications—it may be observed in general that, notwithstanding all the modern helps to aid the surgeon in his investigations, and with the increased knowledge acquired in modern times of the diseased conditions of the thoracic viscera, the diagnosis is often most obscure:

> "There are no absolute signs," Mr. Poland remarks, "upon which we can decide; we must await the issue, and maintain a strict watch for any symptom or complication which may set in. Our prognosis must be guarded, and must always be considered unfavourable for at least four or five days before the patient can be pronounced to be out of danger; and in expressing any opinion, it must be recollected that the surgeon is not bound to state whether a wound has penetrated the chest or not." (p. 355.)

A foreign student, meaning to kill himself, took a long amputating knife, and passed it slowly through the left side of his chest, with the intention of transfixing his heart. The blade was passed completely through the chest up to the handle, and made a considerable wound where it passed out below the point of the scapula. He withdrew the knife, and was greatly surprised to find himself still living and breathing. As he was feeling for the wound, in order to pass the knife again, and to transfix his heart effectually in a second attempt, he was disturbed by the servant coming into the room. The late Mr. Farish was summoned to his assistance. Under his care, in conjunction with Mr. Stanley, the student recovered, and returned to his own country. The chief treatment consisted in low diet and free bleeding. Was the lung transfixed? It was thought not. Probably the air entered the chest as the pleura was opened by the point of the knife, and the lung collapsed, and escaped, so as to avoid the direct passage of the blade through its substance.



*Injuries of the Abdomen* (excluding cases of hernia) are treated by Mr. G. Pollock in a full and comprehensive essay, in which he introduces them to the notice of the reader as "accidents generally of a grave character, with the effects of which the surgeon has frequently, but too often hopelessly, to combat." (p. 388.) Of the more severe injuries, complicated with rupture or protrusion of viscera, Mr. Pollock's extensive experience has furnished abundant examples, and his practical comments upon the cases he relates are sufficient to encourage us to persevere in the most active and assiduous attention, with a hope that our efforts may not be useless.

In treating of contusions, Mr. Pollock gives a caution that in examining a patient in case of a blow or any violence received on the walls of the abdomen, the *utmost* amount of mischief that may possibly result should not be overlooked; even a slight contusion must not be regarded too lightly. Many circumstances must be fully inquired into in the first instance before we can decide on the probability, as well as on the extent, of deep-seated mischief. "Contusions," he remarks, "are various in their primitive, as well as in their subsequent, conditions." (p. 389.)

Referring to the prevalent idea that *sudden*—i.e., instantaneous—death may result from a blow on the epigastrium, without leaving any trace of injury, any actual appreciable alteration or injury of the parts contained in the cavities of the abdomen or thorax, such as can be detected on examination after death, Mr. Pollock proceeds to inquire, at some length and with great care, into the evidence we possess to justify us in accepting the popular statement. Among the reported cases little certain can be deduced from the short notes recorded of the post-mortem examinations.

> "We are well aware," he observes, "that in such examinations in past years, exact pathological conditions were not appreciated as they are now; and that many times deaths were apt to be attributed to accidents or insufficient causes, which in our days are known to depend on actual disease." (p. 394.)

In treating of the *Injuries of the Pelvis*, Mr. Birkett, somewhat

restricted in his subject (for the diseases of the urinary organs and of the female generative organs are reserved for future Essays), describes with pathological accuracy the immediate symptoms and ultimate effects of the different injuries commonly suffered by the soft parts and bones, as well as by the viscera contained in the pelvis, and the organs in relation with them; these injuries, generally speaking, becoming of importance in proportion as they affect the functions of the organs in relation with the pelvis. Mr. Birkett relates from his own experience many cases well illustrating the danger to life, and confirming the principles he lays down for the treatment of them.

Fractures and displacements of the bony parts are of frequent occurrence, and usually are severe in character: the danger from such injuries arising in great measure from the contents of the region being involved in the mischief; the diagnosis being often a matter of great difficulty.

A farmer's lad, aged eighteen years, was knocked down by a waggon, and one of the wheels passed over his pelvis as he lay on his belly. Abscesses formed about the hips and perineum. At the end of eighteen months he was able to follow his work, but stiff about the left hip. Nine years after the injury he came under our notice, to obtain relief for some obstruction, of recent origin, to the free passage of his urine. We removed a rough narrow piece of bone, about an inch and a half long, from the urethra. At that time the left hip was firmly anchylosed, and the cicatrices of the different abscesses were all firmly healed. Afterwards fresh abscesses formed about the hips and perineum, and he died exhausted, under the discharge, about two years after we saw him. No examination of the body was made.

The *Injuries of the Upper Extremity* are treated in a full and elaborate essay by Mr. Flower, in which he has given the results of examinations and enquiries made through a series of years during which he has been noting the frequency and the nature of the different injuries, more especially fractures and dislocations. Of the wounds received in this region, few, comparatively speaking, call for any especial remark on their nature and treatment; where bloodvessels of importance are opened, the treatment must be conducted in accordance with the general principles applicable to wounded vessels in other regions. The difficulty often experienced in finding the divided extremities of a deeply-seated artery in the hand, at the bottom of a small wound, which from its anatomical relations cannot be freely enlarged, makes such cases, Mr. Flower remarks, an exception to the rule, otherwise generally followed, of tying a wounded artery at the seat of injury, and compels us to seek other means of restraining the hæmorrhage. Mr. Syme has given it as the result of his experience, that bleeding at and below the wrist (and at and below the ankle), is always under the control of pressure, provided it is properly employed; and the general experience of surgeons, we think, will confirm this. In what way the requisite pressure is to be applied and maintained, still remains a question; and the solution of it is often a task of no small difficulty to the practitioner. The *circulation*, so to speak, must



be checked. The pressure must be uniform and continuous; the object is to lessen the impetus of the advancing stream of blood. A paper with some extremely useful and practical remarks upon this subject was published several years ago by Mr. C. D. Arnott, of Gorleston, who says truly, that there are no vessels in the body, of corresponding magnitude, more favourably situated for easy, accurate, and efficient compression than those of the fore-arm and arm.

The frequency with which the clavicle is broken, and the loss of power generally following immediately on receiving the injury, give a claim to the attention received from Mr. Flower. Prominent as the bone is, and thinly covered at the most usual seat of fracture, it is rather wonderful how many cases come under the notice of surgeons at various periods after the fracture, for which no treatment has been received, the injury not having been detected. In the description of the symptoms, the diagnosis and the treatment of fracture of the clavicle—as, indeed, of the other bones—Mr. Flower's remarks are generally accurate and practical, and the result of extensive observation and study. In children it often happens that the injury is overlooked. The child has had a fall or a blow, and will not move its arm from its side. Union takes place readily. After two or three weeks, perhaps, an odd-looking lump is observed upon the clavicle, and medical advice is sought by the parents for removal of this deformity. In the adult, it is not so often that the fracture is overlooked. Inability to move the limb, following immediately on the accident, or the pain that attends the attempt to use it, drives the patient at an early period to the surgeon. Though this may be generally the case, it is not universally that "the patient is unable to lift the arm to the head, or to move it extensively forwards or backwards, at least without much suffering." (p. 527.) A gentleman, who had been engaged in business in the country, where he had been thrown from a horse, applied to us on his return, complaining of the practitioner in the country, who told him he had broken his collar-bone, and put his arm in a bandage. Swinging his arm about freely—over his head, among other motions—he insisted on a condemnation of the opinion given. Upon examination, we found the fracture clear enough; there could be no mistake about it. Having readjusted the bandage we sent the patient home, promising to pay him a visit before bed-time. We then found the patient had stripped his clothes off—bandage, of course, included, which he thought of little use—and had given himself a shower-bath, as the best means of recovering from the fatigues of his journey. At one of the hospitals in London, a question arose in the committee of management about the real nature of an injury, in the case of a casual patient, who had applied for treatment of a recent injury of the shoulder; this had been reported by the house-surgeon to be a fracture of the clavicle—a diagnosis which had been since disputed by one of the numerous tribe of "bone-setters." The lecturer on anatomy, sitting at the board, gave it as his opinion that the house-surgeon's diagnosis must be erroneous, because the patient had been able to raise his hand above his head. The lecturer on surgery, when he heard of

this—jealous for the reputation of his former pupil, the house-surgeon—mentioned the circumstance to us, among others of his professional friends, adding his own opinion that the power to lift the hand above the head was not of itself convincing evidence that the clavicle was unbroken. In the cases which afterwards came under our observation we made the experiment; and it happened so rarely that the patient was unable to make the disputed movement, that we ceased to take any note.

The nature and the varieties of fractures involving the shoulder, the elbow, and the wrist joints, are well described; and Mr. Flower has not overlooked the difficulty in the way of forming an accurate diagnosis during life, while he points out the necessity of it, as conducive to a satisfactory mode of treatment of these complicated cases. In the elbow-joint, more complicated than either of the others in its osseous relations, such remarkable varieties have been found upon dissection, and the symptoms during life seem so various, that we incline to doubt whether it often happens that any two are exactly alike in anatomical particulars.

Common as dislocations of the humerus are, "their pathology," Mr. Flower remarks, "is still imperfectly understood, and great discrepancies exist in the classification and descriptions given by various writers who have directed their attention to them." (p. 564.) With the view to greater precision in describing the different varieties, Mr. Flower proposes a more definite system of nomenclature, a simplification of that of Malgaigne and the modern French surgeons, in which the names are derived from the relation of the head of the bone in its new situation to important contiguous osseous structures:—Sub-coracoid, forwards and slightly downwards; the most common form of the dislocation. Sub-glenoid, downwards and forwards; a rare form, though often, under the name of "dislocation into the axilla," described as the most common. Sub-clavicular; very rare, the most difficult of reduction, sometimes resisting every attempt, even in the hands of the most experienced. Sub-spinous, backwards, on to the dorsum of the scapula; the rarest form of all, the most easy of reduction, and, though not likely to be confounded with any of the others, yet sometimes overlooked; though rare, opportunities in sufficient number have been found to study the effects of this accident in its anatomical relations.

Mr. Flower's descriptions of the symptoms, varieties, and anatomical characters of these injuries, and of the after changes which take place in the affected structures when left unreduced, are full and accurate; and they are well deserving of the attention of surgeons, of those especially who are engaged in educating students for practice. In the face of the facts demonstrated by anatomy, "it is difficult," Mr. Flower observes, "to understand how the wide-spread error of regarding the sub-glenoid as the typical form of dislocation at the shoulder-joint, should have been so long maintained." (p. 566.)

A surgeon, now of large experience, once told us that, having started in life with the approved knowledge of this subject, "the wide-spread error," as Mr. Flower would say, he was much puzzled with the



tion, Avarice, Love of Glory, of Knowledge, of Society, &c., were only *different forms of desire*. In no part of his *Lectures* does he give any distinct definition of *will* or *volition*; but in his observations on the Zoonomia of Dr. Erasmus Darwin, Sir Wm. Hamilton might have found the following remarks: "Admitting [with Darwin] love, ambition, avarice, to be names of particular desires; and hatred, disgust, fear, anxiety, of particular aversions, *they are not, therefore, exertions of volition. Volition is not desire itself, but exertion in consequence of desire.* If the desire and the volition were the same, they would usually be followed by fibrous [muscular] motions, for the same effect must result from the same sensorial change. But love, or hatred, may be felt without any fibrous exertion; and the martyr of disease is not precluded from the desire of exercise by being unable to enjoy it." (P. 59, section ii). I have already shown that volition is the immediate result of a *desire to act* which is *not checked* by some stronger, or, at least, *more influential desire*, arising out of some feeling or emotion that *reacts through intelligence* for the attainment or avoidance of its object; and that what is called the *exertion* of volition, or the *sense of effort*, is the coincidence and approval of the intellect in the felt impulse, and the consequent combination and concentration of both in the desire itself, or upon the desired end. (See Note D.) The only difference, then, between an involuntary and a *voluntary* impulse, is that, in the former, although the intellect *disapproves* of the result, the correlative feeling, motive, or emotion which it excites, is insufficient to resist the impulse; while in the latter, the intellect *approving* of the result, excites *no opposing feeling or motive* whatever, but coincides, or goes along, with the impulse, and, together with it, constitutes our consciousness of *personal effort*. *In the absence of any other opposing and more influential desire* or feeling, *a desire to act* must necessarily, by its *impulsive* or *dynamic tendency, result in action;* the greater *exertion* or effort is the greater concentration of the intellect, in combination with, and as the immediate result of, the desire itself. Whatever mysterious notions Sir William Hamilton might have entertained respecting "the Will," it is pretty certain that he knew little or nothing of the *real process of volition*—certainly less than was known by Brown, whom he seemed to delight in accusing of *mistakes* and *plagiarisms*. (See especially his *Discussions on Philosophy*, &c., art. ii.) But it is rather surprising that while making these accusations, he did not see the impropriety of appropriating some of Brown's thoughts without acknowledging the source whence he derived them. Thus, in correcting Reid's

statement, that memory is "an *immediate* knowledge of the *past*," he shows only what Brown had already shown, that such a knowledge is impossible, and that our knowledge of the *past* can be only *mediate*. (Compare Brown's *Philos. of Human Mind*. Lect. 41.)

*(To be continued.)*

---

## Art. II.—ON COOLING OF THE BODY AFTER DEATH.

By Benjamin W. Richardson, M.A., M.D.
Senior Physician to the Royal Infirmary for Diseases of the Chest.

I have been requested to put on paper a few facts relative to the cooling of the body after death. The subject, of interest generally, has become of special importance owing to the late trial, for murder, of a man named Gardner. This man was found guilty and doomed to be publicly strangled. His fate turned exclusively on the vague question whether a dead body could become cold on the external surfaces of the head, chest, and upper and lower limbs, within three or from that to four hours. A negative answer to this question led to his conviction, and the man was so decisively condemned that the judge told him not to hope for mercy. But when the trial was over, the Secretary of State, Sir George Grey, received from medical men so many facts in opposition to the opinion that was expressed at the trial, that he had to reverse the judgment, and to spare the culprit's life.

The profession asks, and the public asks, how is it possible that such difference of opinion could exist? And I believe there is not one thinking person who did not feel anxiety for the Home Secretary, in the dilemma in which he was cast. Happily in cases such as that of Gardner, there are these indications as guides to the official mind; that where there is doubt it is always safe to err on the side of mercy, and that should an error be committed on the side of mercy, none except the professional sight-goers to executions can be any the worse for it, and they not really the worse, but something the better, in regard to their influence on the world, from their own small but vicious centres of power.

I hope that never again the life of a human being will be allowed to rest on the question of the time required for the



body of a dead person to become what is called "*cold*." It is a blot both on our national character for knowledge, and on our humanity, that such a hazard has ever been played. If the fire of a steam-engine had suddenly gone out, instead of the fire of life from a living body, and an engineer had risen in the witness-box and sworn that because certain external parts of the engine were cold, therefore the engine had stopped play at least three hours; and if on that evidence the life of a man had been condemned by a judge and jury, the public would have pronounced judge and jury as madmen. The evidence and its results would have been considered simply atrocious. Yet, in truth, in the Gardner case, this is what was done; done and tolerated because the people are struck with a kind of mysterious influence whenever the living mechanism is considered and commented on. The expositor of the steam-engine is a man, he must speak cautiously; the expositor of the physics of the body is an oracle, what he says must be believed because there are none but men of his own class to correct him. It is not to be assumed that this condition of things will last. In time the people will learn the laws of life as they now learn arithmetic, geography, or other common branches of knowledge, then anomalies and mysteries will disappear.

I repeat, that after what has occurred in this case of Gardner, it is impossible that any man will ever again be tossed over to the executioner on the speculation that a body must have been dead *so long* because it was *so cold*. Nevertheless the question of the cooling of the body is an interesting one, and one on which but little has been said. I regret that to what has to come in this paper, much more might be added; but at all events, that which is given will supply certain approximations to the truth, together with some positive facts and deductions from them.

The first point to be remembered in respect to the cooling of the body is, that as regards the body altogether, the cooling process, as a general rule, goes on after death without any movement in the opposite direction. But this rule is subjected to a rare exception. Exposed surfaces of the body, such as the cheeks, left with a capillary network full of blood, may become coloured after death and even slightly warm. In a man who died from suffocation in the village of Broughton Astley, near Leicester, about fourteen years ago, and whom I endeavoured to restore by long continued inflation of the chest, this appearance was at one time so striking that the bystanders believed fully the man was being restored. His cheeks became red; his lips red; and in the lip-muscles there was the slightest appreciable quivering movement. This latter effect continued probably fifteen minutes, and the redness much longer. The

cheek, previously cold and deathly, became also warm to the touch. These effects might be esteemed as due to the attempts that were made to restore animation; but this supposition must be eliminated, because I have seen the same phenomena in cases where no attempt to restore life had been made. Dr. Snow was once called to see a young woman who, after having been dead three days, suddenly became so suffused and red, that her friends doubted the fact of her death. After a time, however, the colour abated; and commencing putrefaction proclaimed that the dissolution was perfect. The delusive signs thus given have a very simple explanation. The coloration takes place only in parts where there is a wide surface of capillary vessels, and a surface which is superficial as well as wide, and exposed to the air, such as the centre of the cheeks and the lips. Into such a surface of vessels left charged with blood, the external oxygen finds its way; and a certain amount of combination takes place between the oxygen and blood, attended with evolution of heat, with vivification of colour, and, if muscles be near to be influenced by the calorific ray, with slight uneasy movements in such muscles.

I name the possibility of return of warmth in a dead body because, rare as it is, it might lead to serious misapprehensions. A case might occur in which a body that had been dead over forty-eight hours was found with the cheeks flushed and warm. Assume a medical witness, taking superficial note of this fact, and swearing thereon that the body was but just dead or had not been dead more than one, two, or three hours, because the face was warm! such evidence bearing suspiciously on the conduct of any prisoner might tell against him even more readily than the opposite statement, that a body had been dead so long because it was cold.

The temperature of the dead body, placed in the air and resting on a non-conducting surface, sinks from the moment of death. The process of cooling then continues until the temperature is reduced to that of the surrounding air, at which point it stops. But if, after the body has reached the minimum temperature of the air, the air rises in temperature, the body still remains at the minimum temperature until putrefaction sets in. The dead body is thus, for several hours after death, like a minimum thermometer marking the lowest degree of heat that has occurred. For instance, if death take place with the air at 60° Fahrenheit, and a dead body is placed on a non-conducting substance, such as a blanket, the temperature of the body will fall to 60°. But if the temperature of the air afterwards rise to 70° or 80° the body will still register 60° until it begins to decompose.



It is not always, however, that the temperature of the body falls suddenly to one point and remains there. It will follow the air to a certain point, and remain fixed while the air rises: but the air may fall again below 60°, to 50° to 40°. Then the body continues to follow, and goes to the minimum, there to remain, whatever may be the temperature of the atmospheric medium afterwards, *i.e.*, to whatever height that medium may rise in a natural way. The same rule that applies to the air, applies within temperatures varying from 40° Fahrenheit to 96° to other substances by which the body may be surrounded. Thus, if a warm blooded animal is drowned in water having a temperature of 96°, and if the water is retained at that temperature, the body keeps its caloric; if the temperature in which the animal is drowned be below 96° (say, again, 60°), the body of the animal falls to that temperature and remains at that: taken out and plunged into water at 96° it gains only superficial warmth: to raise the temperature of the mass, the water must be injected into the arteries, and even then the heat must not be lower than 115°, to enable it to bring the temperature of the whole to 96°. The general law, then, applicable to the cooling of the dead body under ordinary circumstances is, that the temperature of the body falls to the surrounding medium, whatever that may be; but that the temperature of the body does not rise with the mere increase of temperature of the surrounding medium.

There is one other general rule which deserves notice, and which, I believe, is absolute; viz., that *cæteris paribus*, the rate of cooling in a medium colder than the body, is the same in all cases, down to the temperature of the surrounding medium. Thus, if two animals are destroyed at the same time, in the same way, and under the same conditions, and if one is placed in a temperature of 60°, and the other in a temperature of 40°, both animals will give a temperature of 60° at the same time when the one in the water at 60° has reached its minimum; but in the case of the animal that is in the lower temperature, the cooling will continue down to 40° before the equilibrium is determined.

These facts in regard to cooling of the animal body are very simple, and by comparison in analogous circumstances admit of being reduced to formulæ; but as there are no two bodies absolutely alike, as there are no two bodies left after death in the same conditions absolutely, and as no two bodies die precisely in the same way, the rate of cooling of any dead body is subject to great variations, of which we can only form approximative measurements.

There are three grand modifying circumstances to be considered on this subject:—

1. The condition of the body itself.
2. The surroundings of the body.
3. The mode of death.

In regard to the condition of the body itself, even in cases of sudden death, unattended by organic changes, considerable variations, dependent on the natural external warmth of the body during life, are presented. It is a fact not easily explained, but still true, that in some persons the temperature of the skin naturally is below 96°, and is, therefore, by comparison, to a hand at 96°, cold. One cannot shake hands with half-a-dozen persons half-a-dozen times without becoming conscious that there are gradations of temperature natural to the hands of these persons, one's own hand being the standard; but when the hand is thus naturally cold, all exposed parts are equally cold; not only so, persons naturally cold, if they go lightly covered, are soon seized with general chillness. They instinctively court warmth—live on it, luxuriate in it. In summer time they themselves lose the subjective consciousness of cold, but to another person of warmer temperament they present still the objective or comparative idea of coldness. If they die from any sudden cause, the fact of coldness could be no test of the time of death. If in parts warmly covered they were warm without redness, (the exceptional phenomenon of revivification of the cutaneous surface being remembered) it might be inferred, from a knowledge of the previous history of the person, that death had not long taken place, but even then no boundary of time could be safely marked out.

The condition of the body in respect to the amount of fat makes a great difference. In men with large chests and no extreme lankiness, in whom the heart has a short surface to irrigate, in these men caloric is abundantly produced, nutrition is active, more fatty food is often taken in than can be burned, the cellular tissue becomes the store-house of non-conducting adipose material, and warmth is long retained. But even in these cases, if the body is left uncovered, the external surface cools with moderate quickness. I believe the external warmth rarely extends beyond fifteen hours. I once made the post-mortem of a plethoric man, who died suddenly in a convulsive paroxysm while sitting up in bed. He was a violent man, and in a fit of rage he threw some article of clothing at his attendant, was seized directly with spasm of the chest, and died before assistance could be procured. Thirteen hours afterwards I conducted the post-mortem. There had been no loss of blood from rupture of vessel, and both sides of



the heart were full of blood; the body also had been covered, and a fire had been in the room for some part of the time, but the body was cold externally at every part, though not rigid. On opening the visceral cavities, however, the intestines and large organs still retained warmth, to my sensation; they were warm to my hand, which was of its usual warmth. I name this case, because it is one in which every circumstance tended to favour the retention of heat by the external surface, and yet the external cooling was well marked thirteen hours after death.

Persons who are naturally very thin, cool after death with great rapidity, whatever may be the form of death. It requires but slight observation of disease to recognise the truth of this fact. I have seen patients with phthisis pass before me in the heat of summer, and as pulse after pulse was taken, I have felt the antecedent coldness of death in the moist chilly hand. I have seen such die, and have known no difference between the temperature of the external surface of the body before and after the fatal event. In common anæmia the same extreme coldness prevails; in anasarca also, and to a certain extent in diabetes, uræmia, and ague, to say nothing of cyanosis.

Periods of life make a difference in the cooling of the body after death: in the infant and the aged person the process is extremely rapid. In the aged, who die the natural death by sleep, the cooling is so gradual before the death that it is difficult in some instances to tell from the mere temperature whether the body is alive or dead. I saw an instance of this kind recently, where the somnolency of dissolution, senile coma, continued for a period of three weeks, and in the last hours so deeply tranquil was the repose, so cold the body, despite all attempts at supplying artificial warmth, that it required a watchful eye over the respiratory movements to say "life has not ceased." So, during certain conditions in adults, where blood is diverted from the system to answer some second or supplementary purpose, the same chilliness prevails. Anæmic thin women, in the last stages of pregnancy, are often unnaturally chilly, and labour is preceded by universal surface coldness. I remember a case when I was in general practice, where a woman in her eighth month of pregnancy died suddenly from syncope. I was at some distance, but was speedily summoned, and was on the spot within an hour and a half after the death; the patient was robed in the white pall of mortality; she was as marble, and the fingers were rigid; her body universally cold.

I made also the post-mortem examination of a lady who died in the same sudden way, during the seventh month of pregnancy, in the year 1860. This lady had appeared well up to the moment of her death. She had been out to the shops in the morning to

order the household necessaries; she had returned and was playing at ball with a child when she suddenly reclined on a dresser, then fell, and was picked up dead. Dr., now Professor, Halford was called in and attended instantly, but found life quite extinct. The friends told me that the event was so sudden they could not realize it as death, but that the rapid and deathly coldness of the body first aroused their fears. "Before the doctor came," to use the expression of one of the bystanders, "she was like a stone, she was so icy cold, so that I felt sure she was dead." We found that in this case death had been produced by the liberation of a fibrinous plug into the pulmonary artery, and by mechanical obstruction of the circulation.

The coverings of the body and the character of the surface on which the body rests after death, exert a material but not easily calculated influence on the process of cooling. If the body recline on a cold and absorbing surface, such as a brick or stone floor, the cooling will necessarily take place with greater rapidity than on a bed of straw or feathers; so again a body unprotected from the external air will seek the temperature of the air more quickly than if it were surrounded with non-conducting material. I thought once that some rule might be arrived at on this point by taking the temperature of sheep after death by the knife, and by comparing the decline of temperature of a sheep that was shorn with another that was not shorn, both being killed at the same time. I made the observation with two small bulb thermometers by placing a thermometer in each case beneath the shoulder of the animal, that being a point where the skin is most free from wool. The results I obtained were, at least, interesting. I found that for the first twenty-six minutes after death the thermometer fell half as slowly again in the animal that was warmly covered, compared with the one that had lost its non-conducting envelope; but after this period the change was scarcely perceptible. I have tried to carry out the same inquiry in small animals recently dead by covering them with flannel of various degrees of thickness; but the results are so variable that I can reduce them to no rule, and the only inference I can draw in respect to the human subject is, that for the first two hours the body covered with bedclothes would retain its warmth in parts such as the abdomen and flexures of the limbs, but that beyond that time the loss of external temperature is so decided and universal as to render any opinion mere vague conjecture altogether inadmissible in the way of evidence.

We come now to the most important modifying cause, I mean mode of death. The great rule in respect to this is comprised in saying, that the rapidity of the cooling process turns greatly



on the point, whether the circulation fails prior to the respiration; or, to put the matter more definitely—whether the body is left full of blood heated to the ordinary degree, or either empty of blood, or charged with a blood the oxidation of which has been, for some time previously to death, partially suspended. In all cases where the blood is suddenly removed from the circulating channels, the decrease of temperature is immediate. The temperature of the solids is, in fact, so sudden upon the withdrawal of the blood from them, that the actual period of cooling may be said to be determined by the rapidity of the withdrawal. We see the immediate effects of withdrawal of blood in the ordinary act of fainting: we see it still better in hæmorrhage, either internal or external. The decline of the temperature in these cases is so great, that the external surface of the body may actually run down to that of the air without death. In a case of uterine hæmorrhage to which I was once summoned, the body was so unusually cold that a thermometer placed under the tongue gave the same degree as the external air. Still there was faint breathing, and the vagina and os uteri being carefully plugged, and stimulants gradually and cautiously given, recovery took place, and that patient is now alive and well. I observed the same fact in a case of epistaxis in a child. Further, in examples of death from fibrinous deposition in the right heart, where the blood is not removed from the body, but is simply arrested, from the obtruction, in its circuit through the lungs, the body may be reduced to the temperature of the surrounding air even before death. In one of my earliest papers on the symptoms of fibrinous deposition, I commented on this marble coldness of the body antecedent to death, as one of the best diagnostic indications of the cause of the sinking presented by the patient. I have seen this coldness of surface in as many as twenty-six examples of sinking from fibrinous deposition; and have pointed out that whenever, in an acute inflammatory attack, there is intimation that the feet cannot be kept warm, the first warning is given of impending arrested circulation and death.

In cases of sudden death from effusion of blood, where even the blood is not lost from the body, the cooling process may be perfected so quickly that the suspicion of death having taken place some hours might occur to one who was not familiar with all the facts. I had once under my care at Mortlake, a thin, pale, anæmic girl, with a large and flabby heart. She worked in a laundry, the temperature of which was always high. This girl was subject to frequent attacks of syncope. One day while at her work she fainted, as it was believed, but her friends being unable to restore her by holding

sal volatile to her nose, and by using brisk friction, sent for me. Some half-hour had elapsed when I arrived, and I at once saw that she was dead. She was cold universally, and white as the sheet on which she lay. While I was present rigidity actually commenced in the limbs. Had not the fact been indisputable that this girl was working at the iron within the hour, I should, at that time, have guessed that she had been dead three or even four hours. The determining cause of the fatal result was effusion of blood into the lungs.

I have by me the notes of another case, where a gentleman, apparently in his usual health, rose from the breakfast-table and went to the water-closet. He remained there so long that his relatives became anxious and called to him. He did not answer, and the door therefore was forced. The man was dead, cold, and partly rigid; he had been in the water-closet some time less than an hour. At the period when this event happened the last cholera epidemic was showing itself, and under the circumstances, owing to the place in which the death happened, and the choleraic aspect of the body, the inference was jumped at that the man had fallen a victim to the dreaded disease; and so a post-mortem was made, and lo! the death was found to have occurred from rupture of an aneurism and effusion of blood into the pericardium.

Cases of death from wounds and hæmorrhage are happily so rare in the human subject, that we have few opportunities of determining the period at which the body cools after them. I have tried to gather some kind of information in this direction by researches on inferior animals at the slaughter-house; but as there are many circumstances in the way to retard the cooling process there, it is not easy to define the rate of cooling. In a shorn sheep, I determined, on a day the temperature of which was 65° Fahrenheit, that under the shoulder the thermometer, which before the death of the animal stood at 99°, fell to 79° in thirty minutes. At this time the mercury was beginning to fall more rapidly, and the body of the animal was everywhere cold to my hand—even the tongue and inner surfaces of the mouth were cold, but I was obliged to give up the observation, owing to the fact that the coldness interfered with the process of dressing. Afterwards I made other observations, the results of which all centred round the first experiment, and I believe it is not far from a correct definition of the cooling of an animal body. The mean temperature of the sheep is 2° above that of the human body, according to my estimate, and the process of cooling would be somewhat slower in the sheep, other things being the same. But taking these differences out of the argument, and placing the cooling of a human subject that had died from sheer and



sudden loss of blood, in comparison with an inferior warm-blooded animal that had died from the same cause, we may fairly estimate that with the temperature of the air at 65°, the body exposed to the air, or protected only by linen clothing, would sink to 76° in twenty minutes, and to the temperature of the air in forty-five, or at most fifty minutes.

But as I wish to put every difficulty forward, I must state that here again differences may be presented due to causes which at first sight may not appear; for instance, the question of the last meal makes a difference in the cooling process; if the body is fasting at the time when blood is withdrawn to the death, the cooling is much quicker than during the assimilation of a hearty meal. Intelligent butchers know this fact well and act upon it: if they wish a quick cooling, they kill their animals fasting.

It is not necessary that the blood in the mass should be lost from the body to ensure rapid cooling; it is enough that the watery part should drain away. How well marked is this fact in cholera, I need not explain. I believe that if I were taken blindfolded to a patient in the collapse of cholera I could diagnose the disease by the touch alone: so cold, so shrivelled, the skin of the sufferer by the side of that of the healthy man. And how rapid these changes! A man named Dade, in 1854, was in my consulting-room at ten in the morning, complaining only of slight pain in the bowels; his skin then was warm to my touch; at eleven and a half, he was in bed, thickly covered, with bottles of hot water around him wherever they could be conveniently placed, and yet the thermometer under his tongue registered but 68°, his breath fell cold on my hand, and his face (for the man might have sat for the picture), carried me instinctively, and in spite of all surroundings, to the rising Lazarus of Haydon. All this within two hours: a living body wrecked by a sudden blast; its fire choked, its engine power out of gear, its governing intelligence unable to command, and its movements, such as they were, wild and pitiful! A chaotic wreck of life, drifting on the shores of death in a storm of two hours! And yet that wreck might recover, as it did in the case of Dade. Had it not recovered, the temperature after the death would have remained scarcely modified from that which immediately preceded the dissolution.

There are some poisons which produce a form of death, followed by very rapid cooling: the cyanides are of this class, oxalic acid, and bichloride of mercury. All these, when they kill quickly, destroy the heat-producing force of the blood, and effects analogous to those arising from hæmorrhage, and its ally, choleraic flux, are the natural sequences.

To sum up: the knowledge we possess as to the cooling of the body after death may be included all in the following heads:

1. If the body is left dead with its vessels full of blood, the temperature of the blood being unaffected by the mode of death, the cooling is slow, but in the great majority of cases is completed in fifteen hours.

2. If the body is left dead from direct and absolute loss of blood, cooling to the temperature of the surrounding medium is completed, in regard to the external surface, in two hours.

3. If the body is left dead from sudden and profuse exudation, as in cholera, the cooling to the temperature of the surrounding medium is completed in two hours.

4. If the body is left dead from obstruction to the circulation, as from fibrinous concretion, the body, in so far as the external surface is concerned, will be chilled to the temperature of its surrounding medium in two hours.

5. In these last three named forms of death, if the death be slow, the heat of surface may sink to that of the surrounding medium, even before life has ceased.

6. The body, when dead, will sink steadily in temperature to the medium of its surrounding envelope: in the air to the air, in a stone tomb to the tomb; but it will not afterwards rise in temperature by the application of any external warmth, short of such as would destroy its texture.

7. After all forms of death, the age and corporeal condition of the person must be taken into account; youth and old age, great thinness of structure, deficiency of food, and states in which blood is diverted from its systemic course, quicken the decline of the animal heat.

8. In taking observations for medico-legal purposes, in any suspected case, the mere test of the hand is altogether unreliable: for as the terms heat and cold are relative only, and as between the hands of different observers the greatest natural difference may prevail,—that which to one hand would signify warmth, to another would signify cold. If any observation in respect to temperature be made, therefore, it should be carried out with the thermometer, the points at which the temperature is taken being the flexures of joints, the mouth, or the nostril.

In conclusion I have to offer but one other observation. In all cases the temperature of the air should be taken with care, and a comparison should be instituted between the body and the air. By such a comparison, in any case where the body had been left lying on a non-conducting substance, such as a bed, and where there was no evidence that the surrounding air had been raised in temperature by artificial means, certain facts might possibly be



made out in some instances, by a strict analysis, conducted in the following manner. Compare the temperature of the body with that of the air; if the temperature in several parts is above the temperature of the air, the inference is strong that the body has not been dead two hours. If its temperature be the same as the air, the inference is fair that the body has cooled to that temperature within the period that the air has registered the said temperature. If the body is below the temperature of the air, the inference would be that it had cooled at a time when the air was at a lower temperature than existed at the period of observation; and if then, on referring to the minimum self-registering thermometer, the observer could say at such an hour before the observation on this body, the thermometer registered in the air a minimum degree, of say 40°, and this body registers 40°, the proof would be conclusive that the said body had been surrounded by a medium of 40° after its death. The inference would thereupon fairly follow that the said body was dead at the hour when the thermometer had reached its minimum.

It may be that in time some more accurate facts will be made known, and some ingenious instrument be devised for measuring the process of cooling after dissolution. If I had time, I could, I think, produce an instrument for carrying on careful researches of the nature suggested; but the question involved is really of little moment if the medical community will only be cautious in giving opinions upon it once or twice in a century. I have shown a few facts, and many sources of doubt in the above history, and I cannot end better than by remarking, that although I have perhaps looked into the matter as carefully as any other physician or physiologist of my day, I would sooner cut off my own right hand than send any human being to the scaffold on a dogmatic statement based upon the hypothesis that the period of death can be determined by the temperature of the dead.

---

## Art. III.—FREE TRADE IN MEDICINE.

At a time when the efforts, made so largely of late, for the legislative protection of the profession in this country, have most miserably failed; when English practitioners of medicine have saddled themselves with a cumbersome regulative government, which affects the most effete red-tapism, which suffers itself to be bearded alike by charlatan and corporation, and which effects the least amount of benefit at the largest amount of cost; at a time, indeed, when the examples which, every now and then, straggle into notice of the method pursued by French courts of law in cases of quackery, and which, acting as wormwood and gall to our feelings, seem to show that the legislative enactments of our neighbours are much more fitted than our own to protect the majesty and emoluments of Physic:—at such a time it cannot fail to prove of interest to harken to a loud-complaining voice from suffering (and, if we are to believe the cry, over-governed) medicine across the Straits.

A French physician, discontented with the existing state of things within and without the profession in France, especially with the relations of Medicine to the Law, utters his complaint,* and boldly advocates the removal of all legislative restrictions on the practice of physic; averring that by such a course, coupled with a higher degree of education among authorized practitioners, quackery would be most effectually held in check, and eventually destroyed.

A Frenchman who proposes an innovation must always base it upon first principles. As the sceptic in Bishop Earle's delightful *Microcosmography*, who "puts his foot into heresies tenderly, as a cat into water," he feels a shiver of undefinable dread at his own boldness; and instead of taking his stand upon the wants of the time, reverts at once from a revolutionary title to an inquiry into the eternal fitness of things. Hence, we are first invited to consider on what grounds of pure reason the prosecution of quacks can be justified.

It is presumed that the law, by which the proceedings of unlicensed practitioners are forbidden, must rest on the assumption that the art of medicine is of difficult acquirement, and dangerous if exercised by inexperienced hands. The design of the law, therefore, is to prevent the injury that incompetent practitioners might inflict upon their patients.

* *La Médecine et le Monopole.* Par le Docteur Romain Vigouroux. 8vo. pp. 45. Paris, 1862. E. Dentu.



Our author argues, however, that government regulations, of a protective character, are neither necessary nor justifiable in cases where subjects can protect themselves. He admits the danger that overhangs the victims of charlatanism, but maintains that this danger is neither unforeseen, nor, as far as the patient is concerned, unavoidable. The patient seeks the quack with his eyes open, courts the danger, and would, if he were able, utterly reject the protection.

And it is a very curious illustration of the essential difference between the French and English mind, that the inherent right of a man to choose his own doctor, whether quack or not, is defended upon the ground that there are various systems of philosophy, corresponding to the several views that may be entertained about various metaphysical problems, and that these systems of philosophy have their corresponding or analogous systems of medicine. The physician who is a rationalist founds a rationalistic school of medicine; the physician who is a spiritualist, a spiritualistic one. It is assumed, further, that the patients of each will be of corresponding mental characters; and that this correspondence will even extend from the calm domain of philosophy to the tempest-tossed region of politics. "The patients of a physician present, on the whole, a certain homogeneity of judgments and sympathies, even upon subjects foreign to medicine; and free-thinkers will seldom have recourse to the same physician, or even to the same physic, as those who are ready to submit themselves to authority." On this account Dr. Vigouroux is of opinion that every sick person is entitled to select, as his doctor, from among all mankind, the individual most homogeneous with himself; and that any restriction upon this right amounts, in fact, to a restriction upon liberty of conscience. He paints the supposed hardships of a man who cannot find the required homogeneity in the ranks of official medicine, and who cannot go beyond those ranks without complicity in an illegal action.

On this side of the Channel, the doctor's facts and arguments, up to this point, will be regarded as the merest moonshine. In this country, at least, medical schools or systems are not based upon metaphysical subtleties, but simply upon various interpretations of clinical experience; we go to the facts for our system, not to the system for our facts. And except for the famous conclusion arrived at by our most celebrated lecturer on medicine, to the effect that the disputes about contagion and non-contagion were the result of the importation, into matters medical, of the respective peculiarities of the Whig and Tory intellects, we are not aware that there is the slightest general correspondence between the medical and the general,

or the political, or the religious opinions of our men of mark. Still less do their opinions on general subjects determine the nature of their connexions.

But even when regarded in this light, the demand for physic in harmony with the opinions of the patient strikes us as something at once interesting and novel. The British Medical Association is entering upon a laborious therapeutical inquiry, and we would submit that there is here an opening for careful and painstaking investigation. If Dr. Vigouroux be right, how much of the uncertainty that attends upon the action of remedies may be due to our insular carelessness, in not ascertaining the philosophical and religious creeds of the patient, as well as the symptoms of his disease. We fear there is scarcely a physician in London who would hesitate to prescribe, albeit equally ignorant and careless, as to whether his patient were a "free thinker" or a "partisan of authority." And yet, if this very circumstance be sufficient to determine a difference in the physiological action of medicines, it must probably, in some way or other, leave its mark upon the organism. It is to be feared that an inquiry into opinions about things in general would lead to tiresome delay in the consulting-room; and hence some external signs bearing upon the matter are greatly to be desired, and should be diligently sought for. Among the rising men attached to the metropolitan hospitals there must be many fully competent to undertake the necessary researches; and we trust that they will neither disregard such an opportunity of elucidating one of the hidden causes of idiosyncrasy, nor forget the immortality that would reward the inventor of an accurate ideoscope.

Returning to matters of more immediately practical import, the author thinks that the same freedom with which men can choose a religion, or an instructor for their children, should be extended to the choice of a doctor. He thinks the interests which are left to the discretion of the public are similar in kind, and even higher in degree, than the health interest that is protected. He admits that the education of the public in matters medical has yet to begin; but he thinks that the power of blundering, and the penalties which attach to blunders, would in themselves form a good foundation for it. He does not appear to see that his argument may be turned against himself. In this country there is an increasing feeling that schoolmasters should be licensed, and their competency tested, by some public body. We think, indeed, that the protection of the public against quackery is a legitimate and proper end of legislation; but, in common with Dr. Vigouroux, we doubt if any real protection be afforded under the present system.



The protection of the profession against irregular competition Dr. Vigouroux dismisses at once, as a claim not to be entertained for a moment. He points out, with perfect truth, that many other callings require a prolonged and expensive education, and usually entail a weary period of waiting for employment, but that the professors of these callings receive no protection from the State. He points out, further, that the protected industries are only those that are too inherently weak to stand alone; and he refers to the doctrines of free trade as containing the only true philosophy of such matters. The next chapter of the pamphlet is devoted to a description of the processes against quackery in a French court of law. There are many Englishmen who would be glad to see analogous processes in our own courts, and we recommend this portion of *La Médecine et le Monopole* to their careful perusal. The account given may be summed up by saying, that the person arraigned has opportunity of producing in open court witnesses ready to testify to marvellous cures; and that he thus gains a notoriety cheap at the fifteen francs of penalty. Moreover, where medical practitioners or corporations are the persons to set the law in motion, any failure of the prosecution becomes the victory of the charlatan in his lawsuit with the faculty.

It is unnecessary to follow Dr. Vigouroux step by step through his pamphlet. Suffice it to say, that he exhibits the inefficiency of the existing law and the necessity for an alteration, points out that a change in the direction of greater severity desired by some would fail by reason of the violence it would do to public opinion, and would inevitably pave the way to a removal of all restrictions; and traces the causes of quackery, or the support it receives from the public, to two chief causes, of which the first is popular ignorance on all matters of natural science, the next, the injury done to the medical profession as a body by the existence of the "*officier de santé*," who with scanty knowledge, imperfect education, and little scrupulousness, commits errors of diagnosis, of treatment, and of general conduct, the reproach of which is shared with him by men who could not have fallen into them. The public, little versed in the distinctions between different kinds of medical qualification, condemn the whole body for the failings of a few, and estimate the physician by their experience of the *officier*. Dr. Vigouroux states that the latter grade is defended on the ground of a presumed necessity to provide a cheap doctor for the poor; and that this necessity has its origin, so far as it is real, in the laws which totally forbid the practice of the unqualified. He thinks the poor, if they must have an inferior article, had better have it unticketed, and that the *officiers* would be advantageously replaced by practi-

tioners wholly unqualified (*les médecins non grades*), whose claims to confidence would rest upon their own conduct and apparent skill, rather than upon a cheap diploma, testifying to an inferior and superficial education. He advocates, therefore, the abolition of the restrictive laws and of the grade *officier*, and the adoption of a curriculum and examination which would make the degree of a physician unattainable, save by men of very considerable ability and knowledge.

At the present time, when it is reported that the Medical Council have prepared or are preparing a bill to punish and prevent illegal practice, and when they would be supported in doing so by the voices of many practitioners, the appearance of this little pamphlet is singularly opportune. We are strongly impressed with the belief that the suppression of quackery must be attempted by striking at its causes; and that the imprisonment or other punishment of offenders will leave the evil where it was, and, at most, will only seclude a single professor for a very brief period. A prison will no more reform a quack than it will a pickpocket; and public opinion would not tolerate any severe punishment, any that would really exert a deterring influence. Indeed, in this country, as in France, any legal penalty that could be enforced would probably be courted as a sort of cheap martyrdom and means of notoriety, and would be found in no way to diminish, even if it did not augment, the mischief.

The cause of quackery, we apprehend, is, in about one case in ten, the disappointment of the unreasonable expectations of the sick. A patient desires something that is beyond the reach of our art, the cure of malignant disease, for example; or else wishes to be well without submission to the necessary discipline or treatment. In either case, the surgeon being honest and speaking the truth, a quack is applied to, who is dishonest and does not object to tell lies for a consideration, or who is probably too ignorant even to know when he is doing so. In the case of a patient who refuses to submit to treatment, it is quite conceivable that serious mischief may be the result. The disease may be one (such as strangulated hernia or acute glaucoma) in which time is of infinite value, in which the performance of an operation within a certain number of hours is absolutely necessary in order to preserve life or to restore healthy action; and the patient must then suffer the consequences of his folly. But such instances are very, very rare. In the great issues of life men usually take care to ascertain the value of the advice they follow. As a matter of fact, the unreasonable expectations that take people to quacks are almost confined to incurable or chronic ailments, in which the mischief done by want of treatment is



comparatively small; only just enough, perhaps, to convince the sufferer of its reality, and to lead him back, in penitent submission, to the hands of the authorized practitioner. The remedy, we think, can only be sought in the diffusion of knowledge, and especially knowledge of the elements of physiology and of sanitary science. As these become more and more spread abroad among the community, the bases of medical science and the nature of the difference between the physician and the quack will become daily more and more apparent.

The remaining nine-tenths of existing quackery can be traced, we greatly fear, to the disappointment of reasonable expectations; and we are well assured that quackery will flourish in any district, precisely in the ratio in which the local surgeons provide good grounds for such disappointment. If the doctor be either ignorant or careless, a certain proportion of his patients will remain on hand unrelieved, so as to lower the public estimate of his ability, and to impair that confidence in him that is so needful to his success. Of this proportion it is not too much to say that some will probably be injured by treatment, and will improve when it is discontinued. If these should by any chance go to a quack or a homœopath, and receive some inert medicine, lo! a wonderful cure has been effected.

If the doctor be rapacious, and bent only upon extorting the uttermost farthing from his patients, he will, usually, be ignorant and careless as well. But greed will add terribly to the effect of the other disqualifications, and will help the local quacks immensely. People can get rid of them; but they are afraid to let such a doctor gain his footing in their houses. So they go to a druggist, or to a seller of worm powders, or to anybody who will, they think, help them to stave off the evil beginnings of a bill, or perhaps to avoid them altogether.

And why should doctors be ignorant, or careless, or greedy? Alas! we are all patients in the same hospital, suffering all alike from some degree of these and many other infirmities, and no hope is held out to us of any but a gradual cure. Still it is worth while to see whether, over and above the necessary frailty of human nature, there may not be special causes admitting of removal. We think such causes must be sought, almost wholly, in defective education, and especially in defective preliminary education. The student who goes to a hospital without previous mental and moral training, has neither power to acquire and arrange knowledge, nor perception of the importance of doing so. He is apt to look on his profession and his acquirements as matters that are for his own sole benefit, and not as involving very heavy responsibilities in the way of duties towards his fellow-creatures. From this point of view he attends to what he

likes, and neglects what he likes, as a matter of inclination or of indolence, rather than of conscience; and when time calls him to take his place in life, he still recognises no claim in his profession, either to know or to do, which he may not postpone to his own profit or convenience. It would be hard, and perhaps unjust, to say that the heads of the profession in London have and perceive a direct interest in keeping down the standard of skill and knowledge among the many; but the fatal facilities that have been given for the entrance of uneducated men into our ranks, the indecent mutiny of the Council of the College of Surgeons against the Medical Council, and the absence of any provision that could lead to a better state of things, all go near to justify a belief that such an interest has been both perceived and acted upon. The men who frame curricula are practically acquainted with the duties of a medical practitioner; and they cannot be ignorant how little the regulations they have devised are, in themselves, calculated to produce licentiates who will discharge those duties in a creditable manner.

Of the ignorance and carelessness that depend upon moral torpor, upon the absence of a sense of duty in connexion with professional study and practice, greed is an invariable concomitant. The routine of medical work is so unpleasant, in many respects, that it can only be thoroughly accomplished under the influence of scientific enthusiasm, sense of duty, or desire of gain. Perhaps it is best accomplished when they are combined; but the absence of one, and *a fortiori* of two of them, must either receive compensation from excessive development of the third, or must involve an absolute incapacity to discharge the ordinary duties of a practitioner. Some men find out this incapacity for themselves; others receive tacit information on the subject from the public. But there are many who have no love of science whatever, and who have but a limited sense of duty, who still go through the outward forms of medical attendance upon the sick in a punctual and methodical manner. From such men there proceeds an atmosphere eminently favourable to the development of quackery.

There is, however, a kind of carelessness, very hurtful in its influence upon the sick, and ten times more hurtful in its reaction upon those who practise it, and through them upon the profession, which proceeds from very different causes, and chiefly from the numerical inadequacy of the regulation "staff" of a hospital or dispensary. It is chiefly to the out-patient department that this observation will apply, and we will illustrate it by the practice of one of the best hospitals in London.

At the institution in question, the charge of about nine thousand out-patients yearly devolves upon three assistant-physicians. These gentlemen attend from one o'clock until about half-past two, each of them twice a week; and, except by special order, no patient is allowed to come before them on both these days. A few do so, and a few are allowed to come once a fortnight, but as a rule, one attendance weekly is the practice. A large proportion of these out-patients suffer from complicated chronic disease, and many of them are so poor that their improvement is hindered by want of comforts or even of necessaries. We shall be within the mark if we allow six visits to the hospital for each person. It follows that the assistant-physician, in an hour and a half, is called upon to prescribe for about 173 persons, of whom 29 will be new cases.



Of course it will occasionally happen that the practised eye of the physician detects, in a moment, something that does not make itself apparent to less skilled observers. The patient will be detained, carefully examined by the doctor and by the students, the disease accurately diagnosed, the treatment skilfully directed. But what is the rule? The first glance, or the most salient symptom, is taken as the basis of a prescription; and to every patient who can say "better," the words "go on the same" are repeated with a rapidity worthy of Charles Mathews. We well remember that one of the assistant physicians was accustomed to devote to the instruction of the students as much time as they could save him. Before his arrival, and even in his presence, they used to call in as many patients as their own persuasions and the persuasions of the hall-porter could induce to forego their right to an interview with the great man, and to despatch them with marvellous rapidity. And then, at the close of this proceeding, the doctor would turn his chair to the fire, throw the contents of his snuff-box, for easier access, upon a sheet of paper, say that he had ten minutes or twenty minutes, as the case might be, ask what he should talk about, and pour forth such stores of wit, and wisdom, and knowledge, from the exuberance of his fertile fancy, his magnificent intellect, his unequalled memory, that those hasty and extempore lessons can never fade from the minds of his hearers, their principles never be lost, their precepts never be forgotten. The voice that uttered them is now silent, the speaker is added to the number of those whose lives, worn out by incessant physical and mental toil, have been spent in the mere attainment of an eminence, the rewards of which were still in the future; and now, in looking back upon the past, partiality itself could not deny the abandonment of duty involved in the custom we have described.

It would be absurd of course, to test any universal system by the powers of a great and exceptional genius; and it is manifest that the number of persons prescribed for under the conditions

detailed above, must not only preclude correctness of diagnosis in very many instances, but must even lead continually to errors and oversights of the most important kind. Even if this were not the case, the habit of hasty and superficial examination would be formed, and this habit, hurtful even to the physician himself, would be doubly hurtful as an example to half-instructed students. There are not wanting young men who aim at rapidity of diagnosis, and who simply cultivate a habit of jumping at inaccurate conclusions. We have lately seen an instance in which a practitioner of this type, called to a poor woman who was vomiting, rested upon that symptom a diagnosis of *dyspepsia*, and a treatment by what is called "Mist: Sodæ Co." He did not discover that the vomiting was stercoraceous, nor anticipate the death of the patient, which occurred (from intestinal strangulation) about six hours after the visit. Sir Henry Halford, who was accustomed to pay twenty visits in an hour, and Sir Benjamin Brodie, whose marvellous rapidity of perception needs no description here, were the models whose practice this gentleman professed to follow. We have seen, also, a case of pain (said to be obscure) attending certain movements of the hip and thigh, and variously treated during some months, under various hypotheses as to its nature, but always without benefit, by some three or four of the leading men of London. At last it occurred to a very undistinguished practitioner to examine the seat of pain, with the result of discovering a simple clue to the apparent mystery. None of the physicians or surgeons who had prescribed in vain had bethought them of this method of inquiry.

Now, carelessness such as this disappoints reasonable expectations, and by doing so is a fertile source of quackery. People can tell when the great hospital surgeon desires only to get his guineas, and to clear his room as fast as possible; they can tell when the humble general practitioner does not know what is the matter, and does not want to know, and does not care whether they are better or worse, except in so far as the former condition may curtail his charges, or the latter diminish his reputation. Is it not obviously true that the prosperity of quackery is the measure of want of confidence in legitimate medicine? Is it not obviously true that a man who understands his business thoroughly, and who is in earnest about it, cannot fail to command the confidence of all who are brought into contact with him? We think that both these propositions are undeniable; and we say to those of our brethren who hate quackery as a crime and a nuisance, and who really desire its destruction, that the way thereto is to remember that every professional opinion and act tends to the elevation or to the disgrace of legitimate medicine, and thereby to the abolition or the encouragement of quackery.



Every erroneous judgment, every instance of malpractice, is a point ceded to the enemy; and while we remember that errors cannot be excluded from human effort, and therefore judge others charitably, let us remember also how many of our own errors depend upon ignorance about matters that we ought to know, or upon carelessness about points that we ought to observe. For the present generation individual care and watchfulness will do much, and for those who will succeed us careful preliminary education will do more. When avoidable errors are in great measure excluded, when we are prepared to satisfy the reasonable expectations of our patients, the demand for quacks will have reached a vanishing point, and the trade that is now so profitable will cease to be worth pursuing. Penal legislation against quackery would produce either a *tracasserie* or a persecution; the first futile, the second unbearable.

In proportion, however, as we elevate our standard of education, shall we be justified in seeking from the Government protection against false pretenders to the medical character. We would leave the corn cutter, the worm doctor, the bone setter, the "botanist," the Lady Bountiful, the country parson, and the country parson's wife, at liberty to physic, all and sundry, either for hire or for charity, as many as choose to resort to them; but we would consign to the oakum-yard or the treadmill, without a shadow of compunction, all persons, who not being duly qualified members of the medical profession, used any title or committed any act calculated to lead to the belief that they were so qualified.

---

## Art. IV.—MANIA EPHEMERA.

By J. Crichton Browne, M.D., Assistant-Physician Derby County Asylum.

Notwithstanding the vaunted intelligence of the age in which we live, the education of the masses, the mental illumination of the upper ten thousand, the universal dissemination of correct views and sound principles, a pestilential atmosphere of ignorance and error is still somehow and somewhere engendered, is still freely circulating through the magnificent and glittering social edifice and condensing itself especially in some mysterious corners. In connexion with insanity and the insane, errors both of fact and of sentiment are even yet peculiarly prevalent. While relatives can stand round, and with smiling com-

placency contemplate the arthritic throes of some antiquated *bon vivant*, whose every joint is in a state of chalky degeneration, who is but a mass of tophitic monuments, piled up to the memory of "departed joys" of the table and unrestrained appetites; they will turn away with looks of horror and aversion from regarding the wanderings of some noble, but disordered mind, overthrown from its very loftiness and from the elegance of its structure, which rendered it unable to withstand the rude blasts of a tempestuous world. A man will proclaim that he has been a martyr to gout, but he will never confess that he has been the victim of mania. A *genteel* family is not more under the ban of disgrace when one of its members is enjoying the *otium cum dignitate* of a convict establishment, than when one is in an asylum. This, indeed, is the culminating point and highest dishonour; for what can more effectually degrade a man and ruin his prospects than residence in an institution set apart for the treatment of insanity? In the public eye it is bad enough to have been insane at home, but it is tenfold worse to have sought seclusion and those means most approved as contributing to cure. He who has once crossed the threshold of an asylum is popularly considered good for nothing afterwards; and even many of those who pride themselves on their enlightenment, and who would theoretically repudiate such a doctrine, practically give in their adherence to it, by refusing to take into their service or to place confidence in the discharged lunatic. I have myself known an instance, in which a friendless girl, recovered from an attack of mania, has gone forth from an asylum, has fruitlessly sought employment, has found no rest for the sole of her foot, and has at length been driven to hide her misfortune in "the dark flowing river."

A discharge from an asylum is thus to some lunatics, a positive calamity, implying as it does, the loss of a comfortable home and kind friends, and a return to toil and anxiety, to a world that has affixed a stigma to the affection from which they have suffered, and that regards with suspicion and distrust any one who has come out of a "mad-house."

It is assuredly the duty of the medical profession to wage unceasing and determined war against those popular errors and prejudices regarding insanity and asylums, which we have just indicated; which are so unfounded, so injurious, and so calculated diminish the chances of cure, by inducing patients and their relations to conceal insanity in its incipient stages, when it is most susceptible of benefit by treatment, and to procrastinate removal to an asylum, until such removal is useless—until, indeed, what might have been only a transient defect has become a life-long deformity. But it is also the duty of medical practitioners to



allow themselves to be regulated to a certain extent by these prejudices, and to protect their patients, as far as may be, from the evil effects of popular prepossessions, which will not be uprooted and consumed in a day nor a year. It therefore becomes a matter of the highest importance to distinguish at once those cases in which incarceration in an asylum is demanded and to which a certain amount of publicity must therefore be given, from those others which may be treated with equal success in their own homes and the nature of which may be altogether concealed. A very serious responsibility devolves upon each medical man who is called upon to pronounce judgment in a case of mental disease. If, without sufficient cause, he detains his patient amongst his family and friends, surrounded by the very circumstances which may have awakened his morbid ideas, and deprives him of the restorative influences of new and unexpected impressions and of all those appliances and measures which are only to be found in a well ordered asylum, he must be harassed by the reflection that he may have been instrumental in impairing or retarding recovery. And if on the other hand, with ill-advised precipitancy, he has hurried off his patient to seclusion, during some transitory aberration of mind, he will afterwards doubtless have the distressing consciousness that he has injured the social position and prospects of one whom he only desired to benefit. Of the two errors in practice referred to, the former is certainly the more common, but the latter is also of occasional occurrence; and several cases which have been lately brought under my observation have directed my attention to a form of mental disease in which such a mistake is not unlikely to be committed. I allude to ephemeral mania, which consists in a transitory isolated attack of mental disturbance, usually not exceeding forty-eight hours in duration, and which is apt to be confounded with ordinary general mania—which malady it very closely resembles in many particulars. The brevity of its continuance, however, separates it widely from mania proper, and renders it quite unnecessary that those suffering from it should be removed to an asylum. Indeed, any such removal would be prejudicial to those afflicted with mania ephemera; for upon recovering themselves and awakening as from a troubled dream, they would obviously incur great risk of relapse or of regression into some more permanent affection from the shock, at finding themselves in such a place, from the vexation and chagrin inseparable from a realization of their true position. It is therefore, of momentous consequence to recognise this disorder, which is capable of easy cure at home, which is so fleeting and evanescent, and in which the mind is not overthrown nor even gravely damaged; for whenever the tyranny

of the attack is overpast, with wondrous elasticity the mind springs up and regains its former stature and rectitude like "a wind-bent flower released." No differential diagnosis, however, between ephemeral and ordinary mania, as yet exists. This can only be attained in a serviceable and accurate form by a careful observation and record of cases, and by inferences drawn from these; and it is as a trifling contribution to this very desirable object that the present paper has been written.

Every species of insanity may manifest itself in the form of a short temporary attack, but such attacks are of rare occurrence in every variety except mania. In this statement isolated hallucinations, recognised as such, and experienced by persons of sound mind, are not of course included, as they can scarcely be regarded as instances of insanity in the common acceptation of that term. But leaving these out of consideration, there can be no doubt that acute mania is the kind of insanity most often met with in the form of a short solitary paroxysm. In what is said, however, regarding this affection in this paper, all notice of one class of ephemeral maniacal paroxysms is purposely omitted. No allusion is made to mania epileptica, to those temporary attacks of excitement which often immediately precede or follow epileptic seizures. The frequent recurrence of these attacks, their violent, sometimes desperately homicidal character, imperatively demand that care and treatment which an asylum alone furnishes, and place them beyond the scope of the present inquiry.

The causes of mania ephemera are very various. Debilitating influences, such as deficient nourishment, impurity of the atmosphere, sedentary habits, confinement, and lack of exercise, exhausting exertion of mind or body, but especially of the former, unhappy circumstances, previous disease of a weakening or nervous character, excessive indulgence in stimulants, and hereditary proclivity to disease, are all powerful in predisposing to it, as to disease in general. These causes are particularly potent when operating upon a nervous temperament. Excessive mental emotion is pre-eminently an exciting cause. Grief, surprise, fear, anger, or joy, is a usual precursor. A man may be frightened to madness as well as to death. This madness may be of no temporary kind, but it is nevertheless true that the great majority of instances of temporary insanity may be traced to overwrought feeling in its corporeal relations. It is indeed characteristic of ephemeral mania that its immediate cause is almost invariably obvious and prominent, and not, as frequently is the case in other varieties of mental alienation, hidden and imperceptible, quietly, stealthily undermining bodily functions and mental powers, unrecognised even by watchful on-



lookers, except in the catastrophe which it has brought about. It is further characteristic that the cause is generally quick and sudden in its operation, not slowly progressive, but rapidly culminating in mental derangement. The more violent passions, ungoverned bursts of temper, unexpected sorrows, family dissensions, reverses of fortune, bitter disappointments, agitating joys, novel and powerful religious impressions, are most prolific exciting causes, and these acting in combination with certain predisposing and physical circumstances, bring about a temporary perturbation of mind, just as with predisposing and physical circumstances of another description, they might entail more lasting disorder. Indeed, ephemeral mania seems generally to consist essentially in an alteration of the cerebral circulation, following upon some kind of over-excitement of the emotions. It is sometimes a blushing of the brain after a profound emotion.

The application of an appropriate stimulus to any organ causes a determination of blood to it. Snuff ensures a flow of blood to the nose, spices to the salivary glands, food to the stomach, diuretics to the kidneys. The amount of vital turgescence in such instances is determined by the degree and continuance of the stimulation. The well-being of a part, or its function, being menaced by any unusual excitement, more blood is required to supply unusual loss and to perform other conservative services. The arteries thus become dilated and transmit their contents with augmented velocity, the circulation is increased, and the result is, that the nutrition and sensibility of the part are also increased if the stimulation be moderate, and are perverted if it be excessive in degree.

Now it is well-known that determination of blood to the brain does take place in certain persons, in consequence of mental excitement, as is shown by the violent throbbing of the carotid and temporal arteries, flushing of the face, giddiness, &c., which often follow cerebral stimulation. Even in healthy persons, or in persons of plethoric habit, this determination of blood may occasion transient delirium, with various signs of encephalic disturbance, such as extreme sensibility to light and sound, restlessness, pain in the head, and visual hallucinations. A flood of distorted ideas flows through the mind and overwhelms it; bewilderment and incoherence follow, and for the time being the patient is to all intents and purposes maniacal. A distinguished physician narrates the case of a gentleman subject to attacks of determination of blood to the head, "which caused him so much suffering and loss of moral control that he cut his throat to destroy his life. Whilst recovering from the wound, attacks sometimes came on, first with beating of the

carotids, then with flushing of the face and head, suffusion of the eyes, and feelings of distraction in the head." But it is not in the plethoric or healthy that determination of blood to the brain is so likely to produce ephemeral mania as in the weak and anæmic, who, though suffering from general depression and debility, are still liable to irritation and exaltation of all the corporeal functions. And of all functions, those of the nervous centres have been found most liable to excitement in cases of spanæmia. The generally intensely nervous character of persons with greatly prostrated strength has been long remarked, as also their proneness to excitement. Dr. Williams has offered an explanation of this apparent anomaly. He states that the blood-vessels of the nervous centres, in consequence of their non-exposure to atmospheric pressure and their attachments to bony canals, do not, in spanæmia, shrink as the blood within them becomes reduced in quantity and quality. The disproportionate amount of blood which they thus contain, acts in accordance as it is affected by the heart's propulsive power, and thus, under the influence of emotion, excitement, or palpitation, the cerebral vessels receive an unusual share of increased but partial force as a result of their patency to the heart's action. An erethism of the functions of the nervous centres is the consequence of this, and thus mania ephemera may be produced by congestion in anæmia. When this is the case, with great heat and throbbing of the head, the trunk and extremities may remain cold and comparatively bloodless, just as with palpitation of the heart the pulse at the wrist may be almost imperceptible. But apart from congestion, or any discoverable circulatory change, mania ephemera may arise out of a mere preponderance of nervous action, in those remarkable for delicate nervous systems and strong innervation. This hyper-cœnæsthesis is most frequently exhibited in females at the period of development or at the climacteric period of life, and most in those who have been exposed to influences that heighten sensibility, weaken spontaneity, and tend to create a preponderance of the sexual feelings and relations.

The symptoms of mania ephemera vary greatly, and are commonly in intimate relation with the exciting causes of the attack. The patient generally appears as if he were partially drunk, or as if he were living and acting some confused and whimsical dream. He talks nonsense, utters meaningless ejaculations, breaks off in the midst of his sentences, makes ineffectual efforts to express his thoughts, wanders in a labyrinth of untold loveliness or of hideous grotesqueness, is tossed in a whirlpool of contending emotions, now buoyed up by hope and triumph, and again drawn downwards by terror and despair. He laughs and



cries alternately, or he is irritable, capricious, or self-willed. He is impetuous in manner or violent, sometimes suspiciously avoiding those around him, sometimes attacking them with savage ferocity. He may be subject to hallucinations of all the senses and labour under an abnormal motor exaltation. Indeed, there is always a tendency to motor exaltation and rapid movement when the mind is agitated with strong emotion. The deranged mind delivers itself up, unrestrainedly, to this impulse, and the maniac rushes to and fro with a frantic recklessness, in harmony with his thoughts, climbs, attitudinizes, tears and destroys the articles around him.

In all this description, however, there is nothing which is not applicable to ordinary acute mania as well as to mania ephemera, and, indeed, it is no easy matter to discover distinctions between these two varieties which shall be universally or even widely correct. The individual cases often approach so closely to each other, that it would be impossible to point out diagnostic signs, while others again present points of difference which, if carefully observed and recorded, may ultimately guide to a more clearly defined line of demarcation.

In a large majority of cases of mania ephemera, there are none of those premonitory symptoms which so generally herald the approach of ordinary mania. The sufferer may be weak, anæmic, and in bad bodily health; but until the occurrence of the exciting cause the mind most commonly remains unclouded. There is none of that impairment of judgment, that tottering of reason before her final fall, that feverish uneasiness, that morbid activity, that rash speculation, that inexplicable dread of impending calamity, that unwonted perverseness, or that terror-haunted sleeplessness, which so clearly betokens serious vascular disorder in the brain, and by which acute mania is so often preceded. So also, during the paroxysm, the involvement of the mind seems usually to be less deep and entire than in ordinary mania. No doubt in many cases, even of ephemeral mania, the mind is totally engulfed in the disorder; but in others a certain degree of intelligence continues to preside over the wreck, and to impart some trifling guidance to it. The patient often appears to appreciate his position, to know that he is not himself, while he also recognises his friends, and distinguishes phantasms from realities. To certain types of the affection, as, for example, the ecstatic, this will not apply, as the mind is then altogether absorbed in the current of morbid ideas; but it is at the same time true with reference to many instances, springing out of family brawls and disagreements, and other emotions not religious in their nature. In ephemeral mania there is generally more regard for cleanliness and decency

than in mania proper. Those internal sensations of intolerable heat which prompt maniacs to denude themselves, and go about naked; those hallucinations of touch which induce them to expose their persons and bedaub themselves with filth and ordure, are absent; so modesty and propriety are not ordinarily violated. But this, also, is only a general rule, liable to many exceptions. The celebrated Dr. Fothergill, in an attack of mania ephemera, was seized with an uncontrollable desire to perambulate the streets of Edinburgh naked, preaching repentance. Another general observation is, that the language in ephemeral mania is not so blasphemous and obscene as in mania proper. When it is of a highly erotic character it will most frequently be found that the disease has originated in religious excitement. The destructive tendencies are commonly well marked in mania ephemera, and homicidal impulses are not unfrequently combined with it, thus rendering it a dangerous malady, and giving rise to many problems of the highest interest to the medical jurist, and eminently worthy of his most attentive consideration. In this disease, of all the animal instincts and passions destructiveness seems to hold the supremacy, and divested as the mind is of the capacity to act in compliance with the dictates of the higher sentiments, unbridled licence is given to any predominating impulse. Thus diabolical crimes are occasionally committed or attempted during an attack of ephemeral mania. The following example is from Marc. "Obs. 204.—A shoemaker, æt. 35, industrious and sober, rose early, and engaged in work. Very speedily his wife was struck by his incoherent observations and distracted expressions. The unfortunate man seized a knife and rushed upon her in order to kill her. The neighbours restrained the madman in order to prevent the catastrophe. He defended himself with the knife. His face was red; his pulse full and frequent; his tongue dry, and the surface of the body covered with perspiration. About noon he became calm and slept. In the evening he was perfectly natural and rational, but recollected nothing of what had passed."* Feuchtersleben relates the case of a young man, "in perfect health, who awoke suddenly one night in a fit of raving madness, ill-treated his wife, attempted to leap out of the window, and struck at whatever came in his way. An emetic put an end to this scene in an hour, since which he had been in a perfect state of health, never having had a recurrence of the attack." Many other examples might be adduced to illustrate the occasional supremacy of destructive instincts in mania ephemera; but I shall content myself with citing but one

* *De la Folie, considérée dans ses Rapports avec les Questions Medico-Judiciaires.* Par C. C. H. Marc. Tome ii. p. 510.



more, which came under my own observation, and which, moreover, illustrates several other points of interest in this disease.

F. F., æt. 50, a small farmer, of nervous temperament, was brought to the Derby County Asylum* in a strait-waistcoat, his legs being secured by ropes. His body was marked with several extensive bruises in consequence of the coercion to which he had been subjected. He was shouting aloud short incoherent sentences, uttering imprecations against those around, whom he seemed to suspect of conspiracy against him, and struggling violently to be free. He did not answer the questions put to him, but continued to cry out and to cast furtive glances about him. He appeared to be in weak bodily health, his pulse was a hundred, but feeble and thready, his face flushed, his head hot, his tongue coated with a white fur; respiration hurried. The pupils were slightly dilated, but sensitive to light, the muscular movements were tremulous. General and special sensibility were normal, as far as could be ascertained. The history of the case was elicited as follows. F. F. had suffered much grief and anxiety on account of the undutiful and cruel conduct of his children, also from business reverses; and after a domestic quarrel, twenty-four hours prior to his admission, suddenly became insane. His insanity was manifested by sudden maniacal excitement and incoherence. He had stripped himself to his shirt, seized a crowbar, rushed from his house and down the public street, threatening to murder any one who approached him. It was with the utmost difficulty he was overpowered and restrained. He had been sleepless and had continued raving wildly all night. He never was insane before, and never had any relatives insane. Immediately on his admission he had a warm bath and a mild purgative. He had not been an hour in the institution before he became comparatively rational. At his own request he retired to bed. He at once fell into a placid sleep, and on his awaking in the evening, no trace of insanity was discoverable in him. He has since continued quite well. He has but a very dim recollection of all that transpired during his excitement. The recovery of this man may have been merely contemporaneous with his removal to an asylum; but the novelty of his position, the influence of discipline, the helplessness and ineffectiveness of a single will, the absorption of personality in the general movement of a large establishment, and the order and quietness which prevail, may have been also instrumental in guiding his thoughts into their natural channel, and in recalling consciousness and self-control.

* I am indebted to Dr. Hitchman's kindness for permission to make use of cases admitted into this asylum.

The condition of general sensibility in mania ephemera is very similar to that in ordinary mania. Perhaps it is less often abolished or diminished, though in the maniacal bursts of ecstasy, where the sufferers present exalted pietism, intense love, burning adoration; where they shout forth hymns and petitions, or prostrate themselves in contemplation, absolved from all earthly ties, external impressions even of the most severe description are frequently unheeded. So, too, with muscular action. As a general rule, there is not that enormous development of muscular strength, that craving for violent exertion, and that endurance of fatigue, which have been so long recognised as characteristic of acute mania; but still there are many instances of mania ephemera which partake also of these characteristics, in which the disease seems to have generated new strength, in which dancing, leaping, and all sorts of extraordinary bodily contortions, are carried on, for hours together, without apparent inconvenience. How far such motions are automatic, and how far voluntary, it might be difficult to decide. The cerebral influences, however, determining motion in this disorder may acquire a force productive of spasm and convulsions. Garrick, liable to those temporary aberrations for which so many distinguished actors have been remarkable, after he had acted Lear or Othello, passed some hours in convulsions in bed. Where the manifestations already described are not present, there is most generally a muscular tremor, a tremulousness and uncertainty of muscular action, not unlike that observed in delirium tremens.

N. E., a young man of nervous temperament, whose case I have had recently under observation, was complaining of debility, occasional faintness, palpitation on slight exertion, coldness of the extremities, and loss of appetite, when one evening, after a fit of anger, produced by opposition to his wishes, he became suddenly insane. His relations were surprised at hearing strange and unaccountable noises proceeding from his room. On going to his apartment, they found the furniture in great disorder, and the young man himself in bed, laughing and chattering in the most unnatural manner. He at once recognised those who entered his room and named them, burst into tears, assured them that he was the victim of persecution, that there were men beneath his bed, and pointed out angels at the windows and in the room. He shouted, laughed, and sung, talked to imaginary beings, and insisted upon getting up and walking to a neighbouring churchyard. When prevented from doing so, he was irritated at first, but soon gave up the project. His hands shook, and his whole body shivered as if from cold. He complained of headache, and at his own desire had water poured over the head. This, he said, gave him relief; he ordered the light to be extinguished, as it hurt his eyes. After he had been ill about two hours, a dose of the sedative solution of opium was given him. In about three hours more he became calm and fell asleep. The next day he complained of lassitude and weariness, but mentally he was quite well.



The terrible alteration of countenance in ordinary mania which gives to the sufferer such a haggard and unnatural expression, even before the disease has begun to tell upon his strength, is not usually present in mania ephemera. Neither is the huskiness of voice, bristling of the hair, contraction of the skin of the forehead, or protruberance of the eyes, observable. The stools are not black and offensive, but the urine is generally loaded with phosphates, from the oxidation of the phosphorized fat of the nervous matter.

The symptoms of mania ephemera are invariably modified by the period of life and circumstances of the sufferer. When appearing in females, produced by influences operating through the generative focus of the cœnæsthesis, they usually partake of an hysterical character. The rapid evolution of the sexual organs and functions, or the derangement of these, sometimes induces morbid mental activity. Illustrative of this is the following case, with remarks, translated from Marc:—

"A female, subject at each catamenial period to mental disturbance, encountered, while thus affected, one of her own sex, whom she grossly insulted, in the presence of another person. The aggrieved party complained; the aggressor denied the fact, and the judge accepted her protestations of innocence upon oath, which was made in good faith, as she could recal nothing which occurred during these paroxysms of excitement. The complainant was found liable in expenses; but, discovering the witness of the injuries to which she had been exposed, and her declaration having been admitted, the falsehood of the original oath became evident.

"In consequence of this, Professor Berends, Frankfort sur l'Oder, was called upon to answer the following interrogatory: 'Is the state of the accused such as to call upon us to admit that her paroxysms of anger are such that she cannot recal what takes place during their continuance?'

"The report of the Professor was to the effect, 'that he had attentively studied the documentary evidence, and that he had personally, and in the presence of another medical man, investigated the sanitary condition of the accused. Surgeon L., who had professionally attended the woman, assured him that on the arrival of the menstrual period and during the discharge, she was constantly attacked with an orgasm and cerebral congestion, with febrile acceleration of pulse, and that the exacerbation was ordinarily so violent as to be attended with delirium. During the epoch she became very irascible and subject to paroxysms of furious anger: her own statements corresponded closely with those of her medical attendant. Her external aspect

and her general constitution clearly indicated an anormal impressibility, a great weakness of the nervous system, and an excessive irritability. The pupils were dilated, and her gaze, as well as her expression of countenance, could not leave any doubt as to her condition. Dr. B. did not hesitate to reply in the affirmative to the question proposed to him. It is certain that during a paroxysm of febrile delirium there is no recollection, or, at all events, an imperfect recollection of what has occurred, because the special senses are enfeebled or even perverted. Anger, as every other passion in excess, induces, it is known, an analogous condition, when, by the predominance of powerful and vivid impressions, the exercise of reflection and volition are suspended. But in the case under consideration it should be remarked, that the disposition to anger, and to its most outrageous ebullitions, has its seat in the irritability and unhealthy tendencies of the nervous system, that consequently the origin of the fury should be attributed to the state of the body, inasmuch as when the excitement has reached a certain amount, it may be impossible for the accused to resist such an influence upon her moral nature. Besides, all medical men are of one opinion as to the accidents, such as spasms, convulsions, syncope, epilepsy, abdominal pain, with which menstruation may be complicated, and as to the disturbance in the cerebral functions which it may produce.

"'This evacuation, it is true, is as natural to the female as pregnancy and parturition, during which temporary mental alienation often takes place. But, upon all occasions, when marked disorders attack the sex, we may rest assured that these are the consequence of an anormal or pathological condition. If, then, it be established that the accused abused the woman N. during the menstrual period, or near to it, and was suffering from the constitutional disturbance to which she is subject, it follows that she retained no knowledge of the insults complained of.' "*

The following case has been communicated to me by an eminent medical psychologist :—

"About ten years ago I attended a lady, who was described as recovering from an attack of mental excitement, of some duration, and which had been brought on by anxiety. She was labouring, when I saw her, under peculiarity and perversity of disposition. She recovered perfectly, and subsequently mingled freely and frequently in society, manifesting great gentleness of disposition, prudence, and self-possession. I was summoned to see her about two months since, and as the telegram indicated danger and the necessity for dispatch, I travelled as rapidly as railways and posters enabled me. The history of the case briefly was, that she had received an offer of marriage, under very perplexing circumstances, upon Thursday, which agitated her much, and rendered her sleepless; that on Friday the catamenia appeared, and to such an alarming extent as apparently to amount to menorrhagia. After another sleepless night, she became, upon

* Marc, *De la Folie*, tom. ii. p. 512.



Saturday, hysterical, restless, loquacious, incoherent, and then maniacal. Though of fragile, delicate frame, her violence had been extreme, and had defied and exhausted the strength of five or six female servants. On the evening of Sunday the medical man in attendance exhibited two drachms of laudanum. In an hour or two she fell asleep, and when I arrived was still sleeping, but was restless, moaning, muttering, and had the aspect of complete exhaustion. Her sleep was attended with stertor, and had created alarm both in the medical man and the relatives. After sleeping for about ten hours, she awoke. She was still incoherent, disposed to talk, to toss her limbs about, and was evidently unable to recognise those about her, or where she was. There was, however, a great change in other respects; the pulse had fallen in frequency, and greatly in strength; the pupils were dilated: the skin was profusely covered with perspiration; the voice sunk to a whisper: the countenance was pale and collapsed; and various indications of increasing prostration were observed. Champagne was given immediately and freely; followed by jellies, soups, and other means of support and stimulation. The effect was seen at once; and in the course of a few hours tranquillity and repose and comparative intelligence were re-established; in a few days the patient was regarded by her friends as well, and after a short interval she resumed her former pursuits and her former place in society, without a trace of any mental or nervous affection, and without a suspicion on the part of those with whom she associated of the terrible ordeal through which she had passed."

Mania ephemera may occur during pregnancy, grafted upon the usual excitability of that state, and associated with its uncontrollable longings. It may also spring out of the cerebral congestions of the puerperal state and the period of lactation.

Many of the epidemic psychopathies which have from time to time appeared, seem to have been epidemics of ephemeral mania. They have almost without exception had their source in emotions, in an intense regard for religion, morality, the fine arts, or in an uncouth fear of the supernatural and unseen. They have been disseminated by psychical contagion and pathological sympathy, and have taken root and grown to rankness in the soil of ignorance, superstition, and nervous debility. They have also withered and vanished before moral forces. When the intellectual feeling, which in its normal exercise is termed enthusiasm, oversteps the boundaries of reason, it gives origin to innumerable extravagant acts and ideas, which can only be regarded as constituting a brief paroxysm of mania. The madness of the Milesian maidens, described by Plutarch, cured by an edict enforcing public exposure upon subsequent sufferers; the dancing epidemics of the Middle Ages, recounted by Hecker, the prevalent madness of the nuns of Saxony and Brandenburg, recorded by Simon Goulard, in which these ladies "pre-

dicted, capered, climbed up walls, spoke various languages, bleated like sheep, and amused themselves by biting each other;"—the insanity of the Amsterdam foundlings, the *extasis religiosa* of the Swedes; the ecstasies of primitive races —all afford examples of ephemeral mania occurring epidemically. The phenomena of these conditions, which deserve a full and discriminating consideration such as cannot here be given them, are in fact but the symptoms of mania, modified by prevailing notions and beliefs. Those afflicted by them, like maniacs, had all their vital endowments deranged, and had lost the capacity of reasoning, of comparing, and associating their ideas. Memory had deserted them, volition was in abeyance, and all the functions of organic life were more or less disturbed.

It is not my purpose to enlarge further upon this topic, or upon the treatment of mania ephemera, which has, however, only to be conducted upon the general principles of medical science. It can be scarcely necessary to observe that during the paroxysm the patient must be confined in a large, well-ventilated, partially darkened room, or only allowed to take exercise under the most watchful supervision; that constraint must be avoided, but the most rigorous, though mild superintendence observed. Equanimity, with calm decision, must characterize all intercourse with the patient, whose relations should be kept away from him. Great benefit will generally accrue from the use of evaporating lotions applied to the head, or from cold affusion on the head while the body is in a warm bath. Mild purgatives should be administered, and ten to twenty minims of the sedative solution of opium with tincture of hyoscyamus, or a quarter of a grain to a grain of muriate of morphia in camphor mixture. These are invaluable in allaying restlessness and irritability, and in inducing sleep, so often the conclusion of an attack of ephemeral mania. The efficacy of digitalis is not yet established. Wine is sometimes required, and when the heart's action is feeble, must be fearlessly given, even when violent excitement exists.

Both during and after the attack the state of the system must receive the most careful attention. Existing diseases must be treated, and the constitution must be strengthened by every possible means. The surest prophylaxis against a return of the ailment is founded upon a consideration of its predisposing and exciting causes; and thus it is that in this ailment restraint of caprices, passions, and selfish feelings should be so forcibly inculcated. Among the medical agents valuable in preventing relapse, quinine occupies the foremost place; its power being probably dependent upon its properties of restoring deficient tone to the vascular system and of removing congestions wherever these exist. Next to quinine, the preparations



of iron appear to be of most use. But, indeed, there are no peculiarities in the treatment of mania ephemera. Regard being had to the causes of the disease, to the degree of excitement and vascular fulness, and to the state of the secretions, excretions, and reproductive functions, each case has only to be conducted upon ordinary hygienic and pharmaceutical principles.

---

## Art. V.—MORELL'S INDUCTIVE MENTAL PHILOSOPHY.*

Dr. Morell is a clear seer in a twilight region, which is sometimes palpably obscure. He is a faithful and lucid narrator of what is disclosed in his observations; faithful even when his experience teaches and tells against his own convictions; lucid in producing an exposition of what is in his view the genesis of thought, or of the laws by which the growth of thought is regulated; in a form which is at once recondite and attractive, and perhaps not the less so that his style is rich and redundant and imaginative; equal to the requirements of the philosopher, but not above the grasp of even the partially educated thinker. He is, however, not only a clear but a comprehensive thinker; he travels beyond the confines of his own consciousness, and, satisfied that a philosophy founded upon self-analysis, is not merely the portrait of an individual, but if unassociated with a consideration of psychical action wherever it is manifested and of the laws of those structures through which it is manifested—must be one-sided, he may be regarded as a physiological psychologist. As such only do we propose to deal with him in these pages.

From the fundamental distinctions of vital phenomena are the characteristic principle evolved in his present volume. He conceives that the attributes of vitality may be summed up in the resisting or repelling all that would destroy the entirety or oneness of the organism or the power of self-maintenance, in the selecting and appropriating what is conducive to life, or the power of attraction and assimilation. He recognises the same twofold law in operation in the property of the nerves of special sensation, in assimilating and propagating certain impulses from without, and then of exciting a reactive force which expends itself in motion communicated and in repulsion effected in reference to the world without. The instinct or power of adaptation to external circumstances, by which what is conducive to

* *An Introduction to Mental Philosophy on the Inductive Method.* By J. D. Morell, A.M., LL.D. London: 1862.

well-being is renewed, and what is noxious is repelled; and reasoning in separating and distinguishing as a necessary preliminary to the assimilation and complete adoption of truth—are held to be examples of the same law in the operations of mind-force.

We should be reluctant to affirm that there was both a play of fancy and an ambition to systematize in this identification of things which must still be regarded as distinct, however similar they may be rendered by description, when we have before us the doctrine of the correlation of forces and its influence even over logical minds. There is, however, a dogma at the very root of the supposed connexion of the laws of the general system and those of mentalization, which demands examination. "Were no impulse," says our author, p. 31, "to reach the mind within, we have no reason to think that any of its powers or capacities could be developed." This may be accepted as a declaration of faith in the creed of the sensational school, or it may not. If the profession be tantamount to an admission that powers and capacities, in other terms, mind, pre-exist the impulse from without and exist independently of it, but require such impulse for their growth and development, further discussion must embrace simply the nature, and condition, and relation of these powers and capacities. But if this formula contain the dogma that these powers, &c., must owe their existence and activity to the external activity, or, in fact, that the external impulse becomes, when impressed upon nervous tissue, the mind; or that it induces that molecular change which is supposed to occur either causatively or coincidentally with every mental act, there is then cast down the gage of battle in a strife which, as it is connected with a difference in mental constitution, must be perpetuated for ever. For this reason we are not disposed to accept the challenge, and moreover, Dr. Morell has, in various places, guarded himself, vaguely and loosely perhaps, against any accusation of scepticism of the independent existence of mind. It would, however, be unsatisfactory to leave the subject in the state in which it is placed by the quotation from the *Outlines of Mental Philosophy*. It appears to us that it can be demonstrated, that the mind exists anterior to impressions received through the special senses, or cœnæsthesis, and may be traced in the exercise of special powers and functions. We do not propose to reproduce either the history of the controversy as to innate powers, or to employ the weapons of those who rest content with the proposition of Leibnitz, Nihil est in intellectu quod non prius fuerit in sensu, nempe nisi intellectus ipse; or to repeat subtleties and refinements which, although they may contain actually conceal truths, and which may well be dispensed with in an inquiry so practical, and in our eyes,



passages, we submit, appear to demonstrate that the laws of similarity, &c., are built upon a mental constitution; it may be defined an activity, an individuality or primitive type, which is part of our nature, and which if not innate in the sense of idea is innate in the sense of faculty. But at p. 281, the law of similarity is stated to "begin its operations *spontaneously*;" that is, distinct from any natural or inevitable affinity in the "like experiences which unconsciously melt together, and any repulsion by which unlike are held apart." But we are inclined to demand, is the act of comparison by which the likeness or unlikeness is detected the result merely of impressions coming fortuitously together, or does it reside in a faculty, an individuality, which exists previous to the meeting together, and in which resides the act of approximation?

After a wide stride it appears that there is a distinction between an *à priori* fact or condition underlying the mental process by which knowledge is obtained, and *à priori* knowledge itself. "Consequently, there may exist," as Locke has affirmed, "not only ideas from *sensation*, but ideas from *reflection, i.e.*, ideas arising from the inward observation which the mind can make of its own nature and operations." (p. 307.) It would be superfluous to carry this analysis further, for in various places, as well as in the analysis of will previously quoted, there is a distinct admission of "primordial powers" or faculties in relation to external objects which do not call these powers into existence, but which minister to their activity;—but in carrying out this view the speculation that the physical feeling of want—hunger, for instance—is synonymous with an instinct which prompts us to seek food, appears to be altogether untenable. There is a confusion of the sensation of hunger and the debility which attends abstinence and exhaustion, and the psychical appetite for food. The sensation is a modification of pain; the appetite is a desire for gratification; but although the one may be implanted in order to relieve the other, the link which connects them, whether it be of causation or not, altogether escapes our observation. The sensation must exist anterior to the propensity; while the propensity exercises its influence in the absence of the sensation, and the appetite may become extinct while the sensation is urgent.

In more advanced inquiries into the freedom of the will, the proposition occurs that "motive means a mental state which we can control by our spontaneity or personality" (p. 383); and hence, if we can control the motive we can control the volition. It might be inquired, what is *spontaneity?* The fact here enunciated is admitted as a characteristic perhaps of all, but assuredly of energetic minds; but by what mental process

do we influence the motive, and, indirectly, the will? It must be in virtue of some force behind, and more potent than, and different from, that which is controlled. It cannot be by calling up residua, for the intention is not subdued, nor supplanted, nor displaced; it cannot be by any voluntary process, otherwise there would occur the anomaly of a will standing in antagonism to another will! Is the phenomenon explicable on the theory of separate faculties or tendencies, occupying consciousness alternately, and urging action in different directions? For example, (p. 365) Dr. Morell writes, "every one is more or less conscious of the *antagonism* which sometimes shows itself between the reason and the will. Cases perpetually occur in which passion impels towards one course of action, while reason as decidedly points to another," &c. This is an admission of opposition between two powers; and the conclusion is fatal to the theory of development by laws. "Intelligence, then, is a *condition* essential to the existence of will, though it is not a *measure* of it."

We have differed from our author widely and earnestly, and have given a more careful examination of his work, chiefly because we regard him as demanding and deserving attention, whatever may be his teaching. The merit of such a work is less as a monograph than to make people think, and to show them the modes in which they think. Self-analysis is perhaps the characteristic and the blemish of thoughtful men in our time; but if such inquirers crave a formula, they cannot desire one clearer or more rudimentary of the kind, than that furnished in the "Introduction to Mental Philosophy on the Inductive Method."

---

## Art. VI.—GRATUITOUS MEDICAL SERVICES.

For a considerable time past, the widely prevalent custom of *giving* medical and surgical advice and assistance to the poor has been held in question by many practitioners of medicine. Being ourselves unconvinced by the arguments hitherto advanced in disfavour of the custom, we purpose to state concisely what seem to us to be the principles involved in the matter, and what are the practical results springing from their application.

The opponents to the system of gratuitous medical services appear to rest their opposition, generally speaking, upon the following grounds:—First, they deny that compliance with the custom is obligatory, as a matter of conscience and duty towards



mankind; secondly, they affirm that departure from it is a duty to the profession; and thirdly, they maintain that the abuses resulting from the system are themselves sufficient to justify its unqualified condemnation.

In defence of the first statement they rest their case upon an imaginary parallel between a medical man and a baker, and the following is the argument used:—

Bread, it is alleged, is a necessary of life, in a stricter sense even than medical skill can be said to be so. The baker, in common with his fellow-citizens, lies under an obligation to supply the poor with both. But this obligation is discharged by the payment of his allotted contribution to the poor's rate. He is under no exclusive obligation to supply food gratuitously to those who cannot purchase it. He sells his bread to the authorities, who distribute it, and he gives away nothing that is special to his calling. Because the baker is not expected to give bread to all who are poor and hungry, the surgeon ought not to be expected to give skill to those who are poor and sick. Because Boards of Guardians buy bread for distribution, as much as is needed, so they, or others for them, ought to buy all the medical skill that is required, in order to meet the ailments of the poorer portion of the community.

Against some of this we have not a word to say. As a matter of fact, as far as legal obligations are concerned, the tradesman and the doctor are perfectly upon a level; and, for the service of the poor, the community is compelled to purchase what each class has to sell. The difference is this: that, while the community buys sufficient bread for all the demands, it does not buy sufficient skill, and it expects what is lacking to be made up by the medical profession. Society expects gratuitous services, not from any particular individual in the medical body, but from some of them; and this expectation is invariably fulfilled. According to our objectors, it is based upon injustice and ought not to be entertained.

To such we would reply that there is some difference (commonly, indeed, believed to be of the broadest kind), between skill and merchandize, between the gift of God and that which can be bought for money. According to Christian precept, we are bound to use our skill in healing for the benefit of the sick. Certainly, it is a gift to us, by which we are to live; but as certainly it is a gift, through us, to mankind, which, as Christian men, we dare not withhold from the poor. The baker has no gift in any like sense; and if he have a capacity for business which renders him a prosperous man, he cannot impart of this to the poor, but only of its fruits, by giving the money which it has brought him. As far, therefore, as the elementary prin-

ciple is concerned, we hold all these analogies between the duty of the baker and the duty of the surgeon to be utterly fallacious. We will not urge that they are degrading, because we wish to point out a difference, not to arrogate a superiority.

If this view be correct, the first objection advanced falls to the ground, and with it, subject to a higher law of duty, the second. But it would be well to reflect whether there is not another aspect than that advocated by the objectors, in which duty to the profession may be regarded. It will hardly be denied that the power of healing is a personal gift, not possessed by all people in an equal degree, and which the mere compliance with the requirements of a professional curriculum and of boards of examiners can hardly supply. It is a gift, indeed, to be cultivated, and increased by study and observation, but scarcely, we think, to be altogether acquired. But there is a tacit assumption, underlying the outcry against which we protest, that all qualified practitioners are equal in skill and knowledge. No one has absolutely put this assumption into words, but the idea is never absent from the discussion. The hospital surgeon, it is said, who sees a labourer without a fee, deprives the general practitioner of a certain modicum of profit, it matters not how small. The hospital surgeon cannot take less than a guinea, the general practitioner may fittingly receive one-eighth of that sum, for which he will gladly supply, not only advice, but also physic. The labourer cannot pay the larger fee, but he might probably pay the smaller. The hospital surgeon, therefore, by his compliance with an evil custom, robs the general practitioner of his modest emolument, and diminishes, by so much, the aggregate earnings of the profession during the day. To give force to this argument, however, it is necessary to assume that the patient would derive equal benefit whether treated by the general practitioner or the hospital surgeon. It is only, in fact, upon this assumption that the argument can have any weight.

We willingly concede that hospital staffs do not hold sole possession either of the gift of healing or of medical wisdom. Happily this is very far from being the case; but it is well to consider whether hospital physicians and surgeons do not perform a somewhat higher duty towards the profession than that which may be estimated by pounds, shillings, and pence; whether, in fact, their gratuitous services are not only a work of Christian charity, but also a reasonable tribute to the public, on behalf of the profession, for those errors and shortcomings necessary to a science imperfect in itself and often most imperfectly practised. Does not the profession, in fact, show a higher appreciation of its lofty calling, and perform more nobly its duty to itself, by offering, untarnished by greed, a ready succour, not only to the



utterly impoverished, but to the victims of erring, careless, ignorant, or incompetent brethren? That there are such, few, we presume, will deny. How, indeed, could it be otherwise, when we reflect upon the very inadequate preparation which has hitherto been required, either professionally or morally, for the responsibilities of a medical life? Our examining bodies have framed regulations, which chiefly secure fees for themselves, a period of empirical drudgery or of chartered idleness for the student, and a few weeks of cramming by a grinder, as a preparation for the final ordeal. It is true that they have lately been forced, by public opinion, into reforms, but they are even now looking back with regret upon the good old times of idleness and ignorance, and they have reformed as little as they dared. There can be no higher or better testimony to the essential tendency of medical practice to elevate those who pursue it, than the fact that, in spite of the College of Surgeons and the Apothecaries' Hall, in spite of apprenticeship and grinding, the great bulk of the general practitioners of this country do actually struggle out of the slough of student life into the position of honourable and intelligent gentlemen. But there are many who do not do this; and it is to be remembered that it is upon these that the paid treatment of the poor must chiefly devolve. For various reasons such men do not "get on," and they are compelled to work for a remuneration which more prosperous men refuse. They are compelled to work, but they cannot be compelled to work well.

We are painfully impressed by the conviction (forced upon us by long and wide experience), that the medical treatment of the sick poor, whether as club or union patients, or as paying small sums for medicine upon its delivery, is often unsatisfactory in the last degree. "Cheapness," is the great object sought under these circumstances, and the medical care is too commonly accurately apportioned to the amount paid per case. If a man's necessity unfortunately compel him to accept the paltry terms offered by a "union" or a "club," his necessities, it is well to remember, do not compel him to treat his pauper or club patients indifferently or carelessly. The moral responsibility in these cases differs not a whit from that of better paid cases; the responsibility, in fact, cannot be measured by the scale of charges. The moral guilt of a board of guardians or club does not cover moral guilt on the part of the parochial or club medical officer. But often necessity has nothing whatever to do with the acceptance of the beggarly pittances proffered by these bodies. The following recent example is a case in point:—

The poor of a township under the "Gilbert Act," had been long attended by a medical practitioner, whose charges,

including medicine, averaged about 30*l.* a year. On a change of guardians the board was seized with an economical fit, and it determined that the medical cost of the poor should, in future, as in neighbouring townships, be arranged by estimate "in lump," and not, as previously, by charge per case. Notices were distributed to the three medical practitioners residing within the township, asking them to send in estimates of the sum for which they would each undertake the medical care of the poor. No information could be given as to the average amount of sick in the year, records of medical relief solely not being kept. One practitioner refused to give an estimate; the other two (one having been for some time the township medical officer) sent in estimates for 30*l.*, stating that they named this sum because it approximated to the annual average and reasonable medical cost of several years. In the meantime, the project of the guardians had become widely known, and estimates poured in from surgeons in adjoining townships. All these practitioners lived *out* of the township, the said township being somewhat extensive and containing not less than 8500 population. The lowest of the volunteered estimates was 5*l.*, the highest 20*l.* The practitioner who offered to do for 20*l.* the work required, lived a mile and three quarters from the workhouse, and near to one extremity of the township, but about two miles and a half from the furthest extremity. The practitioner who offered to do the work for 5*l.*, lived upwards of two miles distant from any part of the township. A third practitioner, who gave an estimate of 10*l.*, lived a mile and a half distant from the nearest cottage in the township. The two last-named individuals were comparatively substantial men. They both stated that they had private patients in the township, and that as they worked their practice entirely riding or driving, the distance would in no wise affect their proper attendance upon the sick. As to the facts that the distance of their residences would in any way tell somewhat heavily upon the pauper invalid who had to seek their help, and would interpose a somewhat serious difficulty to obtaining immediate assistance in sudden illness, or quick attendance in midwifery cases; or that the loss of half a day to some member of the sick person's family, in fetching the medicine (the estimate including the supply of medicine!)—these of course were trifling questions which such worthy gentlemen could not be expected to entertain. The guardians long debated the propriety of electing the gentleman referred to whose estimate amounted to 10*l.* One great argument in his favour was that he had attended the poor of his own township, the population of which was about 7000, for a like sum for several years. It was feared, however, that as the practitioner lived out of the township the election would be illegal. In the end, the resident practitioners, who had given estimates, refusing to modify their estimates, the practitioner who had offered to do the work for 20*l.* was elected, he (a new-comer) living nearest to the township. We had the curiosity to ask this brother-practitioner upon what principle he had given his estimate. "Oh," he remarked, jauntily, "the amount is my house-rent, and I'll make it pay, you'll see." "And how about the sick poor," we inquired. "That is their look-out," he laughingly rejoined, "and the look-out of the Board of Guardians." We have a certain weakness for the credit and honour of the profession, which we are sometimes at a loss whether to look upon as a virtue or as a vice. It is not easy at all times to determine whether reticence belongs to the one category or the other. The worthy we have referred to is a "M.R.C.S. and L.A.C." of no very late date, and he was accustomed to describe us as "A very good fellow, always ready to get a brother practitioner out of a *mess*." Within a fortnight we were summoned hastily to aid this representative of medicine in the case of an aged pauper. He (i.e. the surgeon) had contrived to thrust a catheter through the wall of the urethra, and alongside the rectum, and he was puzzled that urine did not follow. A day or two afterwards he met with an instance of what he called "impaction" in a pauper midwifery case, and he opened the child's head with a pair of ordinary, short scissors, with "immediate success." As for the more serious surgical cases he came across, it was merely from the fact that he had a neighbouring general hospital to fall back upon, that the unfortunates were saved from lamentable results. Thanks to our kindness and the general hospital, the man, for the sake of his large family, was saved from immediate perdition, but he was quickly deprived of doing mischief upon the sick poor; and it is to be hoped that wherever he may now be neither poor nor rich may be submitted to his ignorant mercies.



It may be said that this is a rare case. It is a glaring case, we admit, but it is not a solitary case within our own experience, and it is but one of many in which the profession has escaped unutterable disgrace almost solely through the generous, gratuitous, and oft self-sacrificing aid which it affords to the poor, privately and in hospitals. We have a right to place this aid as a set-off against the short-comings of ignorance and error, and to glory in the set-off.

But there is another consideration, of wider application, perhaps, and which leads to very nigh the same conclusion.

As long as medical science is progressive, it must always be extending its boundaries in some direction or other, more rapidly than busy men in general practice can keep pace with it. Of

such partial developments, such processes of outgrowth from the general body of knowledge, several have been witnessed by the generation now living. When the out-patients of the London Hospital described Dr. Thomas Davies as "the man with the horn," auscultation of the lungs was a mystery to the majority of the profession. Since then auscultation of the heart, and a knowledge of the true significance of its sounds, and more lately still certain facts about the pathology of cerebral and spinal diseases, have been of practical utility in the hands of a few, long before they could be mastered and applied by the many. During the last few years, the marvellous advances of ophthalmology furnish another and very striking illustration of the same kind; while the recent improvements in laryngoscopy and rhinoscopy are only less striking because more restricted in their application. We acquiesce contentedly in the fact that, perhaps not one practitioner in twenty can use the ophthalmoscope and correctly interpret its revelations, although it has now been more than ten years before the profession, and although no one, without faithlessness both to the profession and patient, can attempt to treat the internal diseases of the eye without it. Surely our acquiescence depends upon the effect of custom, in shutting the eyes to the most glaring evils. If twenty men all alike profess to treat disease, and nineteen of them will not take the trouble to acquire a certain amount of tact and knowledge, without which the treatment of a very important class of diseases cannot be conducted, do not the nineteen commit a most serious breach of a sacred duty? Is it not obligatory upon them that they should be armed at all points, and prepared to deserve the confidence they solicit? And if, as often happens, when one of the nineteen men is applied to by a patient with internal eye disease, by a poor man, let us say, instead of confessing his ignorance on the matter, and referring the sufferer to his better instructed brother, he treats him without knowledge and without benefit, gives him medicines that may be useless, or even hurtful, and pockets his money, does he not commit a heartless wrong? How can he complain if the twentieth man gives his skill freely to the poor? Is it not to the profit and credit of the profession, as a whole, that the patient should be restored to sight *gratis* by A., rather than that he should be confirmed in blindness by paying half-crowns to B.? Is it not to the credit of the profession that A. should remove all shadow of justification from B.'s misconduct, and deprive the poor, so far as A.'s special knowledge will go, of any reason for seeking B. on account of his presumed cheapness?

We have taken an illustration from ophthalmology because, in its present condition, it furnishes very striking ones. Mr. Bowman has lately published these remarkable words:—



"These (glaucomatous) diseases now begin to admit of accurate definition, of exact discrimination, and, in many cases, of the most admirable cures — diseases which, six years ago, marched on unchecked to more or less rapid destruction of sight. And I do not scruple to say that, were the scientific knowledge of them, now possessed by a few, diffused universally among all the members of our profession, failure of sight from this cause, in Great Britain, would be to a considerable degree prevented, and total blindness would be rare indeed." *

In the face of these words it cannot be disputed that, until all practitioners acquire the knowledge Mr. Bowman indicates, he and his colleagues support the dignity of the profession, while they render vast services to the community.

So long, then, as careless and ignorant practitioners are to be found; so long as a few allow the progress of science to pass on and leave them behind; so long, we conceive, will it be a noble work to afford a refuge to the poor, where, without being mulcted in purse, they can be secured in very great measure against both the errors of haste and the errors of ignorance. Both reflect infinite discredit upon the profession; and it is fit that we should, as a body, provide gratuitously the remedy for our own shortcomings.

With regard to the presumed "abuses" of the gratuitous advice system, it is certain, we think, that no system of human contrivance does the same amount of good with so little evil to counterbalance it. Those who object to the gratuitous character of medical services to charitable institutions, would not, we presume, propose to shut up the institutions altogether, but only to remunerate the medical officers. Let us see what would be the practical results of such a proceeding.

In the first place, a demand for payment by medical officers, would at once close every struggling institution, and every institution of small size and limited income. If payment be given, it must, of course, be a sum bearing proper relation to the professional station of the receiver, and to the time devoted to the work. We are acquainted with one dispensary, where the surgeons receive 10*l.* per annum each, as an acknowledgment of their right to payment, and, in fact, as the small end of the wedge. This ground for receiving a housemaid's wages is all very well, as long as such a payment is exceptional, and avowedly made to assert a principle. But if the rule were for medical officers to receive a pecuniary recompense, that recompense must be a real remuneration for their skill, and must harmonize with their ordinary scale of fees. It will be easy for

* *British Medical Journal*, Oct. 11th, 1862.

any reader to fix in his own mind upon an adequate sum; to multiply it by the number of the medical staff of the nearest county hospital; and then to consider whence the money is to be obtained. Generally speaking, hospitals and dispensaries have not funds enough to encounter the sickness and accidents of their districts. Their normal condition is one of indebtedness to their treasurers or bankers; and their ordinary resource is some form of "special appeal." In point of fact, their existence is possible only because their physicians and surgeons work for nothing.

It cannot be disputed, perhaps, that the position of an honorary officer must always be more dignified than that of a stipendiary. The honorary surgeon, or physician, meets the gentlemen who compose the weekly board on a footing of perfect equality—as their fellow-labourer in a charitable work. The stipendiary would meet them in the hospital only as their paid servant; and would, in many ways, be liable to a control that might easily be made vexatious. It would be no slight evil, surely, to degrade the leading members of the medical profession in the relation they hold to the most influential and wealthy of their patients.

It would be difficult, moreover, to fix upon any scale of payment that would not lead to the suggestion, in times of poverty or pressure, that the work might be done for less. When a hospital was in difficulties, the chairman would say in confidence to the senior surgeon (who was paid, let us say, 400*l.* a-year), that Mr. So-and-so would be very glad to take the office for 200*l.*; and that the institution ought not to lose the opportunity of effecting so important a saving under the head of "salaries." We fully believe that if every hospital and dispensary in the kingdom were to commence the new year with a salaried staff, the application of this kind of argument would restore the "gratis system" before the lapse of a single generation.

Among the so-called "abuses" of our hospital system, the one that is most chiefly and continuously urged is the relief afforded to persons "able to pay." We do not see how stipendiary officers would remove this evil, unless by affording to grumblers the satisfaction of knowing that somebody was paid. In order that this satisfaction should be complete, the contemplated remuneration should be "per case."

It is quite plain, we think, that if persons in easy circumstances choose to be dishonest, and to resort to certain subterfuges, they may obtain the advantages of charitable institutions with very little risk of detection. It is not, and in the nature of things it cannot be, anybody's business to find them out.



They can only be excluded by closing the doors altogether, and most persons would consider the remedy worse than the evil.

There are many cases, however, where an apparent ability to pay is a merely deceptive appearance; where those who have had losses, or been reduced by some of the various kinds of misfortune, are struggling to maintain a decent appearance, or to keep their footing in their class of life until better times may come. We have followed up the history of a few of the seemingly "better-off" hospital patients, and, in doing so have been brought face to face with some of the saddest stories of privation ever encountered in the course of a professional career. For such people, gratuitous medical service means the detection of the germs of disease, the treatment of ailments for which the sufferers would not have afforded themselves a paid doctor, and thus, over and over again, the salvation of lives valuable to families and to the community.

But, it is averred, farmer Smith and butcher Brown go to the county infirmary as out-patients, or go by excursion train to London, and get advice at a hospital there. We do not believe it. Their wives possibly may do so; but attendance at a hospital absorbs too much time to be practised by any class whose time is not absolutely worthless. And to whatever extent the objection may be true, its truth, as a rule, is a mere expression of the popular feeling that doctors of only very moderate repute are more careful to lay the foundation of a bill of charges than to investigate and cure the diseases brought under their notice.

We have our own complaint against hospitals, and it is of a very serious character. They do not accomplish nearly what their pecuniary resources would allow, on account of the most unwise, and, indeed, unjust limitation of the number of their medical officers. In nearly every county town the hospital is in the hands of a small and exclusive clique, who, by virtue of their appointments, affect superiority to their brethren. These appointments are obtained by election, after a costly and humiliating canvass, often after a contest in which every kind of electioneering trick is practised, and in which family interest, religious creed, or other considerations wholly foreign to the issue, are of equal, sometimes of far more, weight than the possession of professional skill, and the conscientious discharge of professional duty. The number of the staff thus selected is invariably below the real needs of the institution, with the result that the out-patient department is grievously neglected, and often handed over absolutely to the house-surgeon. The needs of the institution should, we think, be even less the measure of the proper strength of the staff, than the number of willing labourers that could be procured. The profession, as a body, supports hospitals nobly.

The profession, as a body, has a right to all the advantages (of which experience is the chief) to be gained from them. We hold that every physician or surgeon who resides within a certain distance of a hospital, and who gives proof of skill and diligence in his calling, ought to be permitted to take his share of the work. The duties of a hospital might in this way be divided among a sufficient number of men to insure their proper performance; the profession would largely benefit by the wide distribution of the privileges now so jealously guarded by a few; the patients, by the greater amount of time and care bestowed upon them; and the public, by the power of selection among many men, to each of whom the advantages of hospital practice and of hospital responsibility had been accorded.

---

## Art. VII.—ON A NEW THEORY OF VISION, RESULTING FROM A NEW THEORY OF THE HUMAN MIND.

By J. Alexander Davies.

The doctrine I am about to explain I have, according to the distinction of Dr. Brown, which I take to be a philosophical one, called a *theory*. Concerning the difference between an hypothesis and theory, he has said (*Phil. Hum. Mind*, Lect. 8), "We commonly give the name of hypothesis to cases in which we suppose the intervention of some substance, of the existence of which, as present in the phenomenon, we have no direct proof, or of some additional quality of a substance before unobserved; and the name of theory to cases, which do not suppose the existence of any substance that is not actually observed, or of any quality that has not been actually observed, but merely the continuance, in certain new circumstances, of tendencies observed in other circumstances"—a passage I have thought it would be of utility to adduce, the distinction in question being very commonly overlooked. The *theory*, then, which I would set forth is founded upon, and manifestly follows from, a new theory concerning the nature of the human mind, (both the intellectual and moral nature), which may thus be stated. Without denying the possibility either of the present or future existence of matter, of which the perception would be possible without that of length and breadth—or, as it is generally said, not *having* length and breadth, the absence of which



fact, that the extensive exportation of cattle to Germany had entirely ceased.*

Numerous and severe cases of typhus amongst the inhabitants, and malignant anthrax amongst the animals, were lately observed in the villages situated on the banks of the Danube, near to its mouth. This epidemic was supposed to be caused by the putrefaction of a great many carcases of black cattle, which the waters of the Danube had carried and thrown on the banks. Bulgaria had been visited by a dreadful epidemic amongst cattle, and so many had died, that the carcases were thrown into the Danube. Great fears were at one time entertained for Galatz, and even Silistria; but the energetic measures taken by the authorities stayed the disease.

From a report by Dr. Edwin M. Snow of Providence, Rhode Island, published in the *Philadelphia Medical and Surgical Reporter*, we learn that an epizootic amongst swine has during the last five winters prevailed at Rhode Island. The disease, which has been improperly called hog cholera, has chiefly attacked large herds of the swine, and it has generally disappeared with the end of the cold weather. During the present year, however, it has prevailed more extensively, and did not, as before, cease with the approach of spring. In the course of five months, it had destroyed more than three hundred hogs in the towns of Providence, Cranston, and Johnston; and its victims elsewhere are numbered by thousands.

Dr. Snow considered the disease to be a form of typhoid fever, with diarrhœa, and occasionally with pleuro-pneumonia, arising from a depraved condition of the blood.

In the early part of the year, the cattle disease pleuro-pneumonia prevailed among the cattle in the colony of Victoria, Australia; and measures had been taken against its introduction into the adjacent colony of New South Wales.

---

* British Medical Journal, No. xxxix.

# ON AN INDIAN REMEDY FOR SMALL-POX.

By H. CHALMERS MILES, F.S.S., L.R.C.P.E., Assistant-Surgeon, Royal Artillery.

(*Read November 4th*, 1861.)

ABSTRACT.

EARLY in the last winter a small coasting vessel landed a portion of her crew at an extreme sea-board village, a few miles from Halifax. The persons landed were sick of small-pox, and the disease soon spread, first amongst the cottagers with whom the fishermen mixed, and subsequently amongst those from the capital who resorted to the village for the purposes of trade. Through the early weeks of spring, rumour constantly asserted that vast numbers of the seafaring population were attacked with the complaint; but it was not until early in March that the large civil hospital of Halifax, by the number of its weekly admissions for variola, began to corroborate rumour, and to authenticate the justice of the public anxiety. The disease in process of time extended to the troops in the garrison; but the proportion of attacks to those among the civil population was singularly small. While certain portions of the inhabitants of Halifax were suffering from the epidemic, alarming accounts reached that place relative to the terrible ravages of the scourge amongst the Indians and coloured people generally. Variola is the special plague amongst the Indians; and when they are invaded by this pestilence it sweeps them off by scores. Like the fire of the prairies, it passes over their encamping grounds, destroying all of humankind in its path. On this occasion, the most painful details were given of whole families being carried off by this loathsome disease. After some time, however, it was said that the pestilence had been stayed. One of the Indian race, it was asserted, had come into the disease-stricken camp, possessed of a preparation which had the extraordinary power of curing the kind of cases that had hitherto proved so fatal. This remedy was believed by the Indians to be so efficacious, that, if given to them when attacked with small-pox, they looked forward with confidence to a speedy and effectual cure. An old weird Indian woman was the fortunate possessor of the remedy in question. She had always been known as the doctress of her tribe, and had enjoyed celebrity for many years in consequence of her reputed



knowledge of medicine and wonderful acquaintance with the herbs and roots of the woods. So well established was her fame amongst the Indians, that, when sick, they resorted to her rather than to the white doctors, whom they considered to be "no good". Captain Hardy, of the Royal Artillery, an able and intelligent officer, who has been for years amongst the Indians, says that "the old squaw's remedy has long been known amongst them as an infallible cure for small-pox"; and that "the Indians believe it to be successful in every case."

From the mass of details gathered in the course of conversations with the Indians, the following observations have been sifted with some care.

1. In the instance of an individual suspected to be attacked by variola, but with no distinct pock marks upon him, a large wineglassful, or gill, of the vegetable infusion (to be described hereafter) is first given. The effect of this dose is, that the eruption is at *once brought out*. After a second or third dose, given every four or six hours, the pustules subside, "apparently losing their vitality." The patient feels better after each dose, and, in the graphic expression of a Micmac, "knows there is a great change inside him at once."

2. In a subject already covered with pock marks in an *early stage*, a dose or two will "dissipate the spots", and subdue the febrile symptoms. The urine, from being scanty and high coloured, becomes pale and abundant; whilst, from the first dose, the feelings of the patient assure him that the medicine is "killing the disease." Under the influence of the medicine, in three or four days, the prominent symptoms of constitutional disturbance subside, though, as a precautionary measure, the sick person is kept in camp till the ninth day. No marks of the eruption (as regards pitting, etc.) have been left in the cases examined, in which the agent has been given.

3. With reference to the medicine acting (as believed by the Indians) in the way of preventive to those exposed to infection, it is curious to note that, in the camps where the medicine has been used, the people keep a weak infusion constantly prepared, and take a dose occasionally in the day, so as to "keep the antidote in the blood."

The medicament is the root of an unknown plant, and it is used in the following manner. A full ounce, pounded, is placed in a covered pot, and a pint and a half of spring water added to it. The contents of the pot are then slowly simmered for four or more hours, and until the quantity of liquid is reduced one-third. The infusion is then strained; and a fourth part—about a gill—is a sufficient and full dose for any

ordinary case of variola, in which the eruption has already appeared. No more than the four doses, given once or twice in the twenty-four hours, according to the relief experienced, are usually required. It may, however, as noted above, be administered every four or six hours, should this appear to be necessary. It is preferable that the infusion be given at the early stage of the eruption; but, should it be administered later, it is said that the progress of the pustules towards maturation is arrested; that the constitutional disturbance seems to abate; and that the pustules slowly commence to "dry up." In all cases, the squaw asserts, the greatest relief is experienced after the second dose.

As regards the mystic knowledge which the ancient squaw is thought to possess concerning this agent, and the jealousy, etc., with which she is supposed to guard her secret, Capt. Hardy writes:—"I believe the root to be common in the woods of this province, and perhaps in Canada; but clearly no individual, except those in the camp of the ancient squaw and her daughter, knows where to find it, or to what plant it belongs. From my long acquaintance with the Indians, I may add that I am convinced there is no deception in the matter—that the infusion of the root has done wonders for the Indians, and is looked upon by them as their greatest safeguard; in its diluted form as a preventive, and in more powerful doses as a curative agent in cases of small-pox." Instances may have occurred, however, in which the remedy was administered too late to have effect, or in which the patient was almost moribund; and of course, in such as these, the medicine could not be of avail.

To sum up more precisely the information gathered from the "antique doctress", it would seem that, when the infusion has been given, in the quantity mentioned above, to a moderately healthy subject in the first week of the disease, in no instance has there been an unfavourable result, and that permanent marks of the "pock" are not left. In such a case, the febrile symptoms have disappeared, and the favourable change has been satisfactorily established, by the third dose.

In the camp near Tangier, sixteen or more deaths had occurred prior to the receipt of the "root infusion"; and it is believed that, in all the instances in which it was administered subsequently, complete recovery followed, without marks of pitting, or any other ill effects being left by the disease.

It must be recollected that all the preceding observations have reference to the use of the "remedy" amongst the Indians alone. As regards its administration in the instance of white



people attacked with small-pox, there seems at the present time no satisfactory or reliable evidence, as to the number or nature of the cases, in which it is asserted to have been administered.

The reason why this remedy has not been satisfactorily tried in the Civic Small-pox Hospital and other places, is probably due, partly to the deficiency of information on the subject, and partly to the injudicious and unhappy manner in which the use of the medicine has been advocated.

[Subsequently to this paper being written, and after considerable difficulty, Mr. Miles obtained a specimen of the plant, from which the root was procured. It proved to be the *Sarracenia purpurea* (Nat. Ord. Sarraceniaceæ; Sex. Sys. *Polyandria Monogynia*), vulgarly called Indian cap or pitcher plant, side-saddle flower, huntsman's cap, fly-trap, trumpet-plant, or *muc-ca-kem-ma-dos—i. e.*, frog's leggings, by some Indians. A later communication on the subject, containing additional information, has been addressed by Mr. Miles to the Director General of the Army Medical Department, and was published in the *Lancet* of the 18th October, 1862. G. M.; J. N. R.]

## ON THE SPOTTED-HÆMORRHAGIC YELLOW FEVER OF THE PERUVIAN ANDES, IN 1853-57.

By ARCHIBALD SMITH, M.D.

(*Read December 2nd*, 1861.)

*Introduction.*—On the 20th of March, 1860, I had the honour of being nominated by the Medical Society of Lima, as one of four physicians on its Epidemiological Committee. I was thus placed in a position, which led me to inquire with more care into the origin and progress of certain epidemics in Peru, and very particularly of the yellow fever, which reigned on the Andes since the latter end of 1853.

It is supposed by some medical men in that country, that the epidemics on the coast and in the mountains at this time were only coincident pestilences, without any essential similarity of nature or origin. Whether the peculiar fever which reigned on the coast in 1852-53, was of foreign or native growth, is a question which has been keenly discussed by the members of the Medical Society of Lima, but by no means satisfactorily settled.*

I believe the first case of decided yellow fever with black-vomit during the coast epidemic of 1853, occurred in a patient of my own, who died on the 16th of April. This was a lady from Arequipa. In the first consultation on this case, I stated to my colleagues, that it presented the symptoms of a true typhus-icterodes. All were agreed in looking upon it as an isolated case of this type; but we could not ascertain how it had originated, though it was true that the lady resided at the time of her illness in a great commercial house, which was the very centre of communication with Atlantic ports, and resorted to by nearly all the ship-masters in the guano trade. It was not until a month after this melancholy event, several cases more or less of a similar character, but otherwise unconnected, were brought into public notice by a zealous and active prefect—General D. Pedro Cisneros. Thus, a new light began to dawn on the minds of those physicians under whose observation some such novel cases had fallen;

* It may be deserving of notice that, from the year 1851 to 1859, Lima was subject to a succession of epidemics, ending in diphtheria and small-pox in 1858-59.



## REVIEW OF THE PROGRESS OF HYGIENE DURING THE YEAR 1861.

By E. A. Parkes, M.D., F.R.S., Professor of Hygiene in the Army Medical School.

The prevention of disease being one of the great duties of the Army Medical Officers, the Director-General has considered that it will be useful to appropriate a few pages of the Annual Report to a review of the hygienic discoveries, discussions, and applications which have taken place in the year immediately preceding the publication of the Report. It is not intended to make this a complete and elaborate review of Hygiene, for this would occupy too much space, but merely to bring before the Army Medical Officers, scattered as they are throughout the world, such a general statement of the subject as may inform them of the progress of inquiry and opinion, especially in the subjects connected with their duties.

The following is the order of arrangement:—

I. Enumeration of Works on Military Hygiene published in 1861.
II. Notice of the most important papers on the General Hygienic Conditions.
  *a.* Air.
    1. Composition of the Air.
    2. Ozone.
    3. Suspended matters in Air.
    4. Ventilation.
  *b.* Water and Purification.
  *c.* Food.
  *d.* Soils.
  *e.* Sewers and Deodorization.
III. Individual Hygienic Conditions.
  Bathing.
IV. Military Medical Investigations and Diseases of Soldiers.
  Recruiting in the French Army.
  Acute Tuberculosis.
  Sporadic Acrodynia.
  Ecthyma.
  Acute Goitre.
V. Spread and Prevention of the Specific Diseases.
  Typhus exanthematicus.
  Typhoid Fever.
  Relapsing Fever.
  Cholera.
VI. Chief Statistical Inquiries relating to Health.
  Dr. Sutherland's Scheme of Sanitary Inquiry.
  Dr. Farr's Propositions for a Collection of Sanitary Facts.
VII. Campaigns. The American War.

### I.—Enumeration of Works on Hygiene Published in the Year 1861.

An American work on Military Surgery* has been written to meet the exigencies of the war in the United States. There is nothing in it that is not familiar to British officers; but it is throughout sensible, though brief and meagre. The successive chapters treat of the following subjects:—1. General Observations on the Necessity and Value of Medical Services to an Army; 2. Recruiting; 3. General Hygiene of Troops; 4. Bivouacs, Barracks, Tents, &c.; 5. Hospitals; 6. Preparations for the Field; 7. Management of Troops on the March; 8. Conveyance of Sick and Wounded Men; 9—14. Gunshot Wounds; Amputations; Use of Anæsthetics; Hospital Gangrene; Dysentery; Scurvy.

Under the head of Works on Hygiene, it is necessary to include the admirable Report on Barracks and Hospitals,† by Drs. Sutherland and Barrell, and Captain Galton. It is one of the best works on Practical Hygiene, as far as ventilation, warming, construction, and sewering of buildings is concerned,

* *A Practical Treatise on Military Surgery.* By Frank H. Hamilton. New York: 1861. Pages 282.

† *General Report of the Commission appointed for Improving the Sanitary Condition of Barracks and Hospitals.* Parliamentary Paper, 1861.

that has ever been published. The most important parts of this book will be subsequently given.

A second edition of Sir Ranald Martin's great work on the Influence of Tropical Climates has appeared. It is much enlarged and improved, and contains a special part on the Prevention of Disease, which occupies 156 pages, and is an admirable disquisition on the whole subject of Military Hygiene. As this part is sure to be read carefully by every Army Medical Officer, it does not seem desirable to extract any part of it. It is throughout distinguished by the most sensible and enlightened views, and is a worthy addition to the great works on Military Medicine by Jackson, Marshall, and Hennen.

### II.—General Hygienic Conditions.—Air and Ventilation.

*a.—Composition of the Air.*

I. A careful examination of the air of Madrid, in the interior of the city, in the outskirts, and in some of the houses and hospitals, has been made by Dr. Ramon de Luna, Professor of Chemistry in the University of Madrid.* The amounts of oxygen, nitrogen and carbonic acid were determined, and the presence of organic matter was ascertained by a standard solution of permanganate of potash, though De Luna has not ventured to estimate its quantity, but is contented with applying the terms "absent, slight, sensible, very sensible," &c.

Comparing the air of Madrid within and without the walls, it was found that within the city the amounts of carbonic acid and of organic matter were in excess. Within the walls, the carbonic acid per 1000 volumes of air ranged from 0·8 to 0·3, the mean being 0·517; and the organic matter was in "sensible" quantity in nine out of twelve analyses, and was slight in the other three. Without the walls, the carbonic acid ranged from 0·2 to 0·9 per 1000 volumes of air, and averaged 0·45; the organic matter was absent in one analysis, was in traces in two, was in slight amount in five, and was in sensible amount in four analyses.

The excess of carbonic acid and of organic matter in the city is thus quite evident, and De Luna is of opinion that the statement of Boussingault, that the carbonic acid formed by respiration and combustion in a great city disappears in twenty-four hours, is incorrect, and that Madrid must be looked on, as far as ventilation is concerned, as a large edifice imperfectly aërated.

The air of sleeping-rooms was analysed on two occasions.

In a room without any opening for ventilation, and having a cubic capacity of 953 cubic feet, slept in by a single person, the air, at six o'clock in the morning, had the following composition:—

| | In 1000 volumes. |
|---|---|
| Oxygen | 204·2 |
| Nitrogen | 791 |
| Carbonic acid | 4·8 |
| Organic matter | Very sensible. |
| | 1000·0 |

The carbonic acid was therefore twelve or sixteen times over the normal amount (assumed as 0·3 or 0·4 per 1000).

After two hours of complete ventilation the air of this room still contained 1·6 volumes of carbonic acid per 1000, and some, though a less amount of organic matter.

In a second room, of a capacity of 1695 cubic feet, the air contained, at seven o'clock in the morning, 3·7 volumes of carbonic acid per 1000, and a very sensible quantity of organic matter. After the most complete ventilation for the whole day, it still contained, at 4 p.m., 1·4 volumes of carbonic acid per 1000 and a sensible quantity of organic matter.

These experiments are not quite in accordance with previous observations, and especially with some made by Drs. Gore and Pilcher, at Fort Pitt, which show that by opening the windows the amount of carbonic acid in a sleeping room falls rapidly, nearly to the amount of the outside air. But De Luna is certainly quite correct in asserting that many hours' free ventilation will not remove the excess of the organic matter, probably because this adheres to the walls, clothes, &c., and is oxidized rather slowly.

* *Annales d'Hygiène.* April, 1861. P. 337.



The practical inference from these experiments is familiar to us in this country; it is that the air of every sleeping room should be continually changing, and that the mere opening of windows for a few hours every morning is a most insufficient method.

In the wards of the General and Princess's Hospitals at Madrid De Luna found the following amounts of carbonic acid at noon:—

| | Carb. acid per 1000. |
|---|---|
| General Hospital | 3·2 |
| " " | 3·8 |
| " " | 4·3 |
| Mean | 3·77 |
| Princess's Hospital | 2·7 |
| " " | 3·0 |
| " " | 2·9 |
| Mean | 2·87 |

The quantity of organic matter was "very sensible" in all the analyses.

These results show an extremely bad hygienic condition of these hospitals, and it is scarcely possible that treatment could be satisfactory.

In Fort Pitt, which was not built for an hospital, but in which great attention is paid to ventilation, the mean amount of carbonic acid, at 3 a.m., the least ventilated period of the twenty-four hours, was found by Messrs. Godwin and Walters to be only 0·809 volumes per 1000 on an average; and never, in the least ventilated ward, to exceed 1·22 volumes per 1000.

One fact appears from De Luna's observations that the ratio between the carbonic acid and the organic matter of the air is not constant, and that the latter may be in large quantity when the carbonic acid is not in very great excess. But when the carbonic acid is in large amount the organic matter is so likewise. The same fact has been less definitely ascertained at Fort Pitt.

De Luna directs particular attention to the fact that the bedding is often a cause—and perhaps a principal cause—of the insalubrity of hospitals. A large quantity of air passes into the pores and spaces, and the organic matter and water are largely absorbed by blankets, woollen coverlets, and feathers, and in a less degree by cotton, linen, and straw.

Although the necessity of the most thorough ventilation of the bedding is recognized in this country, it is quite certain that in most hospitals it is, as a matter of necessary routine, not sufficiently attended to.

The air of four cemeteries in Madrid was also examined. The carbonic acid per 1000 was 0·7; 0·6; 0·6; and 0·9; the mean being 0·7; the quantity of organic matter in the air was "very sensible" in all the cases. There was also a perceptible amount of sulphuretted hydrogen or hydrosulphuret of ammonium.

With reference to measures for removing the great impurity of the air of Madrid, De Luna advises a systematic ventilation of the city by means of streets planned with a view to this object, and of open spaces. This is a subject which merits the utmost attention; and in every great city, when improvements are made, the convenience of the traffic, though a most important consideration, should not be the only one. He also proposes a system of tubes running up some distance, by means of which the heated air could be conveyed above the houses. This suggestion seems a little far-fetched. For the ventilation of the houses, De Luna recommends ventilating tubes, which are now happily coming more into use in this country, and the construction of chimneys. He also refers to a plan he has devised for drawing air through the houses by means of an aspirator formed by a water-tank, which he states would be an economical arrangement, as Madrid is to be abundantly supplied with water; but the details of this arrangement, which appears complicated, are not given.

To ventilate hospitals, he proposes tubes placed at the top of the ward,

and aspirators, and also the exposure in the wards of vases filled with quicklime, to absorb carbonic acid. He advises the tubes to be heated, by placing an oil-lamp inside, and calculates that ten beds can be ventilated at a cost of twopence a night. It is, however, still cheaper if gas can be employed. To ventilate the beds in hospitals, De Luna employs an aspirator formed of a large tub or cylinder filled with water; an india-rubber tube is connected with this, and passes into the bed; when the water is allowed to run out, an equal volume of air is necessarily drawn from the bed.

This plan demands some arrangement for allowing the water to run off, and, also, water must be cheap. It is, however, possible that such a plan might be useful, not only for purifying the bedclothes, but for treating fever-patients, who require an immense quantity of air both for the lungs and the surface of the body, and who would very probably be benefited by such an "air-bath."

Some analyses of the air in rooms and open spaces in Fürth have been made by Dr. Mair.* The amount of carbonic acid was often enormous, amounting, in one instance, in a school-house, to 8·71 per 1000 volumes. Mair believes that this impure air is the only cause of pulmonary tuberculosis, and in this he approaches to views which, since the publication of Carmichael's work on Scrofula, have been rather gaining ground in this country. Dr. Henry McCormac has warmly advocated the same view.†

*Ozone.*—The investigation of the curious subject of ozone has not been advanced during the year. The present position of the inquiry seems to be this:—While the observations of Dr. Andrews, of Belfast, seem to have proved that ozone can be formed by the electric spark from the purest oxygen, and that it is much heavier than ordinary oxygen, it still is doubted by many chemists whether there is yet any satisfactory evidence that ozone is ever present in the atmosphere. Therefore the qualitative as well as the quantitative determination of ozone by Schoenbein's or Moffatt's papers, or by the method of Houzeau, is uncertain, and it seems necessary at present to exercise the greatest caution in drawing deductions from observations made in these ways. Yet it seems certain that, whatever be the exact cause of the reaction, the substance producing the decomposition of the iodide of potassium and the formation of iodide of starch, is more common in pure than in vitiated air; is more common in the country than in towns; and is in larger amount in this country in the westerly than in the easterly winds. Whether it be really ozone, or nitrous or nitric acid (the frequent presence of which is now certain), or some other substance, these facts appear to hold good. But as a thorough investigation is now being carried on by Andrews, it is to be hoped this subject will soon be cleared up.

*Suspended Matters in Air.*—M. Pouchet (*Comptes Rendus*, 1861) has attempted to collect the substances suspended the atmosphere by drawing a current of air through a funnel with a very small opening at its mouth; immediately below the opening a piece of glass is placed upon which the current of air infringes. Any solid or corpuscular bodies floating in the atmosphere may in this way be arrested and examined with the microscope.

By means of the "aeroscope," M. Pouchet discovered the almost universal presence of starch grains in the atmosphere, and of silex and carbon frequently; but he never succeeded in detecting a single spore, or ovum, or any encysted animalcule.

It is possible that this plan may lead to some important results when the investigation has been farther carried on. An instrument, given to the writer by Dr. Sanderson, has been used in the wards of Fort Pitt by Dr. Frank, and unequivocal epithelium cells have been detected in several instances. Eiselt (*Med. Times and Gazette*, 1861), in a ward containing 33 children with acute purulent opthalmia, found by means of Pouchet's instrument, pus cells floating in the air.

*Destruction of Organic Germs in the Atmosphere.*—Pasteur, whose researches on the prevention of fermentation in liquids capable of it by admitting only filtered air, excited much attention in 1860, has published this year‡ some observations on the temperature necessary to destroy all the germs or spores in the air. He found that the air could still excite fermentation in liquids capable of it after being heated to 125° C (= 257° Fah.) for a quarter to one hour. The temperature of 127° to 130° C (260° 6 to 266° Fah.) however destroyed this property of the air.

Schröder, who really anticipated in 1854 Pasteur's observations on the effect produced by heated and filtered air on fermentable liquids, has stated* that if putrefiable substances, such as flesh, white of egg, milk, are supplied with filtered air, decomposition takes place in them, but no fungi, and only doubtful traces of infusoria can be found. If these substances are heated to 120° C, or 130° C, and then air, filtered through cotton is allowed to enter, no putrefaction takes place.†

These observations are of interest in all ways; probably also they will give us means of preserving food for some time at a small expense.

*b. Ventilation.*—The Report on barracks and hospitals, to which we have referred, contains an important chapter on ventilation.

All barracks, stables, guard-rooms, and cells in the United Kingdom are now ordered to be ventilated by means of air-tubes or shafts. The Commissioners, in the case of guard-rooms, cells, &c., have occasionally used McKinnell's tube, which is certainly the best arrangement which can be devised of the single tube. For barrack-rooms several tubes are considered best, and the inlet and outlet shafts are separated from each other.

The outlet shafts are directed to be at the top of the room, and in the position considered most advantageous; the corners of the room are generally recommended. Each shaft is carried straight up to the top of the house, and does not communicate with any other room. It is formed usually of wood, is of square shape, with a very smooth inner surface, and is closed above by a louvre to prevent down draughts, and below either by inverted louvres, to disperse the air if a down draught should occur, or by a moveable board and hinge by means of which the opening can be more or less closed.

The inlet openings are of two kinds:—1st. Openings through the wall into the outer air; these are placed as far as possible from the outlet shafts and above the heads of the men; the internal opening is two or three times the size of the outer, and the air is thrown up towards the ceiling by an obliquely shaped board; it is also divided into small currents by perforated zinc plates. 2. An opening from the external air into a hot-air chamber, and thence into the room over the fireplace just under the ceiling.

Each man in barracks is now ordered to have 600 cubic feet of space.‡ The Commissioners believe that if this air can be changed twice in an hour, so as to give 1200 cubic feet per man per hour, this would be sufficient. It may be questioned, however, if this is enough; both from calculation and from actual trial, as far as this has gone, the minimum supply of air, for healthy adults, should be 2000 cubic feet per hour in this country.

To secure the movement of air to the extent of 1200 cubic feet per man per hour, the Commissioners order the outlet and inlet openings to be of the following dimensions:—

*Outlet Openings.*—The size is governed by the cubic space, which itself regulates, or should regulate the number of persons in the room. The sectional area of the shaft is ordered to be:—

On the ground floor of barracks 1 square inch for every 60 cubic feet of room space.

On the 1st floor 1 square inch for every 55 cubic inches of room space.

On the 2nd floor 1 square inch for every 50 cubic inches of room space.

For a room holding twelve men the sectional area of the outlet shaft would be:—

* Pappenheim's *Beiträge*. Heft ii. p. 100.

† *Dublin Journal*. December, 1861.

‡ *Comptes Rendus*. January, 1861.

* *Annales der Chemie und Pharm.* May, 1861.

† Reference may be made to a good article by Dr. Sanderson, in the *British and For. Med. Chir. Rev.* (Oct. 1861), on the Air of Towns, where many of these points are given and discussed.

‡ It is not stated whether the measurement is to be taken when the rooms are empty, or when the men and furniture are in. It ought certainly to be the latter, as that would represent the efficient breathing-space.

On the ground floor = 120 square inches.
On the first floor = 131 square inches.
On the second floor = 144 square inches.

In other words, the sides of the shaft would measure 10, 11, and 12 inches respectively in the three rooms.

Besides this outlet shaft in every barrack-room, there is the chimney, the action of which is taken to be about equal to that of the shaft; and under ordinary circumstances it is believed that, in a room of twelve men, from 8000 to 9000 cubic feet will pass up the shaft, and as much more by the chimney per hour; therefore, for every 600 cubic feet of room space, there will be removed per hour about 1200 cubic feet of air.

*Inlets.*—To supply an equivalent amount of fresh air, one, two, or more openings are cut through the wall close to the ceiling, and as far as possible from the outlet; the size is ordered to be at the rate of one superficial inch of area to every 120 cubic feet of room space, if fresh air be also admitted from behind the grate; for a room of twelve men, which ought to contain 7200 cubic feet of air, the total sectional area of the inlets, at their smallest parts, should therefore be fifty square inches; and the tube, if square, would measure a little more than seven inches to the side.

In addition to these openings, fresh air is admitted to a large chamber behind the fire, and after being warmed, passes into the room near the ceiling. The superficial area of the horizontal tube leading to the hot-air chamber is directed to be one superficial inch for every 100 cubic feet of room space, which, in a room of 7200 cubic feet dimensions, would give a sectional area of 72 square inches, or rather more than 8½ inches to the side if the tube were square.

If the fire-grate is not provided with a warm-air chamber of this sort, the direct opening to the external air is doubled in size (= 1 superficial inch to every 60 cubic feet of room space).

The total sectional area of the tubes for one man would therefore be:—

Outlet shaft = 10 to 12 square inches, according to the position of the room.
Chimney = about the same, or probably a little less.
The inlets = 11 square inches.

If the chimney be taken into account, there is therefore an excess of outlet space. The air which is heated in the chamber behind the fire is intended to have a warmth of from 56° to 70° Fahr.

This system has been admirably contrived, and it is to be hoped that similar plans will be eventually carried out in every room of every private house. I venture to suggest, however, whether the shafts might not be made still larger; the sectional areas are considerably below the dimensions given by Sir Joshua Jebb's experience; and as it is always easy to lessen the size of the tube by simple valves, and thus to regulate the current of air, it would seem always safer to have the shafts too large than too small.

A company, under the title of the National Ventilation Company, has been lately formed, to introduce the use of wire gauze screens at the top of the window sashes, so that by a simple contrivance when the sash is pulled down, instead of leaving an open space at the top of the window, the air passes through the gauze, and entering with small velocity and being divided into many streams, mixes with the air of the room without causing drafts. The plan presents nothing original except the mere fixing of the screen, but it is likely to be very useful, as many persons may adopt this plan who might hesitate to remove a brick from the wall. But when it can be done, it seems more desirable to have regular inlet openings, which never need be closed and which can be thoroughly protected from rain and wind. In the absence of such openings, this plan will be found very useful. When there is a fire in the room, the air will generally find its way in through the gauze; in summer it will pass out, or there may be a double current.



## Water.

During the year there has been little of importance as respects the analysis of drinking water, except the complete observations of Letheby on the water of the Thames and of various London wells. The full details are too long to be given here. The action on lead of the very pure water now collected from the Oolite, and supplied to Manchester, attracted some attention at the meeting of the British Association. As much as $\frac{1}{10}$ths of a grain of lead per gallon was found in the water after being in contact with the pipe for twelve hours (Calvert); and Dr. Angus Smith stated that serious poisonings and even deaths had occurred in Manchester. This physician fixed the minimum injurious quantity of lead as $\frac{1}{40}$th of a grain per gallon. It appears that at Sheffield the water is derived from a similar formation, and there also acts largely on lead, as much as $\frac{1}{17}$ths or $\frac{1}{18}$ths of a grain being taken up per gallon. The hygienic rule of restricting the use of lead to the utmost is still very little attended to in England; convenience and cheapness seem to entirely get the better of the warnings of experience and the reasonings of science.

A reprint of Dr. Haines' (of Bombay) Analysis of the Aden and Nassick Water, given in the *Bombay Transactions*, has been published in England. The principal point of importance is the existence of nitrates in large quantities; one of the Aden wells contained as much as 12·332 grains of nitrate of lime, and the smallest amount was 3·935 grains per gallon. The Nassick wells contained a still greater amount of nitrate of lime and magnesia. These salts are derived from the soil, and Dr. Haines gives an interesting discussion on the question of the nitrification of the soil. For this we refer to the paper.

Dr. Dundas Thomson* has published a short paper on the influence of impure water in the production of disease. All the good cases referred to have already been published by Dr. Snow and others. Dr. Thomson mentions that he has lately examined the water of the celebrated Broad Street pump, to which a curiously localised attack of cholera was traced in 1854, and found it to contain no less than 6·08 grains of organic matter derived from sewage. So that the lesson of former years is it appears already forgotten.

*Analysis of Chinese Waters.*—During the war in China, M. Strohl (Pharmacien aide-major†) analysed the waters of the Peiho Grand Canal, by means of the very useful method adopted from Clark's soap test, by Mr. Boutron (hydrotimétrie). The following amounts of the important ingredients were found (calculated as grains in the imperial gallon):—

| | Peiho, between Suiko and Leanzie. | Peiho at Tientsin | Imperial Canal. | Peh-tang-Ho. | Yantze-kiang. | Wampoo. |
|---|---|---|---|---|---|---|
| Carbonate of Lime .. | 2·163 | 2·527 | 2·527 | 10·09 | 2·163 | 2·163 |
| Salts of Lime other than Carbonate .. .. | 5·334 | 3·115 | 1·778 | 5·334 | 4·445 | 3·556 |
| Salts of Magnesia.. .. | 6·462 | 14·42 | 13·125 | 38·5 | 2·625 | 2·191 |
| Combined $SO_3$ .. .. | 2·985 | 3·272 | 1·463 | 8·666 | 2·985 | 2·065 |
| Action of Nitrate of Silver | Consid. precip. | Slight | Slight | Very large precip. | Slight | Slight |
| Action of Liq. Ammoniæ.. | Consid. precip. | Very marked precip. | Very marked precip. | Very large precip. | Slight | Slight |

* *The London Medical Review*, December, 1861.
† *Recueil de Mémoires de Médicine, &c.* 1861. No. 20, p. 157.

These analyses certainly say a good deal for the industry of this officer; their utility is manifest at a glance. Thus it is evident that the water of Pehtang-Ho should be rejected by every medical officer; it is an extremely hard water, and would be scarcely altered by boiling; the hardness, too, depends on the worst salts in a sanitary point of view, viz., those of magnesia. It also contains a large quantity of chloride of sodium.

The two waters of the Peiho and of the Imperial Canal, are also both objectionable, as both are possessed of a large degree of permanent hardness, for they contain a considerable amount both of sulphate of lime and of magnesian salts. As these waters contain so little carbonate of lime, they must have been derived not from a chalk district, but from a limestone and dolomitic country. None of these waters should have been employed for drinking purposes if any other water could have been procured. The waters of Yantzekiang and of Wampoo are much better in all respects.

M. Strohl give also some similar analyses of some water at Shanghai and in Cochin China. We only extract one analysis. The water of the river "Saigon" had a total hardness (calculated as Clark's scale, viz., 1° = 1 grain carbonate of lime per gallon) of 65° 6.

In the imperial gallon there were—

| | |
|---|---|
| Carbonate of lime .. .. .. .. .. | 7·93 grains. |
| Other salts of lime .. .. .. .. .. | 16·89 „ |
| Magnesian salts .. .. .. .. .. .. | 50·75 „ |

Nitrate of silver and ammonia gave large precipitates. This water could not be drank by the French troops without bad effects. They appear to take their water from wells which yield a tolerably pure supply.

*Water at the Camp at Chalons.*—M. Fleury* has determined by the same simple and accurate method (hydrotimétrie) the water of the camp at Chalons, and of the river Marne. Twelve analyses of the well water (sunk in the chalk) are given; they vary considerably in hardness, and we select two giving the softest and the hardest water as sufficient for our purpose. The amounts are calculated as grains per gallon; the hardness is reckoned in Clark's scale, as that is commonly used in this country.

| | Softest of the well-waters. No. 109—Engineers' Quarters. | Hardest of the well-waters. No. 111—Ambulance of the Centre. |
|---|---|---|
| Hardness (Clark's) .. .. | 6·56 .. .. | 11·5 |
| Carbonate of lime .. .. | 3·81 .. .. | 7·784 |
| Sulphate of lime .. .. | 1·56 .. .. | 3·528 |
| Sulphate of magnesia .. | 1·83 .. .. | 1·4 |
| Chloride of sodium .. .. | 5·46 .. .. | 11·6 |
| Sulphate of soda .. .. | .. .. .. | 0·917 |
| Organic matters (determined by per-manganate of potash approximate) | 0·168 .. .. | 0·266 |

The comparative purity and softness of these waters is remarkable, considering that the wells are sunk in the chalk. It is also curious that the free carbonic acid (as indicated by the method employed) was in small amount. The water from the English chalk districts contains much free $CO_2$, and is considerably richer in carbonate of lime.

*Purification of Water.*—During the year only one new filter has been brought before the public, viz., that of Mr. Danchell. The purifying material is pure animal charcoal in large quantity. A small pocket filter, with an elastic tube and bottle, can be recommended for its simplicity and rapidity of action. The filters of the Silicated Carbon Filter Company, which has been established two or three years, are also very good. The Torbane Hill mineral, which consists of almost pure silica, is impregnated with animal and vegetable charcoal, and is then formed into blocks, through which the water is allowed to pass. Charcoal is the great purifier as in Lipscombe's filters, and it appears

* *Recueil de Mémoires de Médicine, &c.* 1861. No. 20, p. 162.



that at the present time it is superseding all other methods of filtration. The use of magnetic oxide of iron has been again recommended, but it is doubtful whether it is at all equal to charcoal.

### Food.

Much discussion has again taken place on the presumed origin of pellagra, from the use of altered maize, on which the fungus, called in Italy "verderame," or "verdet," has formed. The works published on this point are now very numerous. In 1860, M. Costallat, of Bagneres, published* a striking paper in support of this presumed origin of pellagra. This was replied to by M. Laudouzy, and some strong arguments were adduced in opposition.

In 1861, Boudin published a short paper,† and gave a map, showing the distribution of pellagra in North Italy; and M. Beaugrand (in the thirtieth number of the Annales d'Hygiène, p. 429), has given a short summary of all the recent works on this curious subject.

Boudin, many years ago, denied that altered maize can produce pellagra, on the ground that pellagra is known in places where maize is never used. To this his opponents have answered that there has been an error in diagnosis and that cases of acrodynia or something of the kind have been mistaken for pellagra. He now however reiterates his opinion and believes that fresh support is given to it, by the fact that cases of pellagra are most unequally distributed among a population subsisting on the same food.

The statistical researches of Marini have shown that in forty-four districts belonging to the provinces of Milan and Como, and in the valleys of Brembo and San Martino there are—

| | | | | | |
|---|---|---|---|---|---|
| 9 | districts | without a single case. | | | |
| 7 | having | from 1 to 9 | cases in | 10,000 | inhabitants. |
| 9 | „ | „ 10 to 21 | „ | „ | |
| 11 | „ | „ 32 to 43 | „ | „ | |
| 6 | „ | „ 47 to 58 | „ | „ | |
| 2 | „ | „ 79 to 85 | „ | „ | |
| 44 | | | | | |

North of the 46th degree of latitude there is almost complete absence of pellagra, and to the south of Milan the disease again decreases. Yet all have the same food.

Another argument against the production from diseased maize, is, the fact that the agricultural labourers are almost alone attacked (Marini), and in the same village, the women who are lace-workers, and the men who are engaged in cotton works are exempt, though the food is absolutely the same.

Then the exemption of the south of Italy, where maize is much used and where the "verderame" also occurs, seems a strong argument against this hypothesis.

The whole subject however, in spite of the multitude of works which have been written on it, still seems to demand a fresh investigation. The general evidence certainly seems to bear out the notion that diseased maize is greatly concerned in the production of pellagra, and that the exceptional cases may be found susceptible of explanation when they are more fully examined.

*Trichina Disease.*—Since the discovery by Leukardt of the round worm of which the trichina spiralis is the immature condition, and the more complete account of the wonderful migrations of the the young trichinæ, attention has been especially directed to the possibility of the trichina disease in men being more common than was anticipated. Zenker, in 1860 (Virchow's Archiv., Band 18, p. 561), found trichinæ in the muscles of men no less than four times in 136 sections, or in one of every thirty-four bodies, and this author states unreservedly that the trichinæ by their migrations call forth, when in great numbers, a number of dangerous and often fatal consequences.

The symptoms of this disease are believed to be febrile and to have a close resemblance at first sight to typhus.

In December, 1860, Professor Wunderlich met with a case of prolonged

* *Ann. d'Hygiene.* 1860. Vol. xiii.
† *Ibid.* 1861. No. 29, p. 5.

fever which did not correspond in its course with any of the well-known specific fevers. The patient was a butcher; he eventually got well, and thus negatived the diagnosis of acute tuberculosis which, at one time, had seemed the most probable disease.

Soon after this man was admitted, a second butcher from the same establishment came into hospital with the same symptoms of high fever, with immense depression, but the course of the disease did not correspond with any of the known fevers. But here, as in the first case, in a less degree, the muscles were particularly implicated; there were not only muscular pains but absolute soreness on pressure. This man eventually got well.

Two other butchers, of the same house, were also taken ill with severe febrile symptoms, but they were not seen by Wunderlich.

Now it appeared that these men had been killing a number of pigs, and that eight men in all ate of the raw flesh. Of these eight, four were soon afterwards attacked with these anomalous severe febrile symptoms.

Unfortunately none of the pork had been preserved, and the possibility of the trichina existing in it was therefore not proved. Moreover none of these men died, and no evidence of the worm existing in their muscles was obtainable. But looking to the apparently undoubted fact that the use of the raw meat brought on the disease, and to the great probability that the wanderings in large numbers of the trichinæ will produce these symptoms, Professor Wunderlich deems himself justified in thinking that there are some grounds for considering these febrile attacks to have been a "Trichina disease." (Archiv. für. Heilkunde 1861, p. 269.)

That the use of bad pork will cause febrile symptoms like typhus has been already noted by Heidenheim. In the instance, recorded by this writer, the pork was "evil-swelling," and was therefore partly decomposed; twelve out of fifteen persons who ate the pork were attacked with typhus-like symptoms, and one died. The existence of the trichina was then unknown, but it may be a question whether the cases were not similar to those of Wunderlich's.

At any rate, whether from the presence of trichina or not, a severe febrile disease must be admitted to be produced by the use of bad pork under certain circumstances.

For the diagnosis of the trichina in the muscles of men, Kuchenmeister (Deutsch. Klinik, 1861, No. 5) has proposed to *harpoon* the muscles, but this seems a very severe operation. Welcker (Virchow's Archiv. 1861, Band 21, p. 453) believes that the best place to look for them is under the tongue, close to the frenum; in cats they can be seen easily in this situation. Whether it is so in men is not yet known.

### Soils.

Dr. Angus Smith, who is well known for his observations on the organic matter of the air, has lately been investigating the chemical conditions of soil, and though his observations are incomplete, they are of considerable interest. Malaria is produced, he believes, by putrescence going on in the soil, and this is increased by alkalinity and lessened by acidity of soil. Soils are for the most part acid, and putrefaction does not readily take place. Cold weather produces acidity; in an alkaline peaty district, the setting in of cold produced acidity of soil in a few days; hence the effect of cold in lessening malaria may not be simply by lessening evaporation, but by giving rise to special chemical changes which delay putrefaction. These observations of Dr. Smith's are however at present fragmentary, and it is to be hoped some fuller detail will soon be given.

### Sewers and Deodorization.

The opinion seems still gaining ground, that the great question of sewerage requires re-discussion. Although everybody is opposed to the use of cesspools, and though it is evident that well-contrived and properly-ventilated sewers, with a good fall and a proper supply of water, remove excreta most readily and economically from our habitations, yet it cannot be denied that the existence of this underground net-work of tubes filled with hurtful gases which are continually drawn up into the houses, in spite of all traps and valves, is a very great disadvantage. And the part that sewers



themselves, if improperly contrived, can play in the dissemination of disease, is now well known, and was acknowledged in the never-to-be-forgotten Windsor epidemic of typhoid fever, to which a late national calamity has again called attention.

The plan of allowing the liquid part only of the excreta to pass into the sewers and retaining the solid part in closed boxes, which are periodically carted away in boxes specially contrived for the purpose, has now been in use in Paris, Turin, Milan, and other cities some years. At present there is no good evidence of the effect of this arrangement on health, although doubtless the sewage matter is in a much better state for the farmer. But whether this plan be used or sewers be made, there is no doubt that charcoal boxes and trays should be used to purify the air, and that substances to delay putrefaction should be mixed with the solid matter. During the last year additional evidence in favour of the crude carbolic acid, patented by McDougall, of Manchester, has been given, and it would seem that both for efficiency and cheapness this substance is the best yet proposed. It was well spoken of by Dr. Roscoe, at the meeting of the Bristol Association at Manchester, and it has been tried with success at Glasgow and Exeter. At the latter place the average amount of carbolic acid used was one gallon per diem, at a cost of eleven pence. It was mixed with a small quantity of lime, and so effectually retarded decomposition of sewage as not only to do away with smell, but to considerably increase the value of the sewage, as a manure, by completely retaining all the nitrogen.

At present it would be difficult to express a decided opinion, but it seems possible that a solution has now been found of the difficult problem of utilizing sewage matter.

It is probable that the carbolic acid will supersede all other deodorizers for this purpose.

In the report on barracks already quoted, there is a section on barrack drainage and latrines. The commissioners advise that whenever practicable the sewage should be used for irrigation, and fix five hundred yards as the nearest point to the barracks where the irrigation should take place. They give a drawing of a tank proper for this purpose.

When neither sewers nor the tank above referred to can be used, the commissioners recommend the employment of either Macfarlane's or Jennings' water latrines. In all these cases charcoal air-filters and the carbolic acid should be constantly used, and the greatest attention is necessary for the complete flushing of the latrines, which should not be done merely night and morning, but in the middle of the day also. At the Glasgow barracks, Macfarlane's latrines are used, and the sewage is carted away daily.

The Commissioners describe and figure an urinal, to be used in barracks. They found it difficult to devise one for this purpose, and no kind of urinals used in clubs or offices seemed adapted for the purpose. They therefore contrived one which is figured at page 95 of their report. It consists of a round enamelled iron basin, 1½ feet in diameter, elevated about two feet from the ground, and fed constantly with water by a pipe entering at the bottom; the water rises to a certain level and then flows through a pipe which leads to an outlet pipe. The urine is thus immediately mixed with water, is diluted, and can be carried off as rapidly as necessary. The supply of water is regulated by a stopcock, and the amount usually required is set down at twenty gallons per urinal, supposing it to be used only during the night. The urinal is easily cleansed; it is boxed off in a triangular closet at the corner of the room, if no other convenient place be found for it, and is only used at night. It has been successfully used for two years at the Wellington barracks, and is evidently an immense improvement over the old tub.

If from any cause the old tub urinal must be used and cannot be placed outside the room, carbolic acid should be mixed with the water in the tub every night before the tub is used.

### III.—Individual Hygienic Conditions.

*Bathing.*—M. Dunal* describes the arrangement made at Marseilles in 1858, for *douching* the men of the 33rd of the line. A wooden barrack was erected at a small cost, into which a water tube was led and connected with a spout. A certain number of the men were marched up, took off their clothes in an outer room, passed under the douch, and then redressed—the effects were most satisfactory; the men enjoyed it; they became much cleaner, and their health improved. It was continued only in the summer months, but M. Dunal believes it would be a good thing to continue it through the winter.

The plan seems at the same time cheap, economical, and effective; and, though not so good as a large plunge-bath, might be used at many stations where this could not be obtained. A great number of men could also obtain a shower-bath in this way in a very short time.

M. Michel Levy discribes† the effect produced on the men at Dieppe, who assist in the bathing. These men, 24 in number, are employed during the whole of the bathing season (June—October), and remain more or less immersed in the water for about eight hours daily during the busiest season. The effects produced are referable to the pressure of the water, its movements, and its temperature, which is always 25°, to 30°, or even 35° Fah. lower than that of the body. The men employed have all sound lungs and heart: if any man tries the work who is not perfectly healthy in this respect he cannot continue it; and men of rather feeble circulation are soon obliged to give it up. No drunkard can follow it; and if men already accustomed to the occupation take to drinking, they are very soon compelled to give up their work. But the use of wine in moderation "is a necessity"; "but excess kills; and it is especially the use of brandy, which becomes speedily most hurtful."

The effects produced are at the commencement of the bathing season, if the water reaches to the waist, dyspnea and a sort of anxiety which often obliges the men to leave the water for a time. This sensation gradually leaves them, and only a little oppression at the epigastrium is felt. This, after a little more time, also disappears. These results are probably caused by the pressure on the abdominal walls, somewhat hindering the play of the diaphragm and lower ribs.

If the water reaches only to the knees, the effects produced are those of refrigeration. No sensation of cold is felt in the water, except on very cold days, but on leaving it, a chilly feeling is usual. Thermometric observations prove that there is a decided decrease of bodily temperature which amounted to from 2° to as much as 7° of Fahr.

During the night, all these bathing men are accustomed to have great action of the skin, and this appeared to be one of the most constant effects produced by the reaction after the refrigeration. The sweating lasts the whole night, and is so great as often to oblige them to change their linen. They all consider it healthy, and are accustomed to say—"C'est ce qui nous sauve." Sleep is always very profound.

The secretion of urine is notably augmented while the men are in the water: "it is a veritable diuresis." It is probably produced by the check to cutaneous evaporation

These are the only physiological results. The pathological effects are not many. There are no symptoms of cerebral congestion ever produced even by prolonged immersion; neither sight or hearing are affected. There are no cutaneous symptoms. Odema of the feet is common; and the men attribute this not to the water, but to the prolonged standing; it disappears at night.

Slight rheumatic muscular pains are common among these men, but severe rheumatism seems uncommon. M. Gaudet, the practitioner at Dieppe, has been consulted only twice in 18 years by the bathing men; one of these cases was sciatica; the other, gouty deposits which the man had before he came to Dieppe.

The men appear long lived, and during 18 years only one-third of them have left and had their places taken by others.

* *Recueil de Mém. Mil.* 1861, Mai. P. 380.
† *Annales d'Hygiène.* 1861. P. 451.



### IV.—Military Medical Investigations and Diseases of Soldiers.

*Recruiting.*—M. Sistach‡ has given some important statistics on the number of conscripts rejected for infirmities and for default in stature and figure (taille) in France from 1850—58 inclusive.

*Exemption from Infirmities.*

The total numbers are:—

| Years. | Number of young men composing the class. | Number examined by the Councils of Revision. | Number of exemptions from infirmities. | Proportion of exempt per 1000 examined. |
|---|---|---|---|---|
| 1850 | 305,741 | 164,405 | 48,433 | 294·6 |
| 1851 | 311,218 | 161,077 | 46,838 | 291·4 |
| 1852 | 295,762 | 159,539 | 45,944 | 287·6 |
| 1853 | 301,295 | 255,749 | 62,376 | 247·8 |
| 1854 | 306,602 | 261,121 | 62,564 | 239·5 |
| 1855 | 317,855 | 268,639 | 65,417 | 244·1 |
| 1856 | 310,289 | 211,620 | 60,673 | 286·7 |
| 1857 | 294,761 | 210,919 | 58,514 | 278·6 |
| 1858 | 305,339 | 267,333 | 63,829 | 238·8 |
| Total .. | 2,748,893 | 1,959,302 | 514,588 | |
| Means .. | 305,432 | 217,700 | 57,176 | 267·6 |

The number of exemptions from this cause were therefore much fewer in the year preceding and in the two years of the Crimean war, and in the period preceding the Italian war. It is certainly remarkable how much fewer the rejections were in 1853 and 1858, both years of peace, though war was looming in the one case and had been decided on in the other. The causes of the exemption are best seen in the following table, in which the proportion per 1,000 of rejected men is given.

*Causes of Exemption in 1000 Men drawn for Conscription.—Arranged in order of frequency, beginning with the least frequent.*

| Disease. | Proportion per 1000. | Disease. | Proportion per 1000. |
|---|---|---|---|
| Aphonia.. .. .. .. | 0·32 | Defect in conformation of urinary organs .. .. .. | 3·34 |
| Lepra and Elephantiasis .. | 0·46 | Diseases of the skin .. .. | 3·40 |
| Loss of sight by injury .. | 0·49 | Loss of use of arms, congenital or by disease.. .. .. | 3·43 |
| Ozena .. .. .. .. | 0·54 | Affections of urinary apparatus (other than fault of conformation) .. .. .. .. | 3·61 |
| Convulsions, St. Vitus' Dance, &c. | 0·70 | Deaf-mutism .. .. .. | 3·77 |
| Loss of sight, congenital or by disease .. .. .. | 1·10 | Tumours and engorgement of abdominal organs .. .. | 4·51 |
| Hare-lip, Fissure of palate .. | 1·29 | Loss of use of legs, congenital or by disease.. .. .. | 4·89 |
| Disease of the nose and nasal fossæ.. .. .. .. | 1·38 | Epilepsy .. .. .. | 5·20 |
| Insanity (monomania, mania, dementia) .. .. .. | 1·73 | Deafness from injury or disease | 5·85 |
| Paralysis of one or more limbs | 1·99 | Herpes (Dartre) .. .. | 6·29 |
| Diseases of the auditory apparatus .. .. .. .. | 2·18 | Diseases of respiratory organs (other than those given above) | 7·11 |
| Phthisis.. .. .. .. | 2·64 | | |
| Diseases of lips and mouth, other than hare-lip .. .. | 3·15 | | |
| Strabismus .. .. .. | 3·24 | | |

‡ *Recueil de Mem. Mil.* 1861, Nov. P. 353. In the July number of the same journal is a short paper on the recruits of the Department of the Seine in 1859—60. Particular attention is directed to the considerable number of exemptions from myopia.

*Causes of Exemption—continued.*

| Disease. | Proportion per 1000. | Disease. | Proportion per 1000. |
|---|---|---|---|
| Organic diseases of heart or great vessels | 7·39 | Mutilation of finger and of other organs | 23·85 |
| Loss of use of legs, from injury or accident | 7·83 | Diseases of eyes and annexes which do not entail loss of function | 25·78 |
| Tinea (Teigne) | 8·26 | Loss of teeth | 28·11 |
| Loss of use of arms, from injury or accident | 8·33 | Curvature of spine, gibbosity | 30·00 |
| Baldness (Alopecia) | 10·33 | Scrofula | 36·10 |
| Myopia | 11·16 | Varicocele | 36·23 |
| Stammering | 11·26 | Varices | 36·27 |
| Cretinism, imbecility, idiotism | 13·44 | Club feet, and other incurvations of limbs | 45·33 |
| Flat feet | 13·89 | Hernia | 60·99 |
| Hydrocele and disease of testicles | 16·61 | Various infirmities not included in above | 87·45 |
| Loss of one eye, or sight of one eye | 17·01 | Feebleness of constitution (Faiblesse de constitution) | 348·28 |
| Witherings and contractions | 21·07 | | |
| Goître | 23·51 | TOTAL | 1000 |

It is rather curious with what care various curious diseases have been diagnosed, and yet what a number of rejected are included under the vague terms "various infirmities" and "feebleness of constitution."

A modification of this table, given at a subsequent part of this paper may be useful.

*Causes of Exemptions in* 1000 *Conscripts, generally stated.*

| | |
|---|---|
| Affections of organs of smell | 1·22 |
| " " voice | 11·58 |
| " " hearing | 11·80 |
| " " chest | 17·14 |
| " nervous system | 23·06 |
| " cutaneous | 28·74 |
| " mastication | 32·55 |
| " organs of sight | 58·78 |
| " the regions of the neck | 59·61 |
| " genito-urinary organs | 59·79 |
| " abdominal organs | 65·50 |
| " osseous system | 75·33 |
| Diverse infirmities not included in above | 87·45 |
| Infirmities of the extremities | 119·26 |
| Feebleness of the constitution | 348·28 |
| | 1000·00 |

The kind of recruits furnished by the several departments is carefully inquired into, and the results are illustrated by a shaded mass. But this can be referred to by those who desire to inquire into this point.

All the preceding tables refer to exemption from infirmities; but a certain number were rejected for want of stature and faults in figure. The following table shows this:—



*Exemptions from default in Stature or in Figure.*

| Years. | Number of Men examined by Councils of Revision. | Number rejected for default of stature, &c. | Proportion per 1000. |
|---|---|---|---|
| 1850 | 164,405 | 10,256 | 62·3 |
| 1851 | 161,077 | 9,699 | 59·6 |
| 1852 | 159,939 | 9,889 | 61·8 |
| 1853 | 255,749 | 15,329 | 56·0 |
| 1854 | 261,121 | 17,951 | 68·7 |
| 1855 | 268,039 | 18,466 | 68·8 |
| 1856 | 211,620 | 13 332 | 63·0 |
| 1857 | 210,619 | 13,393 | 63·8 |
| 1858 | 267,333 | 16,491 | 61·7 |
| Total | 1,959,302 | 124,806 | |
| Means | 217,700 | 13,867 | 62·8 |

The wars of the Crimea and of Italy exercised no appreciable effect on the exemptions from this cause.

The exemptions from this cause are very unequally divided among the several departments; a tolerably full account is given of this point, and, like the former series, it is illustrated by a shaded chart. It is concluded that the variations in height in different parts of France are due to race and not to variations in alimentation or kind of life; "the exemptions are twice greater in the celtic zone than in the Kimrik zone (la zone Kimrique), and the proportion is intermediate in the Kimro-celtic zone," (p. 389).

DISEASES IN SOLDIERS.

*Acute Tuberculosis.*—M. Colin (Professeur agrégé au Val-de-Grâce*) records five cases of acute tuberculosis in the soldiers of the garrison of Paris. There is nothing novel in the description of the rapid febrile symptoms or of post-mortem appearances, but it would appear that this fatal disease is unusually common among the soldiers in Paris. It is well known that chronic phthisis is very common, probably more so than even in our own army, but acute tuberculosis has usually been considered to be a comparatively rare disease. Unfortunately the exact frequency of the disease is not given by M. Colin, nor does he give any insight into its causes.

*Sporadic Acrodynia.*—In 1827 and 1828 an outbreak of acrodynia occurred in Paris, and was so prevalent among the soldiers, that in the barracks of Lourcine 500 men were affected out of 700; and in that of Courtille 200 men out of 500. From 1829 to 1859 no case had been recorded in the barracks or military hospitals.

M. Barudel,† in 1859, observed three sporadic cases in the military prison at Lyons. He gives a full description of the symptoms which agree with those attending the epidemic of 1828, and recorded by Chomel; the first symptoms were formication of the extremities, excessive muscular pains, and frequently very painful movements, jerking, and spasms of the arms, forearms, and thighs; then ensued swelling and redness of the mucous membranes of the nose, pharynx, and bronchi, and sometimes of the conjunctiva; there was loss of appetite and diarrhœa, without vomiting; afterwards œdema of the hands, feet, and face, and erythema of the hands and feet, with erythematous patches on the neck, the abdomen, and the bend of the joints came on. The febrile symptoms were marked, and copious sweats ensued towards the height and end of the disease. The acute symptoms lasted about a fortnight and were succeeded by a long convalescence, marked especially by an extraordinary muscular weakness. No case died.

M. Barudel attributes this disease to the excessive labour imposed on the prisoners, who were engaged in drawing of silk. He denies that the food had

* *Recueil de Memoires Milit.* Mars, 1861. P. 177.
† *Recueil de Memoires Milit.* Mai, 1861. P. 367.

anything to do with it; he found the bread, the meat, the vegetables, the salt, and the drinks all good. He doubts its relation to ergotism. The intimate nature of the disease is, he believes, dependant "on irritation of the chord transmitted to the nerves;" but he thinks this irritation depends neither on "myelitis, or acute softening or meningitis," and which irritation has for its consequences profound alterations in sensibility, motility, and nutrition of the extremities.

In the treatment purgatives, chloroform frictions, pulvis antimonialis, and Dover's powder were used. Warm baths were very useful.

It is to be regretted that a more thorough investigation of causes was not instituted by M. Barudel. The disease had a more specific course than any affection produced by simple fatigue would have had; and in spite of the negative results of the examination of the quality of food, we are inclined to think that the cause lay there, and probably in ergotism of the wheat flour.

*Ecthyma.*—M. Dauvé (Médicin aide-major de 1re Classe) calls attention* to the frequent occurrence of ecthyma among French soldiers, and especially in the cavalry. He found it to be most frequent in men of lymphatic constitution; in men of sanguine temperament boils were more frequently produced. The exciting causes were the irritation produced by riding, and by friction of the boots and trowsers with leather seats and leg pieces. The abdominal walls low down, the nates and the lower extremites were the seats of the disease. A scorbutic taint and syphilis were occasional predisposing causes.

*Acute Goitre.*—A curious outbreak of acute goitre occurred in 1860 in the garrison of Briançon (Hautes Alpes), and has been recorded by M. Collin.†

During the year the mean strength of the garrison was 48 officers and 954 men; and from this force 53 cases of acute goitre, (51 soldiers, 2 enfans de troupe) were admitted in the year and in the three following months of 1861.

One case occurred in as short a time as eight days after arrival at Briançon, and one after 16 months' stay there, but the majority (39) occurred after from eight to eleven months sojourn.

The rapidity of growth of the thyroid gland was remarkable; in some very predisposed subjects eight days sufficed to show a large increase; the form of the tumour was most frequently the bilateral.

The causes of this outbreak are examined with some care.

The young soldiers and the novices were apparently most affected; but as the ages of all the regiment are not given, it is impossible to calculate out this point properly. Grade did not affect it, but it is remarkable that no officer was attacked.

The sanguino-lymphatic temperaments and robust constitutions were rather most attacked. No special anterior morbid state could in any case be detected; there was no obvious hereditary tendency, and yet several of the men came from departments where goitre is more or less prevalent. The men who came from maritime places, and who were placed at Briançon under quite unusual conditions (4,285 feet above sea—mountainous) suffered most; the Bretons, who were not numerous in the regiment, furnished seven cases; but the exact number of the Bretons in the corps is not given.

The hygienic conditions of Briançon are good, except that the mountains to the east and south-east obstruct the early sun's rays, and there are great variations of temperature.

Singularly enough, this writer says not one word of the composition of the water, and does not appear to be acquainted with the now numerous researches which seem to trace unequivocally the production of goitre to water highly charged with lime and magnesian salts. The position of Briançon renders it highly probable that was the case there, and that the simplest hygienic means would suffice to get rid of the disease. But instead of looking to this well-known cause, M. Collin decides, at last, that the acute goitre was owing simply to elevation and diminished atmospheric pressure, and to the exertion made by the soldier, loaded with his accoutrements, in ascending the very steep and difficult road. He has thus completely missed the clue, and can only recommended as a precautionary measure that the garrison shall be annually changed.

* *Recueil de Mémoires de Med. et de Chir. Militaires.* Mars, 1861. P. 192.
† *Recueil de Mem. Mil.* July, 1861. P. 1.



The treatment was as usual; but in addition the use of iodide of potassium in the salt was recommended as a prophylactric.

### Spread and Prevention of the Specific Diseases.

*Typhus exanthematicus.*—The most important event under this heading which has occurred during the year, is undoubtedly the introduction of typhus into Liverpool by the Egyptian vessel "Scheah Gehald."

The facts of this very simple case have been rather curiously confused, but we believe the following account which has been derived not only from a study of the published letters and papers, but also from personal communication with Mr. Pemberton, house surgeon of the Southern Hospital at Liverpool, and who was himself attacked with the disease, may be relied on.

A number of men were shipped on board the "Scheah Gehald," at Alexandria, in order to be taken to Liverpool to navigate back a man of war ("Voyageur de la Mer") then in that port. Many of the men were landsmen; they were extremely crowded on board; the weather was bad; the hatches were battened down, and the filth between decks soon became intolerable. Several deaths occurred on the passage,* and on arrival in Liverpool thirty-two men were sent to the Southern Hospital. They arrived there without an interpreter, and necessarily for some time a correct investigation of their diseases was impossible. Two died soon after admission, and their disease was returned as dysentery. But Mr. Pemberton, on whom the duty of receiving and treating the patients at first fell, was convinced that he had some kind of fever before him. Although perfectly well acquainted with typhoid fever, so complete has been the eradication of typhus from Liverpool, that Mr. Pemberton had never seen a case. He called the disease of the Egyptians "febris," however, and in writing to a friend expressed his belief that it was a "gaol fever." The heat of skin, the sordes of the teeth, and the marked symptoms of stupor in some cases, and furious delirium in others, led him to this conclusion, though he could not see the eruption on the dusky skins of the Egyptians. It is important to remember that Mr. Pemberton made this diagnosis at once, and before fever had been communicated to any residents in the hospital.

How many of the 32 Egyptians had this fever it is impossible now to ascertain, but five had marked, and several others had slighter, symptoms. Many of the patients (both it is believed the typhus and others) had dysentery. Several of the men were frost-bitten.

Indubitable typhus, with a well marked rash, was communicated by these men to Mr. Pemberton (who had a well marked rash), to another medical officer, and to two nurses, a porter, and some patients. The chaplain also, who slept out of the hospital, but visited the sick men, was attacked, and died in twelve days. In all, nineteen persons contracted it in the Southern Hospital; three on board the ship after she came to Liverpool, and three at the Liverpool baths. Six died of these twenty-five persons. No single link of evidence is wanting here to show that typhus prevailed on board the ship; and that typhus patients, admitted from the ship into hospital, communicated the disease to a number of other persons. The idea that the Egyptians suffered only from dysentery, and that in some remarkable way a specific disease like typhus arose out of this dysentery, does not appear to have the slightest foundation. To urge such an hypothesis in the face of the simple facts above noted, is to ignore all evidence, and to render the progress of medical science impossible.

Cases of typhus were not only communicated to residents in the hospital, but to persons who boarded the ship, and to three attendants at the public baths, to which more than 200 of the crew were sent. Some of these men were sick, though they were not known to have typhus. They carried typhus however in some way, perhaps in their clothes, and communicated it to the attendants.

Much excitement was created in Liverpool, and it was supposed, even by professional men, that the virulence of the contagion was unusual. But those

* The Captain denied the existence of the fever and the deaths, but his statements are quite untrustworthy.

who fancied this can have known little of typhus exanthematicus. It does not appear to have been one atom more contagious at Liverpool than it has always been.

A good illustration is given by this outbreak of the effect of even moderate ventilation in destroying the specific virus of typhus. The disease in Liverpool soon died away. The active sanitary officers as completely kept the disease at bay, as if they had stopped the "Scheah Gehald" from entering the port. Still, in our proper zeal for sanitary measures, and in our justifiable reliance upon them, we ought to remember that judicious medical investigation and control of the ship on first arrival would have kept the specific poison out of Liverpool, and would have saved the lives of the Englishmen, happily few in number, who were destroyed by it.

The crew (350) of the "Scheah Gehald" were sent to Alexandria on board the "Voyageur de la Mer." The people of Liverpool were probably so glad to get rid of them, that they did not take the trouble to see that the typhus fever had been eradicated, and several of the men were sent at once from the Southern Hospital.

The "Voyageur de la Mer" lost some men on the passage, and landed several at Falmouth, and some with unequivocal typhus at Malta. Of thirteen Englishmen who were in her, six took the disease. A very competent observer, Dr. St. John Edwards, of Malta, diagnosed the affection at once in the Europeans. He appears to have hesitated to affirm that the sick Egyptians who were landed with some sort of fever, were also suffering from typhus, but the account he gives leaves no doubt that such was the case. Both Wunderlich and Griesinger have shown, by thermometric observations, the frequency of the rapid termination alluded to by Mr. Edwards, and have pointed out how remarkably the thermometric curve of typhus contrasts in this respect with that of typhoid fever.

The case of this Egyptian vessel afforded almost the best opportunity seen in this generation for the investigation of the important question of the spontaneous generation of typhus. The opportunity was however lost. That all the circumstances which have been supposed to be capable of calling into existence the specific poison of typhus, were present in this foul and filthy ship, as has been so well pointed out by Dr. Milroy (*Psychological Journal*, Oct., 1861,) is clear. But every one who reads all the published statements will at once perceive that one link of the chain of evidence is wanting, and that it has not been proved* that some of the crew were not ill with typhus when they embarked at Alexandria, or became ill within the incubative period. It can never now be ascertained whether there were such cases or not, and the history of the outbreak at Liverpool affords another instance of the loss of a great opportunity for definitely setting at rest a most important question. The case of the "Scheah Gehald" now assumes exactly the same aspect as so many former instances; there is a *probability*, but there is no *proof*, that typhus fever arose *de novo*.

*Typhoid Fever.*—A series of papers has been commenced by Dr. William Budd (*British Medical Journal*, Nov., Dec.), giving further arguments in favour of the view that sewage air is not *per se* productive of typhoid fever, but that the specific cause of the fever must in some way be introduced in the first instance.

Dr. Budd's conclusions are—

1st. That intestinal or typhiod fever is an essentially contagious disease.

2nd. That the largest and most virulent part of the contagious principle is contained in the discharges from the diseased intestines of the fever patient.

3rd. That the cloacæ which fill the office of sewer, and which are *universally acknowledged to be the principal agents in the propagation of the disease*, owe

* Dr. Milroy indeed says (*The Med. Critic and Psychological Journal*, October, 1861, p. 555) that "there was no disease whatever among the men when they left Alexandria, nor, I believe, for some time after sailing from Malta." But Mr. Pemberton informs me that the interpreter told him some of the men were sick when they came on board. The exact dates of sickness ought to be known.



this faculty solely to their being, in the ordinary course of events, recipient of these discharges.

Dr. Budd objects, and with great reason, to the use of the term "Pythogenic," which commits us to an hypothesis, which is as yet highly doubtful. We had much better retain the terms typhoid or intestinal.

These conclusions are illustrated with much force and precision. We can only here remark that whatever view be taken (whether the specific poison increases only in the body or in the sewage-air), the grand fact is clear that the occurrence of typhoid fever points unequivocally to defective removal of excreta, and that it is a disease altogether and easily preventible. Typhoid fever ought soon to disappear from every return of disease.

*Relapsing Fever.*—Under the title of *Typhus in the North-West Provinces of India*, a very interesting paper, by Dr. William Walker, appeared in the *Edinburgh Medical Journal* (May, 1861, p. 986). The symptoms which are excellently described, and the post-mortem appearances, appear to us however, to prove the disease to have been relapsing fever, and not true typhus exanthamaticus.

After describing the symptoms, which included very early and great muscular prostration, intense pains in the back and limbs, vomiting and tenderness at the epigastrium, without much affection of the nervous centres for three or four days, Dr. Walker continues:—

"With the few exceptions of men who died within forty-eight hours after their admission into hospital, the crisis of the disease occurred on the 5th, 7th, or 9th day. At those periods either the patient's system was overpowered by the disease, and he died comatose, or the fever left him and he became convalescent. Usually there was no marked crisis; sometimes an increased flow of urine; less frequently a profuse perspiration, but very often an increased discharge from the bowels. Neither the patient nor his attendants could tell exactly at what time the fever left him; within a couple of hours the skin became soft and slightly moist; his pulse lowered and became soft; his tongue and mouth moistened; he complained less of thirst and dryness of the throat; his countenance, in a few hours, became quite altered. . . He lay on his back equally helpless as before, but beyond weakness and a feeling of being bruised all over, he declared himself well."

Sometimes the case went on well, but "in a large number of cases, after the 3rd or 4th day of convalescence, a change occurred. This arose sometimes, no doubt, from indiscretion on the part of the patient, but more frequently from the imperfect elimination of the morbific matter from the system. All the former symptoms returned with increased violence."

Dysentery often supervened. Swellings of the parobid glands were common at the crisis. No rash was seen, but its non-existence is not decided. Quinine was hurtful. The intestines were examined in twenty cases, and in none were Peyers patches affected. The disease was apparently contagious and spread over a large tract of country from Saugor, in Central India, to Mirzapore, Ghazeepor, Benares, and subsequently in the North-West.

This able account, and the evidence previously given by Dr. Lyell of relapsing fever in the Valley of Peshawur, clearly show that relapsing as well as typhoid fever is seen in India. But it still appears doubtful whether true typhus exanthematicus is seen.

*Cholera.*—The only important work on Cholera which was published in 1860, is a short treatise by Professor Pettenkofer,* which is intended to be a reply to some statements of Professor Drasche, on the condition of the soil in Krain in Austria. It will be remembered that Pettenkofer asserted, in 1855, that the spread of cholera was dependent on the cholera evacuations which on finding their way into a loose and moist soil, there decompose and give off emanations which produce the disease. Drasche asserted that in Krain, where the cholera has prevailed very severely, these conditions of ground are not given, and that cholera appeared in houses built on the most compact and impenetrable rocks. A careful examination, however, has shown that Drasche is incorrect, and that in Krain, as elsewhere, a loose, moist soil, capable of absorbing moisture in large amount exists wherever cholera has prevailed.

* *Die Cholera und die Bodenbeschaffenheit.* München: 1861.

Pettenkofer also communicates the history of an outbreak of cholera in 1849, among the railway labourers at Sommering. This case had also been cited as an instance against his view, but it turns out to be a strong case for it. But the details are too long to be given here.

Without believing that these views of Pettenkofer, which are similar to those held in this country by Dr. William Budd, will explain all the phenomena of the spread of cholera, we cannot but admit that they are of extraordinary importance, as they must be in part true, and if so, lead at once to sanitary rules of the greatest moment. The closest attention to the bestowal of the stools of cholera, as of typhoid fever, must be now admitted to be an imperative duty.

For some good evidence on the spread of cholera, a work published in the latter part of 1860 may be consulted (Die Cholera epidemie des Jahres, 1859, im Mecklenburg-Schwerin, von D. Ackermann, 1860).

Neither Pettenkofer or Ackermann attempt to investigate the really mysterious point in the spread of cholera, viz., its occasional power of spreading over large districts of country, and even over half the world, and the mode in which an epidemic in a town or part of a town has a sort of definite course; commencing with scattered straggling cases, then suddenly increasing, culminating to an acme, and as suddenly and often regularly declining. Something more occurs here than a mere transport of the poison in cholera dejections.

## VI.—Chief Statistical Inquiries relating to Health.

The proceedings of the International Statistical Congress held in London in 1860, were published in 1861.* The Sanitary sections were engaged especially in defining terms and settling the mode of investigation of sanitary problems. Miss Nightingale's plan for uniform hospital statistics was adopted with slight modifications, and Dr. Sutherland's proposals for an uniform scheme of sanitary statistics, and Dr. Farr's propositions for general sanitary statistics were also recommended to be used. Miss Nightingale's excellent plan is too long to be inserted, but Dr. Sutherland's proposal and Dr. Farr's propositions may be inserted, as they will not be so easily accessible, and as they should be employed in all investigations of the kind.

### *Dr. Sutherland's Proposals for an Uniform Scheme of Sanitary Statistics, as amended by the Section of the Congress.*

1. Statistics of mortality, sickness, and causes of mortality arranged according to age, sex, class, and occupation, to include not only entire towns but districts of towns, such as wards, arrondissements, and also streets, blocks of houses, cul-de-sacs, courts, and the like.
2. The same as regards local charitable institutions, hospitals, poor-houses, schools, common lodging-houses, and the like.
3. The local climate to be tabulated with certified meteorological instruments.
4. The geological formation, soil, and facility, or otherwise, of drainage.
5. The area covered by connected houses, whether comprehended or not, within the limits of the administrative or civic authorities.
6. The length of a line enclosing this area.
7. The amount of space occupied by buildings, and the vacant area, such as squares, streets, places, and the like.
8. The length of streets.
   - *a.* Drained.
   - *b.* Undrained.
   - *c.* Paved.
   - *d.* Unpaved.

9. The breadth of streets, with the general height of the houses to the top of the roof.

* Report of the Proceedings of the Fourth Session of the International Statistical Congress, held in London, July, 1860, London, 1861.



10. Number of houses.
    - " " flats or storys, per house.
    - " " rooms, per house.
    - " " sleeping rooms, with cubical contents of each.
    - " " families and inmates.

11. Character of houses as to
    - *a.* Repair.
    - *b.* Cleanliness.
    - *c.* Ventilation and light.
    - *d.* Healthiness.
    - *e.* Water Supply.
    - *f.* Underground apartments used as dwellings, with the number of inhabitants in each.
    - *g.* Number of houses drained into a sewer
      " " having water-closets.
      " " cesspools.
    - *h.* Number of windows opening to front and rear of the house.
    - *i.* The cubic contents of school-room: the greatest number of scholars; and the means of warming and ventilation.

12. Supply of water to the population and its source from
    - *a.* Rivers.
    - *b.* Lake.
    - *c.* Shallow wells.
    - *d.* Springs.
    - *e.* Waterworks.
    - *f.* Tanks for rain water.

13. Annual proportionate consumption in the town of
    - *a.* Food.
    - *b.* Drinks, with their kinds.

14. Classification of trades.

*First Division.*—Trades and occupations, as to their effects on the individuals themselves.

1. Persons of rank or property, including manufacturing and trading capitalists.
2. Persons in learned professions and persons practising superior arts.
3. Persons actually engaged in defence of the country, specifying rank and particular occupation.
4. Persons engaged in the mercantile marine, or otherwise on the sea, rivers, or canals.
5. Individuals personally engaged in occupations, trades, businesses, and manufactures, or others not embraced in former sections.
   - *a.* Involving severe or moderate bodily exertion, or the reverse
   - *b.* Carried on in the open air, or in shops, warehouses, offices, or other confined places.
   - *c.* Involving exposure to vapours or miasmata of any kind, or to any kind of dust (including those usually deemed unhealthy from these causes).
   - *d.* Involving the maintenance of a constrained position, or any local pressure.
   - *e.* Involving an unusual amount of exposure to the weather, to heat or cold, or sudden alternations of heat or cold.

*Second Division.*—Trades and occupations as to their effect on the surrounding population.

1. Trades and occupations occasioning "nuisance, injury to health, or noise."
2. Trades occasioning neither of these.
3. Trades, the nuisance, injury, or noise of which can be removed or sufficiently diminished by suitable precautions.
4. Trades, the nuisance, injury to health, or noise from which cannot be sufficiently diminished by any precautions.

15. Interments, their cost, and costs of sickness.
16. Statistics of health, sickness, and mortality in the several orders of schools.

*a.* Results of whole and half-time teaching on the physical and intellectual energies of the young previous to mature developement.
*b.* Results of special gymnastic exercises—as boat-rowing, drilling, cricket, football, quoits, and such like.
*c.* Results of gymnastic exercises as practised by various classes in Sweden.
*d.* Topographical site and construction of school and class-rooms, their drainage, ventilation, and light, and also the cubic breathing space of the dormitories, in relation to the number of boys or girls sleeping therein.
*e.* The extent and character of the playgrounds and covered sheds for exercise in wet weather.

*Dr. Farr's Propositions for a Collection of Sanitary Facts.*

1. The sanitary condition of each nation, and of each circumscription, such as, district in England, arrondissement in France, should be distinctly exhibited. The rate of mortality per 1,000 over a series of years should be determined.

2. The mortality, the mean lifetime (vie moyenne), and the fatal diseases of each population should be determined for the whole people and for (*a*) the healthiest districts, (*b*) the unhealthiest districts, and (*c*) all the considerable cities.

3. At the census the numbers suffering from the principal infirmities, and from the diseases which disable people from following their ordinary occupations, should be ascertained. The numbers sick in hospital, their mortality, and the duration of their illness should be investigated; and wherever it is practicable the investigation should be extended to other classes of the population, and notably to the members of all friendly societies.

4. The statue, the weight, the strength, the working power and the intell gence of the people are indications of health which should be explored in groups of the population at each age when that is practicable.

5. Among the causes which are found to have the greatest effect on the health of the people are the air they breathe and its various impurities; their contiguity to each other; their food and drink; the action of their minds and muscular effort, or exercise and labour. In investigating the causes, the effects of varieties of habitation, density, proximity, elevation, latrines, income of the population, should be therefore especially investigated.

6. The occupations have a marked effect on the health of the people, and it is found that by easily-arranged modifications the trades most injurious to health can be made innocuous. The section therefore recommends a special inquiry in every state into the effect of the principal occupations of its people upon health. To secure uniformity, the forms of which examples are given as applied to the miners of England, are recommended for adoption, with such others as circumstances may suggest.

7. The section strongly urges on the congress the propriety of appointing health officers and adopting the most effectual measures to secure the publication of their periodical reports among the people of each locality, showing the state and progress of their sanitary condition.

8. They suggest that in every state, quarterly, and if possible monthly (calendar) returns should be published of the marriages, births, deaths, and prevailing epidemics of every district, as well as annual returns of the deaths and fatal diseases at each quinquennial period of life. The tables should in all cases be accompanied by popular and scientific reports.

9. In large cities, weekly tables such as those of London should be published.

10. In this manner the sanitary condition of each part of the population will become known, and the efficacious measures which can be applied in one country can be applied in all others, so the health of the human race will be improved, and each nation will get its full share of the benefit.

These propositions have been given at length, because they form a scheme which could be easily worked out by any medical officers, if quartered for two or three years in small towns and districts. Comparatively little trouble would enable answers to be given to many of these propositions and an immense amount of information, which could be obtained by no other means, would be easily brought together.



Officers quartered in isolated nations in India, or Australia, could find few occupations more interesting and none more important. In Canada, the Mediterranean, and the West Indies, the work would be still easier, as so much of the machinery already exists.

With respect to trades and occupations, the section appointed a committee, who drew up a scheme of classification as follows. It is to be stated—

1. Whether the trade or occupation involves severe or moderate bodily exertion, or the reverse.
2. Whether it is carried on in the open air, or in shops, warehouses, offices, or to her confined places.
3. Whether it involves exposure to vapours or miasmata of any kind, os to any kind of dust, including all those usually deemed unhealthy from these causes.
4. Whether it involves the maintenance of a constrained posture, or any local pressure.
5. Whether it involves an unusual amount of exposure to vicissitudes of the weather, to heat, or cold, sudden alternations of heat and cold.

In respect of trades, the distinction of master and employed to be recognized.

*Primary Classification of Occupations.*

1. Persons of rank and property, including manufacturing and trading capitalists.
2. Persons in learned professions, or persons practising superior arts.
3. Persons actually engaged in the defence of the country, specifying rank and particular occupation.
4. Persons engaged in the mercantile marine, or otherwise on the sea, rivers, or canals.
5. Individuals personally engaged in occupations, trades, manufactures or businesses, or other employments not embraced in former sections.
   *a.* Involving some bodily exercise.
   *b.* Involving moderate bodily exercise.
   *c.* Not involving bodily exercise.

In the *Journal of the Statistical Society* (Dec., 1860,) is a paper by Dr. Farr, which was read before the British Association, and which gives in a short space an account of the health of the British army in 1859, as compared with previous years. It gives an excellent view of the subject, but as all the facts have been already stated in Dr. Balfour's report of last year, it is unnecessary to give them.

## VII.—Campaigns.

*The American Civil War.*

At present no very accurate returns have been published of the sickness of the Federal Army, and nothing at all is known of the state of the Confederate forces.

The following short account of the Federal troops is compiled from the various articles in the *American Medical Times*, during 1861:—

On the whole, the health of the Federal Army appears to have been good. The only zymotic disease which has acquired any considerable proportion has been measles, which has prevailed in almost all the various armies, especially in the West, where at times some regiments of 900 or 1,000 strong had at once 200 sick. The mortality was not great, but it is stated to have given a disposition to fevers of a typhoid character (acute tuberculosis?).

Diarrhœa and digestive derangements from the altered diet were evidently the most common affections. In many of the camps complaints were made

both of the food and of its cooking. The soldiers had not the least idea of cooking, and many reports mention the urgent need of instruction in this respect.

In order to improve the food, Congress, in the summer of 1861, passed an act of which the two following are clauses:—

Section 13. And be it further enacted:

"That the army ration shall be increased as follows: viz., 22 ounces of bread or flour, or 1 lb. of hard bread; fresh beef shall be issued as often as the commanding officer of any detachment or regiment shall require it in place of salt meat; beans or rice or hominy shall be issued in the same ration in the proportion now provided by the regulations, and 1lb. of potatoes shall be issued at least three times a week, if practicable; and when these articles cannot be issued in these proportions, an equivalent in value shall be issued in some other proper food, and a ration of tea may be substituted for a ration of coffee."

Section 14. And be it further enacted:

"That there may be allowed in hospitals, to be provided under such rules as the Surgeon-General of the Army, with the approval of the Secretary of War, may prescribe such quantities of fresh or preserved fruits, milk, or butter, and of eggs, as may be necessary for the proper diet of the sick.

Shortly afterwards, Congress, by special act, prohibited the sale of ardent spirits to the troops.

During the summer and autumn, a commission in military surgery was formed, and presented to the New York Academy a report of sanitary recommendation; it is a clear sensible document, although it contains nothing whatever of novelty.

During the whole year the health of the army on the Potomac was good; the summer was cool with seasonable rain. Simple diarrhœa was the most prevalent disease; then came mild miasmatic fevers, and then colds, coughs, and mild rheumatism were in the third rank of frequency.

In October the men were somewhat exposed to rain; but as the tents were dry, and as dry, fresh straw and dry clothes were procurable, they did not suffer. In October, General McClellan authorized the construction of improved pavilion hospitals for 5,000 sick, with an allowance of 1,750 cubic feet of air per head, but the working of these hospitals is not yet known.

In December, a sanitary commission published a statistical account of the health of the army on the Potomac. The strength of 200 regiments, was, in November, 176,042 men; of these, 12,841, or 7·3 per cent., were in hospital. The diseases were trifling, as the average duration in hospital was only a little more than five days, and the mortality during the summer of the cases treated was only 3·5 per cent. The various regiments gave very different proportions of sick, as will be seen from the following table, in which the most healthy are placed first.

*Average constantly sick per* 1000 *of strength.*

| | |
|---|---|
| New Jersey | 36 |
| Indiana | 42 |
| Connecticut | 49 |
| Massachusetts | 52 |
| New York | 55 |
| Pennsylvania | 57 |
| Michigan | 76 |
| Wisconsin | 76 |
| Vermont | 88 |
| Maine | 124 |
| Illinois | 156 |
| Ohio | 192 |

The sanitary condition was good; the food was plentiful; the drainage and cleanliness of the camp were well attended to. The tents were well warmed, but were not well ventilated. They were generally floored.

In some of the other armies, however, the sickness appears to have been much greater. In the *American Medical Times* are monthly reports from



Fortress Monro, of which the following table gives some of the chief headings:—

| Month. | Total strength at end of month. | | Total admissions. | Deaths. |
|---|---|---|---|---|
| | Officers. | Men. | | |
| June | 511 | 9,387 | 4,218 | 23 (17 from wounds.) |
| July | 343 | 6,847 | 3,792 | 5 |
| August | 7,361 | | 2,847 | 7 |
| September | 6,532 | | 2,045 | 7 |
| October | 408 | 9,821 | 3,982 (?) | 22 |
| November | 498 | 12,213 | 3,724 | 38 |

The amount of sickness appears here to have been very great, while the mortality was low. Omitting the 17 deaths from wounds, there were 85 deaths in 6 months, in a force averaging each month 8,987 men, or less than 1 per cent. for the 6 months. There were however 20,608 cases of disease, so that a number equivalent to 2¼ times the monthly average strength went through hospital in the 6 months. Probably a record was kept of the very slightest cases, and of every dose of medicine administered.

The increase in the deaths in October and November was owing to the appearance of fever. In October, there were 8 deaths from typhoid and 3 from typhus. In November, there were 16 deaths from typhoid fever out of 73 cases, and the cases of typhus had risen from 3 in October to 23 in November. Evidently there was some danger of loss from the development of these fevers, if energetic sanitary precautions were not taken.

In the table of diseases, affections of the digestive organs (diarrhœa, dysentery) occupy the largest place; miasmatic fevers, of mild type, come second.

In all the armies, except that garrisoning fortress Monro, there appears to have been enough syphilis to have excited some attention, and police regulations were earnestly recommended.

Quinine, as a prophylactic against malarious fevers, was advised by the Sanitary Commission, and the orders issued by the Director-General of the Medical Department of the British Army, during the late war in China, were referred to.

# LETTER

TO

THE RIGHT HONOURABLE

## SPENCER HORATIO WALPOLE,

HER MAJESTY'S SECRETARY OF STATE FOR
THE HOME DEPARTMENT,

FROM

THE DIRECTORS

OF

THE SCOTTISH TEMPERANCE LEAGUE;

BEING

A REPLY TO THE STATEMENTS MADE TO
SIR GEORGE GREY, BART.,
BY THE DEPUTATION OF GLASGOW PUBLICANS.

---

GLASGOW:
SCOTTISH TEMPERANCE LEAGUE, 108 HOPE STREET.
EDINBURGH: W. OLIPHANT AND SON.

1858.

# LETTER

TO

THE RIGHT HONOURABLE

## SPENCER HORATIO WALPOLE,

HER MAJESTY'S SECRETARY OF STATE FOR THE HOME DEPARTMENT.

---

SCOTTISH TEMPERANCE LEAGUE,
OFFICE, 108 HOPE STREET,
GLASGOW, 19*th April*, 1858.

SIR,

WE, the Directors of the Scottish Temperance League, respectfully beg to be permitted to address to you some reply to a communication lately presented, on behalf of the Licensed Victuallers of Scotland, to your predecessor in office, Sir George Grey, relating to the present licensing law, and praying for a committee of inquiry into the working of the Act 16 and 17 Victoriæ, commonly known as the Forbes Mackenzie Act. This favour we request the more earnestly, that the publican interest intend to prosecute their claims with the present Government as energetically as they did with the last.

In the outset of that document, the Licensed Victuallers propose "to point out the hardships" to themselves, "and the many evils" to Scotland, which, they say, "that Act has created." With your leave, we propose now to show that their plea of "hardship" is preposterous, and that, instead of "many

evils," the Mackenzie Act has effected in Scotland an immensity of good.

The first evil which the Licensed Victuallers attribute to the new Act, is that of illicit selling. On this they say, "Before the above Act came into operation, little or no illicit selling was known in Scotland, but from that date there at once came into existence hundreds of illicit sellers in all large towns; and in illustration of this fact, the city of Glasgow contains, at the lowest estimate, upwards of 1600 shebeens, or houses where liquor can be had during any hour of the night, or of Sunday; and those parties who carry on this business are in no way subject to any surveillance by the police or others, consequently the law has great difficulty in reaching them, and they can only be caught by resorting to what is termed in Scotland the 'spy system' to secure a conviction." They then give statistics in reference to these cases, and extract from the *Glasgow Herald* of 9th February, 1857, a report of the case of "Bonnie Bell," to illustrate what they call "this new branch of business, brought into existence immediately upon the passing of Forbes Mackenzie's Act;" and, after some further account of this illicit trade, they again explicitly assert that "the present law has been the cause of its origin."

Deploring, as we do, the existence and many evils of illicit selling, and that progressive restriction must ever expect to encounter this tendency, we declare the above to be a gross and reckless exaggeration. For (1.)—The representations that illicit selling is a "new branch of business, brought into existence immediately upon the passing of Forbes Mackenzie's Act," that "the present law has been the cause of its origin," or even that, "before the above Act came into operation, little or no illicit selling was known in Scotland," are notoriously untrue. Dr. Cleland, as quoted by James Smart, Esq., superintendent of the Glasgow police, says, "that in the year ending the 5th July, 1816, 550 persons were prosecuted in Glasgow for selling without licences and for illicit distillation,



and the penalties awarded against them amounted to upwards of £8000." To come down to the recent years more immediately concerned, Mr. Smart, in his first Report, dated September, 1855, to the Lord Provost and Magistrates of Glasgow, on the working of the new Act, says, "An increase has taken place in the number of convictions under this class (unlicensed dealers in spirits); but the old law was defective, and very many of the parties fined under the new Act carried on business under the old Act for years with impunity—for instance, Currie, M'Cabe, Davies, Grange, and a number of other well-known unlicensed dealers." And in his second Report, 1856, Mr. Smart further says, "The increase of convictions against unlicensed parties, proves that the powers of the new Act are more effective than the old, and not that these dealers were not in existence before it became law. It is a notorious fact, that nearly every brothel in Glasgow, for twenty years back, has sold and still sells wines and spirits. It is also well known that oyster stores, low lodging houses, low eating houses, &c., sell liquor without reserve; and many of them have been convicted since the new law came into operation, who, under the old, were allowed to do so with impunity."

(2.) The statistics on the subject of illicit selling presented by the Licensed Victuallers, and the inferences they deduce therefrom, are grossly exaggerated. The most imposing of them are of a merely hap-hazard and conjectural character. The wholesale assertion that "the city of Glasgow contains, at the lowest estimate, upwards of 1600 shebeens," has, for some time, been publicly challenged by the Directors of the Abstainers' Union of Glasgow, who "offer to pay over to the Glasgow Royal Infirmary the sum of one hundred guineas, provided the Licensed Victuallers' Association will prove to the satisfaction of the authorities the above statement." Of the "club-houses," the Licensed Victuallers say, that "they have sprung up in all quarters of the city of Glasgow;" and yet, on the authority of Mr. Smart, in his Report of 1856, only

six convictions of that description during that year had been obtained. Deducting their conjectural statistics, little or nothing remains but what corresponds to, or is at all events authoritatively superseded by, the following official statistics in Mr. Smart's second Report of 1856:—"There has been an increase," says that highest authority, "in the number of these cases (unlicensed dealers)—the convictions being 164 against 126 last year; and the penalties imposed, £957 15s. against £911. It is worthy of remark, that twenty-two of these cases were directed against licensed victuallers, for selling liquor in their private houses; and six convictions have been obtained against the keepers of 'shebeen clubs'—a class of houses that open when the licensed houses shut, and are kept open generally till four or five o'clock in the morning, and during the whole of Sunday." From this it will be seen that the increase is by no means to the extent that the Licensed Victuallers affirm. It is also distinctly to be noted, that those very cases of which the publicans complain, are cases in which they themselves have been the convicted parties to the number of twenty-two, or nearly one-seventh of the whole. In further proof that the number of club-houses has been egregiously overstated by the Licensed Victuallers, we may add, that at a meeting of the Glasgow Police Committee, held on the 15th March, and presided over by the Lord Provost, Captain Smart, as reported in the *Daily Mail* of 16th March, declared, that after the new Public Houses Act came into operation, "he called the attention of the magistrates to the fact that there were fifty or sixty drinking clubs in Glasgow, and told them it was useless to go on with this Act, unless these could be put down;" and after stating the resolution of the magistrates to do so, and the means to be instituted for this end, Captain Smart adds—"The result is, that since the meeting of the magistrates, nearly every club has been brought before the sitting magistrate, and convictions obtained upon evidence of an actual sale having been made. These clubs are now reduced to one or two—very few, and these are shaky."



(3.) The actual increase, such as it is, in cases of illicit selling, is to be in great part accounted for by the stricter fidelity with which, since the new Act came into existence, the law has been enforced. That Act armed the authorities with new powers; and the moral influence of it, besides, led to a more faithful exercise even of the powers formerly possessed. Mr. Smart, in the extract above quoted from his first Report, Sept. 1855, declares, that "*very many* of the parties fined under the new Act carried on business under the old Act for years with impunity"—some of whom he then proceeds to name. In his second Report, 1856, Mr. Smart says of that class—"These houses have not had the attention bestowed on them that their importance demands, and, in fairness to the licensed dealer, no pains should be spared to suppress them. The magistrates would require to give special instructions in regard to them." From this it is to be expected, and on all accounts very much to be desired, that the ratio of such convictions should progressively increase, till the evil be as thoroughly as possible extirpated. It will, moreover, be apparent from the above facts, that the increased amount of fines for illicit selling, so often appealed to, is no proof of the increase of the illicit system, or even of a greatly increased number of convictions, but simply of the new powers and heavier fines provided for in the new Act, and of the greater fidelity with which it is enforced.

(4.) Had those illicit abuses been as formidable as we have proved them insignificant, they would have claimed, and as it is, *do* claim, to be very stringently met; but they could never, it is respectfully submitted, warrant the removal or relaxation of the wholesome restrictions already imposed on so dangerous a traffic—restrictions which have foreclosed tenfold more evils than the shebeens have created, and which the moral and Christian part of the community only long to see increased. Conceding the principle that increased restriction tends to increase illicit selling, the question still remains, Is the traffic in question morally and politically right? If it is not—and we believe it is not—this principle will not warrant a return to

former laxity in granting licences, or forbid increased stringency even to the extent of ultimate prohibition.

The next charge which the Licensed Victuallers bring against the Mackenzie Act, and which they call "a great evil amongst the working people of Scotland," is, that "they have no place of amusement on the Sabbath day," every house being then shut up, and that, "in consequence, they procure liquor, and consume the same at home in the presence of their families, and the immoral effect of which your memorialists will not dilate upon." To this we reply—(1.) The people of Scotland accept and prize the Sabbath, not as a day of "amusement," still less of bacchanalian revelry, but as a divinely consecrated season, to be spent in secular rest and spiritual duties. This they have all along testified by the most indubitable proofs. The Licensed Victuallers, on the contrary, have here, as a body, publicly committed themselves to the cause of Sabbath desecration. In the face of Scotland and the world, they declare for Sabbath "*amusement*," and, as embraced in this, for Sabbath-day drinking in public-houses. In this they are only consistent; for to overturn the Mackenzie Act would be to promote all this. But ninety-nine hundredths of the people of Scotland will regard it as a shockingly godless consistency, and as one of the most audacious insults ever offered to the profoundest religious convictions and most cherished traditions of their country.

(2.) Without taking time to show, that bad as home drinking is, public-house drinking is, in many obvious respects, worse, we invite attention to the virtual concession here made by the Licensed Victuallers, that drinking produces an "immoral effect." This, indeed, they affirm of home drinking only; but on what grounds? On no conceivable grounds but what imply that drinking itself is an evil. Were drinking not an evil, the influence of home drinking could not be immoral. But if it be an evil, and its influence, as indulged in at home, has, as the publicans truly say, an "immoral effect,"



then it is an evil also in the public-house, and its effect there, too, cannot fail to be immoral. Thus out of their own mouth they stand condemned.

(3.) The assertion that home drinking has increased since the passing of the Mackenzie Act is gratuitous, and, beyond all doubt, the reverse of the truth. It is gratuitous, for the Licensed Victuallers make no attempt to support it by proof. And it is, we venture to affirm, the reverse of the truth, for it is made in the face of facts that dictate a directly opposite conclusion. On Sunday, the 6th March, 1853, fully a year before the Mackenzie Act came into operation, it was found, as the result of careful and accurate observations, that, in the city of Edinburgh, 41,796 visits were made to public-houses on that day, and that of these no fewer than 7,663 were by children under 14 years of age. On Sunday, the 26th June, of the same year, similar observations were made at Leith, including the Newhaven and Parliamentary bounds, as the result of which it was ascertained that, on that Sabbath, out of a total of 17,818 visits to public-houses, no fewer than 3,170 were by boys and girls. Taking Edinburgh and Leith together, the result will be, that out of a grand total of 59,614 visits to public-houses in the course of a single Sabbath, 10,833 were by children under 14 years of age. These last were, of course, every one of them cases in which the drink purchased was to be consumed at home. But by virtue of the Forbes Mackenzie Act, which prohibits all Sunday traffic in intoxicating drinks, there no longer exists any scope for such cases, except in the comparatively few instances in which deliberate means are taken to violate the law. It may, indeed, be rejoined, that due provision will be made for home drinking on Sunday, by the timely purchase of liquor on the day or week before. But a variety of reasons concur to render this in the highest degree improbable; for the class concerned in these cases being the lowest, they have seldom the means, and still more rarely the inclination or the forethought, to lay in drink in any quantity beyond what is immediately to be consumed.

So much, in fact, is that class dependent on facilities obtruded on their immediate notice, and brought to their very doors, that (all experience being witness) the removal of these facilities directly removes, at one sweep, an immense proportion of the drink-consumption and the drunkenness they may have created. But after all reasonable abatement has been made for cases of week-day purchase of strong drink for Sunday use, there will still remain, in the immense number of 10,833 cases of home drinking on Sunday under the old law, margin enough for a difference of many thousands of those cases that must have necessarily disappeared under the operation of the new Act. Thus home drinking, instead of having increased under the operation and influence of the Mackenzie Act, has, by virtue of that very Act, been to an immense extent diminished.

The next allegation of the Licensed Victuallers is, that the Mackenzie Act has increased the consumpt of spirits in Scotland by an excess of nearly two million gallons in 1856 over 1855. No assertion could be more palpably opposed to fact. As soon as it became public, it was challenged and exposed. It was shown, from the new mode of entry in the Excise books since May, 1855, that the Licensed Victuallers had palmed off, as the consumpt of whisky in Scotland, the entire consumpt of Scotland and England together. This they and their abettors strenuously denied, and continued, without scruple, to vend the misrepresentations of the alleged increase in Scotland of two million gallons. The timely returns, however, which we owe to Mr. Dunlop, M.P. for Greenock, have established beyond all cavil a very different fact. These returns give the quantities of whisky and other spirits used in the three years, respectively, immediately preceding and immediately following the passing of the Mackenzie Act. Of these six years, from 1852 to 1857 inclusive, the first four exhibit the Scotch and English consumpts separately; but, owing to the Act of 1855 assimilating the rates of duty in the two countries, the last two years of the series present the Scotch and English consumpts in one common sum. By means of data furnished under the



first four years, we can easily determine, by the rule of proportion, the amount to be deducted for the consumpt in England; and this amount very considerably exceeds the two million gallons of alleged increase—thus accounting for the misrepresentation of the Publicans' Committee, and, instead of an increase, showing an actual decrease. According to these data, the total consumption of ardent spirits in Scotland, during the three years immediately preceding the enactment of the new law, was 21,503,715 gallons; whereas, during the three years that immediately followed that enactment it was only 19,344,457; thus presenting a total decrease, under the new law, of 2,159,253 gallons in three years, or nearly three-fourths of a million gallons as the average decrease for each year. Instead, then, of the alleged increase of two million gallons in Scotland, the authoritative returns of Mr. Dunlop exhibit a positive, and very considerable, decrease.

The Licensed Victuallers next charge the new Act with having caused an increase of drunkenness. On the authority of Dr. Strang, City Chamberlain of Glasgow, they declare the number of cases dealt with in the Police Office in 1857 to have exceeded those of 1856 by 1193; and this excess they ascribe to the influence of the new Act. But such a conclusion carries absurdity in its very front; for the new Act having been in operation in 1856, and a year and a-half before, as well as in 1857, the increase, to whatever extent established, must be due to some other cause. Any such conclusion, to hold good against the Mackenzie Act, must be grounded on a comparison of equal times before and after it came into operation. Dr. Strang's statistics (which, except the important item for 1857, seem to have been taken from Captain Smart's second Report of 1856), themselves furnish materials sufficient for such a comparison—presenting, as they do, the results of 1849 and 1853, which preceded the enactment of the new law, and those of 1856 and 1857, which were subsequent thereto. The comparison is as follows:—

*Cases of Drunkenness.*

| | | | |
|---|---|---|---|
| 1849, . . . . | 10,258 | 1856, . . . . | 6,625 |
| 1853, . . . . | 10,659 | 1857, . . . . | 7,818 |
| | 20,917 | | 14,443 |
| | 14,443 | | |

6,474 Decrease in 1856, 1857, as compared with 1849, 1853.

Even Dr. Strang's statistics, then, when fairly interrogated, show a decrease in the two years, under the new Act, as compared with the other two prior to it, of no fewer than 6,474. But that vamped up plea of increased drunkenness under the new Act, worthless and false as we have already proved it, stands completely exposed by the recent returns for Glasgow, ordered on the motion of Mr. Dunlop, M.P., and now before the public. These returns, which overbear all other statistics on the subject, and appear to supersede all necessity for the committee of inquiry demanded, show a prodigious decrease under the operation of the Mackenzie Act, when the three years immediately prior to its coming into operation are compared with the three years that immediately followed. The new Act, though it became law in August 15, 1853, came into full operation only at Whitsunday, 1854. The years compared, accordingly, are the three years before and the three years after the passing of the new Act;* so that no comparison could be more just and fair. The cases of drunkenness, then, in Glasgow, for each of these periods, (ending 31st December, 1857,) during which the population had increased from 329,000 to 391,000, are as follows:—

| *No. of Cases under Old Law.* | | *No. of Cases under New Law.* | |
|---|---|---|---|
| 1851, . . . . | 24,019 | 1855, . . . . | 16,256 |
| 1852, . . . . | 23,788 | 1856, . . . . | 17,446 |
| 1853, . . . . | 23,841 | 1857, . . . . | 20,043 |
| | 71,648 | | 53,755 |
| | 53,755 | | |

17,893 Decrease under new Act.

* The year 1854 is excluded, as the returns for it embrace five months under the old law and seven months under the new law.



The increase in 1857, however it is to be accounted for, cannot, as we have already seen, be charged to the new Act. If it is to be ascribed to the recent increase of shebeens, it may suffice to set off against this the growing zeal of the police in putting these down. This specific fact, however, in no way affects the general result, namely, that the foregoing average of the three years respectively, immediately before and after the Mackenzie Act came into operation, shows a decrease of cases of drunkenness to the prodigious extent of 17,893, or nearly 6,000 a year; and that, too, whilst the population had increased 62,000. Thus, during the first three years, under the old law, the number of cases was 33 per cent. greater than during the last three years, under the operation of the new law.

Again, taking the Sunday cases by themselves, the results are still more striking:—

| *No. of Sunday Cases under Old Law.* | *No. of Sunday Cases under New Law.* |
|---|---|
| 1,525 | 464 |
| 1,339 | 481 |
| 1,218 | 521 |
| 4,082 | 1,466 |
| 1,466 | |

2,616 Decrease under new Act.

Here the decrease is from 4,082 under the old law, to 1,466 under the new, or 2,616. That is, the cases of Sunday drunkenness under the old law exceed those under the new by 200 per cent.*

Once more, deducting from the total number of cases of

* In harmony with this are the following interesting statements of Mr. Smart: "The same improvement, in respect to order and decorum on our streets on the Sabbath day, mentioned in my first report, still continues, and on Saturday nights, by 12 o'clock, peace and good order are obtained, instead of, as formerly, a state of turmoil and disorder the whole of Sabbath morning. In no place is the difference more observable than in the Police Offices, particularly in the Central Office, where Sunday used to be a busy day, but it is now perfectly quiet, and it is not unusual for a whole Sabbath to pass without a single case of any kind being brought in. The Lieutenants are now at liberty to go to church, one Clerk taking charge of both the Detective and the Lieutenants' Departments—and the Turnkeys have now little else to do on Sunday than read their Bibles."

drunkenness those of the inoffensive kind, there remain cases of drunkenness and crime combined, as follows:—

| *No. under Old Law.* | *No. under New Law.* |
|---|---|
| 13,328 | 6,787 |
| 10,985 | 6,058 |
| 10,659 | 6,525 |
| 34,972 | 19,370 |
| 19,370 | |
| 15,602 Decrease under new Act. | |

These cases, which imply violence or wrong, and entail enormous criminal expenses, and which, therefore, very specially concern the public, decreased from 34,972 under the old law, to 19,370 under the new—a falling off in three years to the extent of 15,602, or 6,200 a year. In other words, the number of cases of drunkenness and crime combined was 84 per cent. higher under the old law than under the new. Thus, in regard to Glasgow, to which alone they particularly refer, the assertions of the Licensed Victuallers are completely belied by the returns ordered, and now obtained, through the motion of Mr. Dunlop; and these same returns establish a corresponding harmony of results throughout the other large towns of Scotland: thus demonstrating, beyond all contradiction, the truly benignant effects of the Mackenzie Act, and how doleful for Scotland would be the day that saw it abrogated or relaxed.

In the remaining part of their memorial, the Licensed Victuallers complain of sundry hardships to which they are exposed. With some of these complaints, such as that relating to the billeting of soldiers, the temperance cause we represent does not require us to intermeddle. As to other alleged hardships, such as being fined if admitting into their premises any person, though a friend or relative, or one in quest of spirits for medicinal purposes, five minutes past eleven at night, or any time on Sunday, we respectfully submit that these are not to be regarded as hardships at all. They are simply the natural and unavoidable results of the



subjection of their trade to restrictive regulation. That their trade is one that does require special regulation, the general current of our past legislation assumes, and publicans themselves seldom care or dare to deny. On the contrary, they have repeatedly owned it to be, in a momentous sense, exceptional to other trades. Thus they have declared that the drink traffic, unlike others, stands in need of regulation, inasmuch as "it deals in a dangerous article." And the very party whose claims we now oppose have confessed the same thing; for in the Report, for 1854, of the Scottish Licensed Victuallers' Association, that body expressly declare, that "to throw open the trade would be to throw open the flood-gates of vice and drunkenness." That their trade demands stringent regulation is thus confessed on all hands. But if these restrictive regulations are not to become a dead letter, the publicans must be held within the limits of the law. If minutes are too freely allowed them, hours will follow, and the whole affair prove like the letting out of waters. Better that inconveniences should occur, though far more formidable than those they mention, than that a salutary law, which has proved such a boon to Scotland, should have its girths cut and be vilely cast away. In really extreme cases, the spirit of British law, it is humbly presumed, would here, as elsewhere, be found large and considerate; but it is respectfully submitted, that no such case is almost ever likely to happen. No grocer needs to have his shop open on Sunday to entertain relations from the country; nor does a druggist need, for the sake of a possible emergency, to keep his shop open all the hours of the twenty-four. Nay, the publican, of all others, ought to have his shop and house in entirely different premises—their conjunction being notoriously a source of numerous abuses and contraventions of the law. The whole plea of hardship, on these grounds, thus resolves itself into a mere complaint against the needful and wholesome restrictions of the Forbes Mackenzie Act; and let these be modified as they may, so long as restrictions on selling remain, publicans'

complaints may be expected to remain. The alleged inconveniences, moreover, bear on the face of them to be little else than a mere pretence. They amount to almost nothing more than the betrayal of a strong desire to sell by night as well as by day, on Sundays as well as week days; and this desire has been further betrayed by the number of cases in which publicans have been convicted of violating the law. Had their sympathies been more with the law, and their chosen interests coincident with those of the public, no such grievances would probably ever have been named. All their complaints about police interference seem fairly met by the statement of Captain Smart, that "no respectable publican in the city had anything to fear from the police." Without reflection on the *men* concerned, it may be safely affirmed, that the *trade* itself, in its present form, can never be made "respectable." In the outset of their document, the Licensed Victuallers call their trade "legitimate." Relatively to the licence law, and to illicit selling, their appropriation of this term need not be disputed; but brought to the moral standard, the drink-trade, it is submitted, is anything but legitimate. It is essentially, invariably, and indiscriminately demoralising; and among the moral and respectable classes of Scottish society, without as well as within the total abstinence pale, the sentiment is strong, and is deepening every day, that instead of relaxation, there ought to be increased restriction, and this we could long to see carried to ultimate prohibition.

ROBERT SMITH, President.
JOHN M'GAVIN, Chairman of the Board of Directors.
NEIL M'NEILL, Vice-Chairman.
WILLIAM SERVICE, Jun., Treasurer.
JOHN S. MARR, Secretary.

MACKAY AND KIRKWOOD, PRINTERS, GLASGOW.

## WHO DISCOVERED
## THE SOURCES OF THE NILE?

*WHO DISCOVERED THE SOURCES OF THE NILE?*

# A LETTER

TO

## SIR RODERICK I. MURCHISON, K.C.B., F.R.S.,

PRESIDENT OF THE ROYAL GEOGRAPHICAL SOCIETY:

WITH

## AN APPENDIX

CONTAINING

A LETTER TO THE RIGHT HON. THE LORD ASHBURTON,

WHEN PRESIDENT OF THE SOCIETY.

BY

CHARLES T. BEKE, PH.D., F.S.A., F.R.G.S.,

AUTHOR OF 'ORIGINES BIBLICÆ,' 'THE SOURCES OF THE NILE,' ETC.

SECOND EDITION.

LONDON:

WILLIAMS AND NORGATE, 14 HENRIETTA STREET, COVENT GARDEN;

AND

JAMES MADDEN, 3 LEADENHALL STREET.

1863.

Τοῦτον μὲν οὖν τὸν [Βαρβαρικὸν] κόλπον περιοικοῦσιν Αἰθίοπες ἀνθρωποφάγοι, ὧν ἀπὸ ὀυσμῶν διήκει τὸ τῆς Σελήνης ὄρος, ἀφ' οὗ ὑποδέχονται τὰς χιόνας αἱ τοῦ Νείλου λίμναι.

AROUND THIS [BARBARIAN] GULF DWELL THE MAN-EATING ETHIOPIANS, FROM THE WEST OF WHOM EXTEND THE MOUNTAINS OF THE MOON, FROM WHICH THE LAKES OF THE NILE RECEIVE THE SNOWS.

*Claudii Ptolemæi Geographiæ* lib. iv. cap. ix. § 3.

TO

## SIR RODERICK I. MURCHISON, K.C.B., F.R.S.

PRESIDENT OF THE ROYAL GEOGRAPHICAL SOCIETY.

SIR,

IT has become requisite that I should thus publicly address you with reference to the subject which now mainly occupies the attention of Geographers, and which necessarily was the principal theme of your recent Anniversary Address from the Chair of the Royal Geographical Society.

On the 9th of last month, when it had been announced by you that Captain Speke had "settled the Nile," though no particulars were given, I took the liberty of addressing you a letter, in which I stated that the question solved was in fact this:—Is Lake Nyanza within the Basin of the Nile?—and I sent you a copy of a map taken from my work 'The Sources of the Nile,' published in 1860, on which, for your information, I had marked the two possible solutions of the question. The one was, that if there were a range of mountains crossing the African continent from east to west near the equator, then Nyanza could not communicate with the Nile. The other was, that if the mountains running from north to south and forming the eastern side of the Basin extended beyond the parallel of latitude in which the southern extremity of the lake lies, then Nyanza would necessarily be included within that Basin, and the streams flowing from those mountains into the lake would be head-streams of the Nile. And I pointed out to you that I had advocated the latter opinion as

long ago as the year 1848, when, at the Swansea Meeting of the British Association for the Advancement of Science, I read a paper "On the Sources of the Nile in the Mountains of the Moon;" referring you to the abstract of that paper published in the 'Report' of the Association for 1848, "Transactions of the Sections," pages 63, 64.

At the same time I recalled to your remembrance the plan of an exploratory journey proposed by me, likewise in 1848 (and partly carried out), for the discovery of the Sources of the Nile, by penetrating from the east coast of Africa, near Zanzibar, as Captains Speke and Grant have now succeeded in doing.

On the 11th of May, two days after I had so written to you, I attended a Meeting of the Royal Geographical Society, at which you presided, when I publicly expressed myself to the effect stated in my letter to you and here repeated.

After fuller information had been received from Captain Speke, verifying the hypothesis I had so long maintained, I addressed you again on the 19th of May, referring you further to my paper of the year 1846, "On the Nile and its Tributaries," printed in the 17th volume of the Society's Journal (pages 1–84), in which was first given the key to the *arcanum magnum* of geography; and I stated that, as I had pointed out the position of the Sources of the Nile, had shown the way to reach them, and had actually set on foot an expedition for their discovery and exploration in the position indicated, I was the *theoretical* discoverer; and I requested you to recognize me as such in your Anniversary Address. In doing so I naturally relied on your impartiality, both in your individual character and in that of President of the Royal Geographical Society, to give me the credit that is my due. And, in order that you might be better able to form an unbiased judgement, I referred you to the letter addressed by me, on the 23rd of April 1862, to your predecessor in office, Lord Ashburton, in which I had recapitulated the



opinions expressed on the subject in the Anniversary Addresses of the Presidents of the Society from 1848 to 1852 inclusive*.

To my astonishment, I was given to understand in reply, that either I must be content to have no allusion whatever made to me in the President's Address, or else, if mentioned at all, I should have attributed to me opinions which I was alleged to have entertained and made public as long ago as the year 1846. And this, it appeared, was to be done without taking into account what I had subsequently published on the subject as facts from time to time became known; which facts, though necessarily occasioning changes and modifications in the details, have established the general truth of my original hypothesis.

Apart from the inconsiderateness of overlooking (especially after the receipt of my letters of the 9th and 19th of May) all that I am so well known to have done since 1846, I was sorry to find the opinions which I expressed in my paper of that date far from correctly stated in your reply. I would not do you the injustice to imagine that you yourself had referred to that paper; for, had you done so, you would have been incapable of so misrepresenting me generally, and even misquoting me in one particular instance. My words are (in page 76), "The source of the Nile is situate at a comparatively short distance from *the sea-coast within* the dominions of the Imam of Maskat." By the introduction of the word "and" between the words "sea-coast" and "within," I am made to have expressed the opinion that the source of the Nile is *within those dominions*; and you then proceed to show the incorrectness of this opinion, which I never entertained.

The intimation of your intended line of conduct with respect to me having only reached me on the morning of Saturday, May the 23rd, I had barely time, before the Anniversary Meeting on the following Monday, to bring to your notice some additional

* My letter to Lord Ashburton is given as an Appendix to this letter.

facts to substantiate my right of discovery. The result was, that on May the 25th you recalled the determination which you had communicated to me three days previously, and in your Anniversary Address made mention of me on more than one occasion.

From the report of your Address in 'The Times,' it would appear, however, that what you did say was said as if meant to "damn with faint praise." In this I express not merely my own opinion, but also that of several persons competent to form a judgement on the subject. Indeed your assertion that Captain Speke has proved that the Mountains of the Moon, "which Ptolemy spoke of as traversing the equatorial regions of Africa from east to west, *have no such range as theoretically inferred by Dr. Beke*," may be (and by many is) understood as meaning that my theoretical inference has been proved by Captain Speke to be erroneous; whereas the fact is that he has entirely confirmed it.

I should be sorry to believe you could have had any intention to misrepresent me, or indeed not to do me full justice. I am therefore led to conclude that you have (doubtless unavoidably) relied for information and assistance on others, who, if not misleading you designedly, have done so through great want of knowledge of the subject.

Were it not so, you surely would not have spoken of the "Montes Lunæ of *Burton and Speke*;" for, as is manifest from what is stated by the former traveller in the second volume of his work 'The Lake Regions of Central Africa,' no two persons could possibly differ more widely than they do with respect to the "Mountains of the Moon;"—Speke calling by that name a range of mountains 6000 or 8000 feet high, in the form of a horseshoe or crescent, encircling the northern end of Lake Tanganyika; whilst Burton (in pages 90, 91) denies the existence of any such range, which he stigmatizes as "wholly hypothetical or rather inventive," and contends (in pages 178–180) that "from the fifth parallel of south latitude to the equator



an elevated mass of granite and sandstone formation crosses from the shores of the Indian Ocean to the centre of Tropical Africa," and probably extends even to the west side of the continent, there to "inosculate with the ridge, which . . . . is popularly known, according to Denham and Clapperton, as el-Gibel Gumḥr,—Jebel Kamar,—or Mons Lunæ." Within "a huge gap"—"breaking the continuity of the line"—of this vast equatorial range, Captain Burton places Lake Nyanza, which he thus excludes from the hydrographical system of the Nile.

The existence of an extensive mountain-range, running from east to west and *separating Nyanza from the Upper Nile*, has, down to the latest moment, found many favourers among African geographers; and (as will, of course, be within your remembrance) it was publicly advocated by Mr. Galton, so recently as May the 11th, at the Society's Meeting. It is in fact this vast mountain-system of Captain Burton and others that I take to be "the hypothetical chain of mountains . . . traversing the equatorial regions of Africa from east to west," of which Captain Speke is declared by you to have now established the non-existence from his own personal observation;—and not the snowy Mountains of the Moon of Ptolemy,—which are described by that geographer as lying to the west of the country of the cannibal negroes, who dwell along the shores of the Barbarian Gulf, near the Island of Menuthias (Zanzibar)*, the melted snows from them being received into the lakes of the Nile, and

* To this day the tribes inhabiting the east coast of Africa near Zanzibar are eaters of human flesh—the *Nyam-Nyam* of the Arabian geographers. In the 'Bulletin de la Société de Géographie' (3rd ser. vol. viii. p. 313), M. Eugène de Froberville speaks of the Amakoua (Makua) as cannibals of the most ferocious and sanguinary character; and Captain Burton, in his work already referred to (vol. i. p. 123), describes the Wadoe as addicted to "a practice which has made their name terrible even in African ears." He fixes the "proper habitat" of the Wadoe in about 6° S. lat.,—that is to say, between Menuthias and the snow-capped Mountains of the Moon—precisely where, seventeen centuries ago, Ptolemy placed his "man-eating Ethiopians."

which I had identified with the mountains forming the eastern side of the Basin of the Nile, before any of the Snowy Mountains, Kilimanjaro, Kenia, Doengo-Engai, &c., or either of the Lakes Tanganyika and Nyanza, were discovered.

Under all the circumstances of the case, therefore, I feel it to be due to myself to assert publicly my formal claim to be recognized as the *theoretical* discoverer of the Sources of the Nile, and at the same time to place on record my sense of the unsuitable treatment I have experienced during the last three years from the Royal Geographical Society, or rather from those by whom the Society's affairs are managed.

When I returned to England in 1860, after an absence of several years, I did hope that within the Council of the Society the old leaven of 1848 would have been exhausted. But to my great disappointment I found that when, in 1861, I communicated to the Society my paper "On the Mountains forming the Eastern Side of the Basin of the Nile," it was refused insertion in the Society's Journal, or even in abstract in the Proceedings. I was still more grieved in 1862 at the difficulties I experienced in obtaining a hearing for the narrative of my journey to Harran in Padan Aram, and thence over Mount Gilead into the Promised Land in the footsteps of the Patriarch Jacob; which occasioned my letter to Lord Ashburton already mentioned. But the climax has been attained now in 1863, when I have been informed by the President that, in his Anniversary Address, of which the most interesting topic is the Discovery of the Sources of the Nile in accordance with my hypothesis and my plan of exploration of 1848, it was deliberately contemplated either to attribute to me opinions which I do not entertain or else to ignore me altogether.

I have the honour to be, Sir,

Your most obedient humble Servant,

CHARLES BEKE.

Bekesbourne House, near Canterbury,
June 5th, 1863.

# APPENDIX.

*Letter from Dr. Beke to Lord Ashburton, dated April 23rd, 1862; with notes now added.*

My Lord,

I am sorry that my sending you (as I had intended) my paper for the Royal Geographical Society before the meeting of the Council on the 28th instant has been prevented by the necessity of replying to the article in last Saturday's 'Athenæum,' from the pen of one of the members of the Council, which, if allowed to remain unanswered, would doubtless cause the rejection of my paper*.

Sir Henry Rawlinson's public attack on me will be publicly

* The article in question appeared in the 'Athenæum' of April the 19th (No. 1799, pp. 529-531). It begins thus:—"Dr. Beke has been long known for the hardihood—not to say extravagance—of his proposed reforms in Biblical geography. There is hardly a country, or a city, mentioned in Scripture which he is content to leave in the position ordinarily assigned to it. His latest crotchet—for I can really call it by no other name—has been to apply the title of 'Aram Naharaim' to the plain watered by the two rivers of Damascus, and to identify the Haran of Genesis with a petty village in that district;" which "village" the writer of the article, in the course of his argument, "insists on," is "a place utterly unknown either in ancient or modern geography," of which, "in all probability, the name does not date more than a few generations back."

My answer, though written before my letter to Lord Ashburton, did not appear in the 'Athenæum' till May the 24th (No. 1804, pp. 693, 694). In it I reminded Sir Henry Rawlinson that what he styled my "*latest* crotchet" was one of the principal subjects treated of in 'Origines Biblicæ,' a work which he had known and studied from about the time of its publication in 1834. On October the 25th following ('Athenæum,' No. 1826, p. 530), I added a reference to the 'Moshtarik' of the Arabian geographer Yakût, who flourished in the 12th century of our era, in which Harran is mentioned as "one of the towns of the Ghutha of Damascus." The three Ionic columns still standing there, with the numerous other architectural remains, prove this "petty village" to have been in the intervening ages a Greek or Roman city, the name of which is lost for the present, but might easily be recovered.

repelled. I have no misgivings as to the result. It is not on that account, therefore, that I now trouble your Lordship. It is in order that hostile personal influences may not, as they have done before, operate detrimentally to me in the Council of the Society of which your Lordship is the President, that I feel it to be my imperative duty, not less to your Lordship than to myself, to lay before you a few facts which (I am convinced your Lordship will agree with me) you ought to know. The subject of Baron von der Decken's visit to the snowy mountain Kilimanjaro cannot fail to form a prominent feature in your Lordship's Anniversary Address; and in this respect likewise I venture to hope that what I am about to relate will prove not merely interesting but useful to your Lordship.

In the year 1846, some time after my return from Abyssinia (for my extensive explorations in which country I received the Gold Medals of the Geographical Societies of London and France), I wrote a paper "On the Nile and its Tributaries," which was read before the former Society, and printed in the 17th volume of its Journal. In the Anniversary Address of the President, Lord Colchester, this paper was designated a "very important" one; and in the opinion thus expressed geographers both in England and in foreign countries have unanimously concurred.

In it I first enunciated my interpretation of Claudius Ptolemy's famous text respecting the Sources of the Nile in two lakes receiving the snows from the Mountains of the Moon; and having, from the consideration of that and other authorities, arrived at the conclusion that "the source of the Nile is situate at a comparatively short distance from the sea-coast within the dominions of the Imam of Maskat, the friend and ally of the principal maritime powers of the world," I observed that "there cannot exist any obstacle of moment in the way of setting at rest this great geographical problem, which for thirty centuries has riveted the attention of the civilized world, at the same time that it has baffled the attempts to solve it made by the most celebrated rulers of Egypt, from the Pharaohs down to Mohammed Ali." *

* Journ. R. G. S. vol. xvii. p. 76. Captain Speke, on his return from his first journey, expressed himself in somewhat similar terms, saying, in 'Blackwood's Magazine' for October 1859, p. 397, that his discovery of Nyanza had "disclosed the probable and, he believed, true source of that mighty stream the Nile, and had almost, if not entirely, solved a problem which it had been the first geographical desideratum of many thousand years to ascertain, and the ambition of the first monarchs of the world to unravel."



Confining myself only to what has been recorded in the Society's Journals, I have next to mention a paper which Mr. Frederick Ayrton read before the Society in the beginning of 1848, and published in vol. xviii. of the Journal (pp. 48–74). Mr. Ayrton, a member of the Council, was a warm partisan of M. d'Abbadie, who pretended to have discovered the source of the Nile in Kaffa, several degrees to the north of the Equator; and his paper was a strong eulogy of his friend at the expense of myself. Of Mr. Ayrton's paper the President, Mr. W. J. Hamilton, spoke in high terms of praise in his Anniversary Address; and after reviewing our respective arguments (unfavourably for me, and favourably for Mr. Ayrton), he concludes by stating that the latter "shows that, as in a tropical climate no great river could take its origin except amidst a lofty mountain-range, we have no authority for looking for the sources of the Nile in a district where it is shown no elevated mountains can exist."*

Mr. Hamilton's Address was delivered on the 22nd of May, 1848. Eleven days previously, namely, on the 11th of May, the Rev. J. Rebmann, one of the Church Missionaries stationed near Mombas, had discovered the Snowy Mountain Kilimanjaro precisely where Mr. Hamilton said it was shown no elevated mountain could exist!

Long before the news of this discovery could reach Europe—in fact shortly after the date of Mr. Hamilton's Address—so satisfied was I of the correctness of my hypothesis, that, Dr. Bialloblotzky having volunteered to perform an exploratory journey into Eastern Africa with a view to the discovery of the sources of the Nile, I undertook the collection of a subscription in aid of his expedition, which however turned out a failure,

* Journ. R. G. S. vol. xviii. p. xxxvii. In p. lvii, Mr. Hamilton asserts that M. d'Abbadie had "succeeded in ascertaining the source of the main stream of the Egyptian Nile—the White Nile, or western branch—*which was supposed, according to a paper by Dr. Beke, lately published in our Journal, to exist two or three degrees to the S. of the equator.*"

the traveller not having been able to proceed further than Zanzibar. I beg leave to lay before your Lordship copies of the several circulars which I addressed from time to time to the subscribers to the expedition; from which you will perceive that *it was substantially the same as that which ten years later was undertaken by Captains Burton and Speke*, under the patronage of the Royal Geographical Society, and at the expense of that Society and the British nation.

Mr. Rebmann's discovery of Kilimanjaro was, in the next Anniversary Address (1849) of the President of the Society, suitably described as "most unexpected." Mr. Hamilton continued:—"The discovery of this lofty mountain has been assumed as giving additional strength to the arguments of *those who look for the sources of the White Nile to the south of the Equator*; but its comparative proximity to the coast, and the course of the rivers both to the north and south which would carry off a great portion of the waters resulting from its melted snows, ought to make us cautious in adopting such a conclusion without more detailed information."*

I do not for a moment imagine that the President was not perfectly sincere and even desirous of being impartial in the controversy between Mr. Ayrton and myself. But the latter gentleman, who was known as Mr. Hamilton's intimate friend, was an active and energetic member of the Council; and it was not unnatural that his opinions and feelings should have had greater weight with the President than those of myself, who had no special representative in the Council, and stood in no relation, friendly or otherwise, to Mr. Hamilton.

The following year the President, Captain (now Rear-Admiral) Smyth, when alluding to Mr. Rebmann's estimate of the height of Kilimanjaro—20,000 feet—remarks, "This circumstance really gives a shade of probability to *the hypothesis which suggests a mountain-chain of* 300 *miles from, and parallel to, the eastern coast, and from which the upper affluents of the Nile would issue.* But even if this assumption were proved as a fact, it would not at all prevent the existence of other distant affluents in the south-west and south."† I need scarcely remark that it is my

* Journ. R. G. S. vol. xix. p. lxxvi. † *Ibid.* vol. xx. p. lx.



hypothesis to which "a shade of probability" is thus cautiously but impartially accorded.

Before the next Anniversary Address the controversy between M. d'Abbadie (with his champion in the Council, Mr. Ayrton) and myself had been brought to an issue. Having elaborately and minutely examined that traveller's alleged journey to Kaffa for the purpose of discovering the source of the Nile, and having come to the decided conclusion that no such journey had taken place, I published, in the month of October 1850, the results of my investigations*. The consequences of this publication were very different in England and in France.

In the latter country, M. d'Abbadie, who was a member of the Council of the Geographical Society there, was able to exercise an influence on that body more powerful than that of Mr. Ayrton on the Society in London. The *Bulletin* of the French Society had long been opened to direct attacks on me, whilst communications from myself were refused insertion; and my remonstrances against this injustice only resulted in his being allowed to continue his attacks anonymously, or rather in the name of the Society itself instead of his own. Under such circumstances, I felt that I owed it to myself to return to that Society the gold medal which it had awarded to me in 1846, which I did on the 2nd of December, 1850.

In this country, on the contrary, M. d'Abbadie lost favour; Mr. Ayrton left the Council of the Royal Geographical Society; and the President, in his next Anniversary Address (1851), made the following pointed observation:—"I shall not here allude to the controversial disputes which have so greatly mystified the rise and course of that wonderful river the Nile; but must unhesitatingly express my own conviction that NO EUROPEAN TRAVELLER, FROM BRUCE DOWNWARDS, HAS YET SEEN ITS TRUE SOURCE."† And, when referring to the discovery

* An Enquiry into M. Antoine d'Abbadie's Journey to Kaffa to discover the Source of the Nile: 8vo, 1850; 2nd edition, 1851.

† These capitals are Admiral Smyth's. He has lately informed me that, having in the year 1817 expressed to the Admiralty his opinion that we must look south of the line for the Western Nile of Herodotus (see his 'Mediterranean,' p. 488), his firmly grounded conviction on this point was the cause of his strong assertion in thus addressing the Society.

of "Kenia, another stupendous eminence covered with eternal snows," he gave it as his opinion that the inland districts of Eastern Africa, visited by the Missionaries, "must be recognized as part of Uniamesi, or the Country of the Moon," and that "*these elevated ranges appeared to be in the vicinity of the spot where the source of Bahr el Abyad, or White Nile, would be found.*"* This, it will be perceived, though I was still not named, was an opinion yet more in accordance with my hypothesis of 1846.

I would here direct your Lordship's attention to another passage in the President's Address, as especially pertinent at the present moment. After congratulating the Society on "the learned and lucid dissertation" which Colonel (now Sir Henry) Rawlinson, one of the Council, had read before the Society, on the identification of the Biblical Cities of Assyria and on the geography of the Lower Tigris, Captain Smyth adverted to the advance of the land at the head of the Persian Gulf "at the extraordinary degree of a mile in thirty years, a rate of increase probably about twice that of the growth of the Sunderbunds or any other known delta;" and he added, "This agrees, in fact, with the statements which Dr. Beke, one of your Fellows, published in the 'Philosophical Magazine,' as far back as February 1834, and in his 'Origines Biblicæ' in the same year."† This should not be lost sight of now that my views in Biblical Geography and History, made public so many years ago, are being stigmatized as "crotchets."

The next President, Sir Roderick Murchison, went very much further than his predecessor, Captain Smyth, expressing himself (1852) in the following terms:—"*Wherever the sources of the Nile may ultimately be fixed and defined, we are now pretty well assured that they lie in lofty mountains at no great distance from the east coast.* In the absence of adequate data, we are not yet entitled to speculate too confidently on the true sources of the White Nile; but, judging from the observations of the missionaries, Krapf and Rebmann, and the position of the snow-capped mountains called Kilimanjaro and Kenia (only distant from the eastern sea about 300 miles), it may be said that there is no exploration in Africa to which greater value would be attached

* Journ. Roy. Geogr. Soc. vol. xxi. p. lxxxviii. † *Ibid.* p. lxxx.



than an ascent of them from the east coast, possibly from near Mombas. [The very journey which I had projected for Dr. Bialloblotzky in 1848.] *The adventurous travellers who shall first lay down the true position of these equatorial snowy mountains (to which our Abyssinian Medallist, Dr. Beke, has often directed public attention)*, and who shall satisfy us that they not only throw off the waters of the White Nile to the north, but some to the east, and will further answer the query whether they may not also shed off other streams to a great lacustrine and sandy interior of this continent, *will be justly considered among the greatest benefactors of this age to geographical science!*"*

In the following year (1853) I left England for Mauritius, remaining abroad till near the end of 1860; and as I was thus altogether out of the scientific world and took no part in its proceedings, I need not trouble your Lordship with any further references to the Addresses of your predecessors in the Presidential Chair.

On my return to England, I found that during my absence the current of opinions had been running counter to the hypothesis I had so long maintained. Others had obtained possession of the field, and I seemed quite lost sight of and (so to say) forgotten. I thought therefore that, in justice to the Royal Geographical Society not less than to myself, I ought again to place my views prominently before the Society; and accordingly I prepared a paper "On the Mountains forming the Eastern side of the Basin of the Nile, and the origin of the designation 'Mountains of the Moon' as applied to them;" which I communicated to the Society on the 10th of May, 1861, but which, after having been kept on hand upwards of three months and a half, was returned to me on the 30th of August following, barely in time to be read by me at the Meeting of the British Association at Manchester†. No reasons were given me for the rejection of my paper; neither did I, nor do I now, seek to question the

* Journ. Roy. Geogr. Soc. vol. xxii. pp. cxxiii, cxxiv.

† An abstract of this paper is printed in the 'Report of the British Association' for 1861, Transactions of the Sections, pp. 184, 185. It was published *in extenso* in the 'Edinburgh New Philosophical Journal' for October 1861, new series, vol. xiv. pp. 240–254.

decision of the Council. But I am bound to state that, in the opinion of many competent judges, the paper is of value and most suitable for insertion in the Society's Journal; and I am willing to believe that, if your Lordship will condescend to peruse the copy of it sent herewith, you will agree that there are in it many interesting and *novel* particulars most pertinent to the existing state of our knowledge of Eastern Africa.

I did not for a moment imagine that the feelings of any member of the Council opposed to myself personally could have caused the rejection of my paper, and I regret even now to be forced to entertain such an idea. Still, when I see a member of the Council openly arrayed against me, and recollect the course of events when Mr. Ayrton was acting in the double character of my opponent and one of my judges, I cannot but have my misgivings. I have therefore decided on adopting the straightforward course of making the present communication to your Lordship. In doing so, I do not, however, ask you to take any action on it as far as I am concerned, but leave it to you to act in such manner as you may deem advisable.

I have the honour &c.*

* The paper which occasioned this letter to Lord Ashburton was eventually read before the Society on the 16th of June, 1862, and printed in the 32nd volume of the Society's Journal (pp. 76–100), under the title of "Notes on an Excursion to Harran in Padan Aram, and thence over Mount Gilead and the Jordan to Shechem."

Printed by TAYLOR and FRANCIS, Red Lion Court, Fleet Street.



## LETTER FROM DR. BIALLOBLOTZKY TO DR. BEKE.

PATTENSEN, NEAR HANOVER,
*5th July*, 1848.

DEAR SIR,

Before I quitted England with the intention of undertaking an exploratory journey in Eastern Africa, you told me that if I could reach Alexandria with my own resources, you might be able to induce some friends of humanity and science to help me on. I have now the pleasure of informing you, that having made my final arrangements at this my native place, I now commence my journey by the way of Göttingen, Vienna, Constantinople,* and Alexandria. At Constantinople I hope to obtain a firman, which has a favourable influence in all Mohammedan countries, even beyond the boundaries of the Ottoman Empire; and at Alexandria I rely upon receiving, through your kind intervention, the means requisite for the further prosecution of my enterprise.

I have already discussed with you my plans; and I will here merely repeat, that, in addition to the hope of being able to solve, agreeably to your anticipation, that most important problem of geography the position of the sources of the Nile, my object is to act as a pioneer of Christian civilization, by observing and describing the moral, religious, and social state of the inhabitants of regions hitherto unvisited by Europeans, but which (there is reason to believe) afford the best and most natural road into the interior of Africa, as being that by which that vast continent must, in great part, have been originally peopled.

# JOURNEY

TO

# DISCOVER THE SOURCES OF THE NILE.

*Plan of Dr. Bialloblotzky's Journey, as settled with Dr. Beke in June, 1848.*

Proceed from Egypt to Aden, and thence to Mombás on the East Coast of Africa, in about 4 degrees of South latitude. At Mombás, or in its vicinity, make arrangements for travelling into the interior with a native caravan or otherwise.

It is anticipated that a journey of about 300 or 400 miles from the coast, in a direction between W. and N.W., will bring the traveller to the edge of the table-land of Eastern Africa,* at the waterparting between the basin of the Upper Nile and those of the rivers Lufidji, Ozi (Pokomóni or Maro) and Sabáki, flowing eastwards into the Indian Ocean.

On reaching the table-land, determine the Southern limits of the basin of the Nile, or that extensive tract of Africa which drains towards Egypt; and visit, if possible, the sources of the principal streams which unite to form that river. Obtain information respecting the great lake, said to exist in the interior near the parallel in which the traveller will then be.

Having explored the head-streams of the Nile, proceed further westwards across the continent, should facilities present themselves for so doing: if not, trace the course of the river downwards to Sennár and Egypt. Notice any branches joining the main stream, and ascertain, as far as practicable, their length and direction.

Note the bearings and distances of the journey; observe the latitude; make meteorological observations; and determine the elevation of the land by means of both the thermometrical and the aneroid barometer; which instruments, together with a sextant and artificial horizon, azimuth compass, hygrometer, and others, are furnished for use.

Record carefully all observations made. Describe the nature of the countries traversed, with their productions and capabilities for cultivation, commerce, and colonization; also the character, manners, and customs of the inhabitants, and their fitness for instruction or for emigration.

Ascertain the state of slavery and the slave trade, both on the coast and in the interior.

Collect vocabularies of the languages, and other materials for their investigation; and make all other suitable observations and inquiries.

Transmit full reports to Dr. Beke at every opportunity.

* Since Dr. Bialloblotzky's departure, it has become known, from information given by the Rev. Mr. Rebmann of the Church Missionary Society's East Africa Mission, that the edge of the table-land is within *two hundred* miles of Mombás. Further inland the lofty peak of Mount Kilimandjáro is visible, capped with perpetual snow. This mountain is on the road to the country of Mono-Moézi, and is apparently a portion of Ptolemy's "Mountains of the Moon," in which the Nile has its origin.—*May 1st*, 1849.

LETTER FROM DR. BIALLOBLOTZKY TO DR. BEKE.

PATTENSEN, NEAR HANOVER,
*5th July*, 1848.

DEAR SIR,

Before I quitted England with the intention of undertaking an exploratory journey in Eastern Africa, you told me that if I could reach Alexandria with my own resources, you might be able to induce some friends of humanity and science to help me on. I have now the pleasure of informing you, that having made my final arrangements at this my native place, I now commence my journey by the way of Göttingen, Vienna, Constantinople,* and Alexandria. At Constantinople I hope to obtain a firman, which has a favourable influence in all Mohammedan countries, even beyond the boundaries of the Ottoman Empire; and at Alexandria I rely upon receiving, through your kind intervention, the means requisite for the further prosecution of my enterprise.

I have already discussed with you my plans; and I will here merely repeat, that, in addition to the hope of being able to solve, agreeably to your anticipation, that most important problem of geography the position of the sources of the Nile, my object is to act as a pioneer of Christian civilization, by observing and describing the moral, religious, and social state of the inhabitants of regions hitherto unvisited by Europeans, but which (there is reason to believe) afford the best and most natural road into the interior of Africa, as being that by which that vast continent must, in great part, have been originally peopled.

I am not such a novice in travelling as not to be aware that the traveller, like the physician, should not be too definite in promising results; because, by so doing, he sinks to the level of the quack, who does not hesitate to predict what no human foresight can anticipate. But you will readily believe me when I say, that everything shall be done that may depend on zeal, energy, and perseverance, united with honesty of purpose; and since you have kindly entrusted me with the further development of your views, it would be very gratifying to me to be able to prove that, in this as in other respects, your confidence in me has not been misplaced.

Believe me to be, DEAR SIR,

Yours very faithfully,

FRIEDRICH BIALLOBLOTZKY.

*To Charles T. Beke, Esq., Ph.D.*

* Dr. Bialloblotzky was subsequently induced to proceed *direct* to Alexandria, by the way of Trieste. On the 4th of January, 1849, he was at Muscat, and on the point of starting for Mombás.

I am not such a novice in travelling as not to be aware that the traveller, like the physician, should not be too definite in promising results; because, by so doing, he sinks to the level of the quack, who does not hesitate to predict what no human foresight can anticipate. But you will readily believe me when I say, that everything shall be done that may depend on zeal, energy, and perseverance, united with honesty of purpose; and since you have kindly entrusted me with the further development of your views, it would be very gratifying to me to be able to prove that, in this as in other respects, your confidence in me has not been misplaced.

Believe me to be, DEAR SIR,
Yours very faithfully,
FRIEDRICH BIALLOBLOTZKY.

*To Charles T. Beke, Esq., Ph.D.*

* Dr. Bialloblotzky was subsequently induced to proceed *direct* to Alexandria, by the way of Trieste. On the 4th of January, 1849, he was at Muscat, and on the point of starting for Mombas.




TAYLOR AND FRANCIS, RED LION COURT, FLEET STREET.

1. Address delivered at the Anniversary Meeting of the Royal Geographical Society of London, 1863, by Sir Roderick I. Murchison, K.C.B., President.
2. Map of the Route explored by Captains Speke and Grant from Zanzibar to Egypt, showing the Outfall of the Nile from the Victoria Nyanza (Lake), and the various Negro Territories discovered by them. London, 1863.
3. Who discovered the Sources of the Nile? By Charles T. Beke, Ph.D., F.S.A., F.R.G.S., &c. London, 1863 - - - - - - - -

ART. IX.—1. *Address delivered at the Anniversary Meeting of the Royal Geographical Society of London*, 1863. By Sir Roderick I. Murchison, K.C.B., President. London, 1863.

2. *Map of the Route explored by Captains Speke and Grant, from Zanzibar to Egypt, showing the Outfall of the Nile from the Victoria Nyanza (Lake) and the various Negro Territories discovered by them.* London, 1863.

3. *Who discovered the Sources of the Nile?* By Charles T. Beke, Ph.D., F.S.A., F.R.G.S., &c. London, 1863.

THE great problem which has perplexed the learned of all ages from the days of Sesostris, and even from an earlier period—for it is referred to in the hieroglyphics of Egypt;—which the earliest of historians and the most learned of geographers vainly strove to fathom; which Alexander the Great was never weary of discussing; which tempted Julius Cæsar to spend nights and days with the Egyptian priests, striving to acquire from them the information which they did not possess; which Napoleon left unsolved, notwithstanding his passion for scientific as for military conquests; and which in modern days baffled the enterprise of Mohammed Ali;—this perplexing mystery, which has maintained its interest unimpaired almost from the commencement of civilisation in the East, has at length been dispelled by two British officers, who have acquired for themselves a world-wide celebrity, reflecting at the same time honour on their country, and giving one of its prominent features to the age in which they live.

In a former article on African Discovery,* we remarked that the region yet unexplored, in which the true sources of the Nile must lie, had become so circumscribed that there was every reason to expect a speedy solution of the problem. The furthest point which had then been reached on the White Nile, by ascending its course, was about 3½° N. lat., by Signor Miani, a Venetian, who had resided for some time in Egypt, and who believed that he had reached 2° N. lat., where he cut his name upon a tree; but Captain Speke, on passing this tree in his homeward journey, found it by observation to be 3½° N. lat., and therefore about 200 miles from the head waters of the Nile. Captains Burton and Speke, in 1859, worked their way to the north by laborious journeys from Zanzibar, and fell in with the lake Tanganyika. The Nyanza was seen and partially explored only by Captain Speke, who, with remarkable sagacity, immediately arrived at

* 'Quarterly Review,' No. 218, p. 496.

the



the conclusion that in it would be found the source of the Nile. That opinion, unfortunately, was not shared by the chief of the expedition and companion of his labours, who had been prevented by illness from accompanying Captain Speke to the Nyanza; and the enterprise, which had hitherto been attended with remarkable success, terminated at a point of high geographical interest, and at a time when a little farther perseverance would undoubtedly have led to the great discovery of the age, and have conferred on the united names of Burton and Speke, the renown which will now attach to those of Speke and Grant.

Rarely has the scientific world been more aroused than by the brief telegram, 'the Nile settled,' which Sir Roderick Murchison received from Cairo; and the excitement was increased, rather than allayed, as the details transpired from time to time, and the conjecture was converted into certainty that the great river to which Egypt owes its place in history and its civilisation, had been at length proved to have its source in a vast lake more than two degrees south of the Equator, the southern shore of which had only once before been trodden by the foot of an European. Before, however, we notice the particular incidents relating to this great discovery, it may be useful to refer briefly to what had been done both in former and in modern times to solve the great enigma.

But why should the Nile have especially attracted the attention of geographers, and have excited the increasing curiosity of the world? Other grand rivers have failed to interest mankind in anything like the same degree; and when their sources have been discovered, they have caused no emotion beyond that of a passing interest and a calm appreciation of a new fact added to the domain of geographical knowledge. The Nile alone has excited wonder bordering on astonishment, and inspired an interest verging on enthusiasm. It is the one cause of the fertility and former greatness of a country the civilisation of which is of a mysterious antiquity, and intimately associated with the sacred history of our race. Its source was an object of great curiosity in Egypt from the remotest periods. It was a frequent subject of discussion among the learned of all nations, and occasionally considered worthy of attention by the government of Egypt itself. Psammitichus I. organised an expedition for exploring the country in which the river was supposed to have its origin, but it did not penetrate very far into the interior; and in the absence of authentic data for determining the difficult

 geographical

geographical problem, people not only speculated freely, but often guessed wildly and believed absurdly. Herodotus enumerates in his history the many conjectures made by the Egyptian philosophers respecting the source of the Nile, as well as their explanations of the most remarkable of its phenomena. He was told that the periodical inundation of its banks was caused by the melting of the snows on the Mountains of the Moon; but how, he observes, can the river be swollen by melted snows, running as it does from the hottest regions of the world, where rain and frost are unknown? Recent discoveries, however, have ascertained that there are mountains of great elevation near to the Equator which are covered with eternal snow. But we have at present no reason to think that the streams and torrents which flow from the precipitous sides of Kenia and Kilimanjaro contribute any quantity of water to the grand reservoir of the Nile. The great volume of the water of the Nile is undoubtedly due to the rain which falls in the equatorial regions of Africa. With respect to the actual sources of the Great River, Herodotus says he had found no one among all with whom he had conversed, whether Egyptians, Libyans, or Greeks, who professed to have any knowledge of them whatever except one person, namely, the scribe who kept the register of the sacred treasures of Minerva in the city of Sala; but even he did not seem to be in earnest when he said that he knew them perfectly. His story was, that between Syéné, a city of the Thebaïs, and Elephantiné, were two hills with sharp conical tops, the name of one being Crophi, and that of the other Mophi, and that midway between them were to be seen the fountains of the Nile, which it was impossible to fathom. The fountains were known to be unfathomable, he declares, because Psammitichus had made trial of them, and had caused a rope to be made many fathoms in length, and had sounded the fountain with it, but could find no bottom; from which Herodotus, evidently more than half-believing the story, infers that there probably existed certain strong eddies, owing to which the water dashed against the mountains, and that by reason of these eddies a sounding-line could not get to the bottom. The Egyptian was evidently practising on the credulity of the inquisitive traveller, and doubtless smiled at his simplicity when he saw him recording, with his habitual care and accuracy, the names of mountains which had no existence whatever but in the imagination of the learned scribe, whom Herodotus probably rewarded for supplying him with such an important addition to his geographical knowledge.

The



The Nile was known, Herodotus says, to the extent of four months' journey, either by land or by water, above the Egyptian boundary, and there the course of the river was from west to east: but beyond that point no one possessed any certain knowledge of it, as the country was uninhabitable by reason of its excessive heat. The Bahr el Abiad, or the White River, the largest and longest of the streams, is now acknowledged to be the Nile, although the Bahr el Azrek, or Blue River, which flows from the highlands of Abyssinia and the source of which is well known, long had its advocates. The remaining branch, or the Atbara, flowing from the east, is of less importance than the two others. All these branches were well known to Ptolemy, who flourished at Alexandria about A.D. 150. This geographer seems always to have considered the western river as the true Nile; and it is remarkable, as a proof either of the possession of some more accurate knowledge than any which has descended to modern times, or as a correct inference from the observed phenomena, that he places the sources of the western river in numerous lakes lying at the base of the Mountains of the Moon. Strabo also mentions lakes from which the Nile issues in the east, but Sir Gardner Wilkinson* identifies these lakes, as well as the large lake Pseboa, above Meroë, with the modern Dembea, in Abyssinia, from or through which the Blue Nile runs.

The proofs which Ptolemy has given that he was well informed on the hydrography of at least two of the branches of the Nile, have always been thought to render his opinion of the origin of the western branch, or the White Nile, well worthy of consideration. In conjecturing the White Nile to be the true Nile, he agrees with Herodotus. About 200 B.C. Eratosthenes, the learned librarian of Alexandria, possessed almost as correct a knowledge of the course of the river as any that has been attained by modern explorers until within the last few years. He agrees with Ptolemy in placing great lakes at the head of the two principal branches of the Nile; and, as his knowledge proved to be correct with respect to the Blue Nile, there was reason for supposing that it might prove equally correct as to the White Nile. A remarkable fact has recently been brought to light, proving that a far more accurate knowledge of the hydrography of the Nile was possessed by some ancient than by modern geographers. Colonel Sir Henry James lately called the attention of Sir Roderick Murchison to Lelewel's 'Géographie du Moyen Age,' where

* Rawlinson's Herodotus, vol. ii. p. 43.

there

there is a map taken from the Arabian work called 'Rasm,' which map was copied by Abu Diafar Mohammed Ben Musa, A.D. 883. This map is, therefore, 1000 years old, and on it the source of the Nile is represented as being in a lake called Kura Kavar, situated on the Equator, an island in it being represented as in longitude 30° 40' E. This exactly agrees with modern discoveries.

Reference was made in a recent number of the 'Journal of the Royal Geographical Society' to a passage of Seneca,* in which that writer relates a conversation which he had with two centurions, who, in the early part of the reign of Nero, had been sent to search for the sources of the Nile. With the assistance of the King of Ethiopia and other chiefs, they, he says, to a great extent accomplished their task; but their further progress by water was found impracticable, when they reached the great jungles or marshes (immensas paludes), perhaps the Bahr el Ghazal, in which only a canoe containing one person could float. Seneca's further account of certain rocks out of or from between which the river was said to fall with great force is remarkable. He may either refer to the imaginary mountains which Herodotus mentions, or to the rush of the great stream from the Lake Nyanza, or from some point in its course of sufficient importance to justify partially if not entirely the imperfect description which he gives.

The principal modern explorations of the Nile have been that by Bruce, who confidently asserted and believed he had proved the Blue Nile to be the Great River of Egypt, and whose inquiries in the country of Darfur led him to place the source of the river at about 7° N. lat. and 27° long., not however in lakes, but in some stream flowing from the Djebel-el-Kamar, or Mountains of the Moon, the name which was given by Ptolemy to the great range in which he affirmed that the true source of the Nile would be found;—one by Linant, who travelled on behalf of the African Association in 1827, and surveyed the course of the White Nile from its confluence with the Blue River to Aleis, a distance of 132 geographical miles;—several modern expeditions, one under the direction of Ibrahim Kashef, an officer of the Viceroy of Egypt, who departed from Khartum, and dividing his party marched for thirty-four days along both banks of the White River without making any considerable progress or discoveries. Between the years 1839 and 1843, three expeditions were fitted out by the Egyptian Government for the exploration of the Nile,

* Nat. Quæst., Lib. 6.

and



and by which the river was followed up into regions previously unknown to the modern world. The first of these expeditions ascended the river as far as 6° 30' N. lat., discovering in its passage the mouth of the Sobat, Lake No, and the Bahr el Ghazal; the second is alleged to have reached 4° 42' N. lat.; the third did not get so far. The second of these expeditions was the most important. The officer in command was so much impressed by the appearance and magnitude of the Bahr el Ghazal that he would certainly have proceeded to explore that remarkable piece of water in preference to the Tubiri, conceiving it entitled by its importance to be considered the true Nile, rather than the river up which he continued his course; but his instructions were imperative to pursue his explorations to the south, whereas the Bahr el Ghazal would have taken him to the west or south-west.

Linant with a party of natives ascended the river as far as 13° 43' N. lat., but was unable to proceed in consequence of the native wars. The description which was given him of the country agrees with that which has since been derived from personal observation. The stream of the Nile was represented as being frequently lost in extensive lakes lying far to the west, and communicating with each other during the periodical inundations, the intervening country being flat. The observations which he himself made confirmed the truth of the description which he received. There was a total absence of gravel and sand in the bed of the river, which negatived the supposition that it could be fed by mountain streams; and its shoals and flats being composed of fine clay,* Linant concluded that it could not issue direct from any lofty region; or if its true source should really be in the Mountains of the Moon, it flowed after leaving them through a great extent of level country. One of the phenomena which it presented led him to the conclusion that it issued from or passed through some large lake; prodigious quantities of fish were observed carried down with the stream at the commencement of the freshes, and Linant rightly inferred that they could only come from a lake, from which they escaped as soon as the rains and the annual inundation set in.

The position of the Nyanza had been imperfectly indicated to Captain Speke by the Arabs whom he met at Kazé, on his first

* The only sand in the White Nile is not brought down by the river, but blown there from the interior by the south-west winds.

visit

visit to the country. It was found to be separated from the Tanganyika by only 200 miles. The southern extremity was observed to be in 2° 30′ S. lat., and its breadth there about ninety miles. It was fed by numerous streams which flowed from the mountain range which divided it from the Tanganyika, as well as by others, and by marshy rivulets which, super-saturated with water in the rainy season, overflow their banks and pour their contents into the lake. The existence of these great lakes in the interior of Africa had often been remarked upon by Sir Roderick Murchison, in his Addresses to the Royal Geographical Society; and he intimated the probability 'that the true centre of Africa is a great elevated watery basin, often abounding in rich lands, its large lakes being fed by numerous streams from adjacent ridges, and its waters escaping to the sea by fissures and depressions in the higher surrounding lands.' And here we cannot but express our satisfaction that the statements of the two enterprising German missionaries Krapf and Rebmann, which were received with so much suspicion, relative to the existence of great mountains covered with snow in this region of Africa, have been completely confirmed by the subsequent explorations of Baron C. von Decken and Mr. Richard Thornton, the former of whom ascended Kilimanjaro to the height of 13,000 feet to the snow-line. The rains at the Equator can scarcely be said ever to cease, but it is in April and November that they are heaviest. It is certainly a most beneficent arrangement that the configuration of Central Africa should be such as to cause the periodical expansion of its rivers into broad but shallow lakes, thereby supplying a great amount of moisture to the atmosphere, without which, in such a region, there could have been no organic life; equatorial Africa would otherwise, instead of a terrestrial paradise covered with a rich and luxuriant vegetation, and the home of millions of the human family revelling in material abundance and animal enjoyment, have been a scorched wilderness in which it would have been utterly impossible for man to subsist. The country on the Nyanza was found by Captain Speke, on his first visit, to be not only perfectly healthy, but abounding in all the necessaries of life. Coffee, the banana, numerous oleaginous plants, the pine apple, the ground-nut and cocoa-nut, rice, the cotton plant, were successfully cultivated, and the hills were covered with herds of fine cattle. During his first visit to the lake, Captain Speke received vague accounts of the Kitangulé and Kitonga, rivers flowing into it. A third large river to the north was described to him;



him; it was said to be broader, deeper, and stronger than either the Kitangulé or the Kitonga, and to flow from the lake through stony, hilly ground in a north-westerly direction. This is doubtless the great river which Captain Speke has now seen, which the natives call the Kivira, and which he confidently denominates the Nile; and the hilly ground is the sandstone range which he describes as a characteristic feature of the scenery to the north-west of the lake. The conviction flashed upon his mind very soon after he had quitted the vicinity that this river must be the Nile. The height of the Nyanza having been ascertained to be upwards of 3500 feet above the level of the sea, and the bed of the Nile at Gondokoro, in latitude nearly 5° N., being greatly lower, Captain Speke arrived at the conclusion that the lake must be the reservoir of the Nile, and he conjectured that the cause why the ancient and modern exploring expeditions had failed to discover the Nyanza, was the existence of impassable rapids occasioned by the difference of elevation between the lake and Gondokoro. The intermediate country, Captain Speke inferred, was terraced like a hanging garden. He has since found its conformation to correspond precisely with that impression; and it is worthy of remark that the independent observations of travellers in Southern and Western Africa similarly reveal to us the existence of great rivers descending by steps from some central plateau.

The public will look forward with eager curiosity for the full details of Captain Speke's last great exploit and adventures, with a few of which he has already gratified his numerous audiences, who have listened at the cost of much bodily discomfort. It appears that returning to Unyanyembi, about 3° south of the Victoria Nyanza, and his former starting point, he and his companion took a new direction, which they were informed would conduct them to a creek on the western shore of the lake, whereas Captain Speke's first acquaintance with it was made nearly at its southern extremity. The track, however, did not lead direct to the Nyanza, but to a long valley called Orége, sloping down to the Nyanza, and presenting some of the appearances of the bed of a lake fast drying up. Captain Speke conceives the great Nyanza itself to have been formerly twice its present size, the surrounding country being covered with a network of rush-drains with boggy bottoms. But it seems to be the characteristic of several of the great African lakes to be subject to enormous periodical expansion and contraction, according to the amount of rain and evaporation to which they are

are subjected. Thus the great lake Tchad was found by Dr. Barth to be an immense lagoon, and at the time of his visit to be only sixty miles in extent from east to west, although Clapperton had found it by rough measurement a few years before Barth's visit to be 120 miles long in the same direction. It may be therefore reasonably concluded that most of the lakes in the equatorial region of Africa are the expansions of large rivers swollen by the tropical rains. That is undoubtedly the case with the Tchad, and it may to a great extent be that of the Victoria Nyanza.

The size of the lake, however, must necessarily be much greater in the rainy season than in the dry, and the apparent traces of a great permanent diminution of its area may be only those of its periodical subsidences. It is scarcely conceivable that a lake so situated as the Nyanza, with the sources of its supply, by tropical rains and mountain streams, perennial, can have permanently decreased, to the extent supposed, from the effects of mere evaporation. Captain Speke recorded his first impression of this great sheet of water as being only the temporary deposit of a vast flood overspreading a flat surface. He believed it to be very shallow, as it was far from presenting the usual characteristics of a deep lake or inland sea, like the Tanganyika, but was studded with a multitude of wooded islands standing out of its surface like low hill tops, similar in their configuration to those of the country through which he had passed, and which would have presented exactly the same appearance as the Nyanza if subjected to a temporary inundation.* The recently discovered smaller lake, called by the travellers 'Little Windermere,' is, it appears, drained by the Kitangulé River into the Nyanza. This river, after receiving the contributions of many smaller streams, and draining some minor lakes, is described as a noble stream, almost equal in volume to the Nile itself when it first issues from the Victoria Nyanza.

Mashondé, in the upper region of the Uganda country, was the spot from which, in his second expedition, Captain Speke first obtained a view of the great lake. There is apparently reason to believe that the Nyanza is connected with some other lakes, for Captain Speke heard from the natives that they were in the practice of going to one in quest of salt by means of a strait, and he conjectures it may be the Baringo of

* Captain Speke's former exploration of the country of the Nyanza is recorded in three highly interesting papers contributed by him to 'Blackwood's Magazine,' in 1859.

Dr.



Dr. Krapf, and which he denominates the Salt Lake, from its islands possessing deposits of salt. In passing along the western shore of the Nyanza, two rivers flowing northwards were met with before he found the great stream which he unhesitatingly proclaims to be the Nile. It is, therefore, from the northern extremity that this great river rushes swiftly from its reservoir, rejoicing as a giant to run its course. The river, soon after it has left the falls, flows through the sandstone hills, to which reference has been before made, and becomes a mountain torrent of great beauty. It then winds sluggishly along a succession of low flats, having less the appearance of a river than of a lake. It is soon increased by two considerable tributaries, and continues its placid course until, in consequence of a rapid fall in the land, it again becomes a foaming torrent. Here Captain Speke quitted the banks for a time. Traversing the chord of a bend which the river describes, he next met with it in the Madi district to the north of the Karuma Falls, where it again presented the aspect of a sluggish stream, alternating with rapids. Before reaching the Madi district, it passes through the Little Luta Nzigé, a considerable lake. This lake, which is thought to be another feeder of the Nile, Mr. Baker, at Captain Speke's suggestion, undertook to explore; and he left Captain Speke for the purpose of pursuing his travels to the south-west, by which he hoped to throw much light upon several collateral questions connected with the supply of the Nile. Here the Asua River, which was represented by the people, with whom Captain Speke conversed, as flowing from the northern end of the Nyanza, joins the Nile, and is during the rains an important feeder of the main stream. Below this point the course of the river is well known, and the Bahr el Ghazal joins it, looking like a lake without any apparent stream of its own. This remarkable sheet of water, which is fed by streams from the east and south, was entered by Mr. Petherick in the course of one of his trading enterprises; but he was prevented from landing on its banks by the hostile attitude of the population. In 1854, however, he succeeded in landing, and in making his way into the interior. The Nile flows past the Bahr el Ghazal with an imposing sweep and velocity.

Of the other principal tributaries to the Nile, the Giraffe River—although its course is at present entirely unknown—is believed to be navigable to a great distance south. The Southern and the Northern Sobat enter from the right bank; and Captain Speke suggests that these three great streams may possibly

possibly be branches of one river further south; and if such should prove on further exploration to be the case, he candidly admits that in its upper course it must be compared with the river which flows from the Nyanza.*

Independently of the high importance which is justly attributed to the discovery of the great river which issues from the Victoria Nyanza, Captain Speke and his companion have opened up to the civilised world a region of Africa equally interesting to the ethnologist, the geographer, and the philanthropist. The chiefs of several of the black tribes, through whose territories they passed, present a striking contrast to the coarse and brutal populations of the districts which lay in Captain Speke's route on his first visit to the Nyanza. The existence of any people in the equatorial region of Africa, in so comparatively advanced a stage of civilisation as that of Karagwé, on the western side of the Nyanza, ought to modify materially the common opinion of the mental and moral attributes of the African race. A people which, without any intercourse with the civilised world except with a few ivory merchants, could attain, unaided by example and instruction, so much proficiency in some of the simpler arts of life, and display so many of its proprieties and humanities, raises the character of the black men to the level of the white, proving them to be capable of the same refinement of feeling and manners. The character of one native chief and of the princes of his family elicited from Captain Speke the highest eulogy which man can bestow on man. He has characterised them as essentially gentlemen. But it would appear that these chiefs were of a superior race, who wandered probably from Abyssinia and became the rulers over tribes which differ little from the ordinary inhabitants of Africa.

Whether the remote regions to which attention is now directed can be brought within the range of mercantile enterprise, remains to be ascertained. We already hear of the formation of a wealthy and influential public company, which will receive the support of the Viceroy of Egypt, and of which the object will be to

* We give the passage referring to these rivers, in the Address delivered by Captain Speke before the Royal Geographical Society:—'The Northern Sobat was passed without our knowledge, which also being navigable would make the Upper Sobat, that is to say, the Sobat above the Delta, of far greater magnitude than the Giraffe, unless indeed these three streams may be one river still further south, when on its combination the comparison would have to be drawn with the Nile above it, and would very nearly equal it, for the Nile with these additions has scarcely doubled its importance, considered as it was seen from above, entering the Bahr el Ghazal.'

open



open the navigation and extend trade throughout the whole course of the Nile. It is proposed to establish a line of telegraphs and a chain of trading posts as far as Khartum, and to form a line of caravans for penetrating the regions to the south. The impression made on Captain Speke on his first visit to these regions, of their boundless fertility and capabilities, has been fully confirmed. The country is everywhere in a high state of cultivation, and the scenery in many parts strikingly grand. The prevalent principle of government appears to be the despotism of a chief; but the people are described as good-natured, intelligent, honest, and easily ruled. Cannibalism was not found to exist in any of the districts, although the travellers were themselves suspected and accused of it. It was imputed to them that they ate voraciously the flesh of women. The difficulties of travel in these countries are very great; and the frequent wars between the different tribes must for some time make exploration and traffic a work of peril. The navigation of the Nile seems beset with difficulties, which it may require centuries of civilisation to overcome. No direct access by water to the district of the Nyanza can be hoped for, at least by the great river which rushes over the Ripon Falls.

It is remarkable that in scarcely any of the great African rivers is the navigation unobstructed. The Zambezi is not navigable in its upper course, and has some serious obstructions in its lower. The great Orange River, after a course of 1000 miles, enters the sea an insignificant stream. The Couanza is navigable but for a short distance, and that only for small vessels. The Congo possesses a wide and deep embouchure, but at the distance of 100 miles from the sea it leaps over tremendous precipices, and is beset with dangerous rapids and terrible cascades. The Niger in its lower course is open, but its upper course presents many obstructions and difficulties. The Senegal is only navigable for 250 miles from its mouth; and now the Nile, in addition to the well-known difficulties of its lower stream, has been ascertained to have a series of rapids and falls in its highest course which must present insuperable obstacles to its navigation.

The farther researches in this most interesting portion of the globe will probably not be confined to the route just explored by the two energetic and successful travellers who have so much excited our sympathy and our interest. The great tributaries of the Nile now deserve attention. They may flow from regions quite as important and probably as interesting as those with which we

have

have recently been made acquainted, although their exploration may not be fruitful of such exciting geographical results. It was suggested so far back as 1837 that the most appropriate mode of exploring the Nile and its tributaries would be by means of a small steamer, drawing only two feet of water, and manned by a small but select crew. An expedition, provisioned for a year, leaving Cairo in the month of July, might, with a little care, pass all the cataracts between that place and Khartum, and reach Gondokoro without difficulty.* For exploring the Nile much above Gondokoro, such an expedition would, we now learn, be unsuitable; but it might be eminently conducive to the prosecution of further geographical discoveries if it should take the direction either of the Sobat, the Giraffe, or the Bahr el Ghazal, and thus be not only the means of greatly enlarging our knowledge of the interior of Africa, but become the harbinger of civilisation to millions yet unknown and unheard-of.

The introduction of steam on the upper waters of the White Nile would not be a novelty. The feat has been already accomplished by three ladies, who, with a spirit and courage which cannot be too highly commended, have not only pushed up the Nile in their little vessel as far as Gondokoro, but have even ventured a day's journey beyond it. They have entered the Sobat, and steamed for some distance up its stream, which they describe as not of great importance, except during the floods. They have gone upon an excursion up the Bahr el Ghazal, by which they hope to make important discoveries relating to streams by which that great 'mere' is fed.

All efforts to ascend the Nile to its source having failed, it is remarkable that no effort should have been made before the expedition of Burton and Speke to reach it from the east. It had several times been suggested that expeditions starting from Zanzibar would have a fairer prospect of reaching the land of mystery than if they proceeded from Egypt. Important discoveries had been made by the German missionaries stationed near the coast, and who took occasional excursions into the interior; and in 1848 Dr. Beke, an able geographer, projected an expedition into the interior from Zanzibar, being convinced that the head-streams of the Nile would certainly be found in the district now known to be drained by the Nyanza. A claim, therefore, has been made by this gentleman to be considered the

* 'Journal of the Royal Geographical Society for 1839.'

theoretical



theoretical discoverer of the sources of the Nile, in consequence of having pointed out (after Ptolemy and the Arabian mapmaker) the quarter in which they were to be sought. This claim cannot in any degree detract from the merit of Captain Speke in having arrived by fair and independent reasoning at the convictions which prompted him to undertake his last expedition, and in having actually discovered the great reservoir from which the mighty Nile flows.

It would be unjust, while applauding the great achievement of the now illustrious explorers of the source of the Nile, not to refer to the invaluable labours of the Society to which the world has for many years been chiefly indebted for the extension of geographical knowledge. To the Royal Geographical Society of Great Britain is due that increase in our knowledge of the surface of the globe, which has been one of the most marked characteristics of this century. The variety and importance of the subjects brought forward for discussion in this Society, no less than the great ability which marks the Papers contributed to its Journal, and the number of its members, place it very high indeed among our scientific bodies. It is a remarkable coincidence that the eminent man who presides with so much ability over its councils, and contributes so greatly to the interest of its discussions, should also be the geologist who has revealed to us the ancient history of the earth, while in his untiring geographical labours he evinces that his interest is not by any means confined to the deep foundations of our planet, or to the mysterious changes which in remote ages its surface has undergone. African discovery has more especially occupied the attention of the Society, and the name of its founder* will be connected with the discovery of the mouth of the Niger; the name of its existing President—to whom is mainly due its resuscitation—will be associated with the discovery of the sources of the Nile. His steady aid, combined with the cordial approbation and support afforded by Her Majesty's Government to the successive expeditions, has greatly contributed to the prosecution of African discovery in the South and in the East, and to the achievements of Livingstone and Speke. The noble river which issues from the Victoria Nyanza is, like Hercules in his cradle, a giant born; but its remote springs of life remain yet unvisited by civilised man. The modern world may still say with the Roman

'Nec licuit populis parvum te, Nile, videre.'

* The late Sir John Barrow.

Its

Its origin may yet lie hidden among the wilds which have only just emerged from the gloom of unexplored distance; but, tracked by the eager steps of the future explorer, it will reveal more and more of its mysteries; and he will at length slake his thirst in the sparkling rill which is the source of Heaven's blessings to the millions who breathe, and move, and have their habitation along the vast expanse of valley and plain from the long-mythical Mountains of the Moon to the old historic land of Egypt and the sea.

---

PAMPHLETS

21

21